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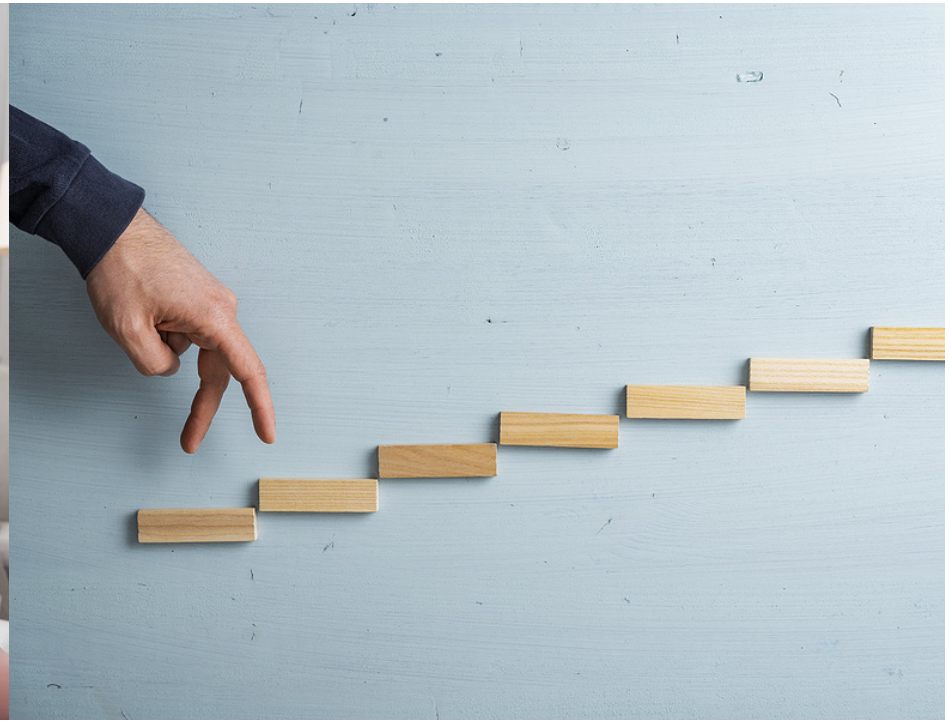
Federaal Kenniscentrum voor de Gezondheidszorg
Centre Fédéral d'Expertise des Soins de Santé
Belgian Health Care Knowledge Centre

NURSING CONSULTATIONS FOR PATIENTS WITH COMPLEX HEALTH CONDITIONS



KCE REPORT 373
HEALTH SERVICES RESEARCH

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LIST OF ABBREVIATIONS

ABBREVIATION	DEFINITION
ABIPA	Association Belge des Infirmiers de Pratique Avancée
ARS	Agence Régionale de Santé
APN	Advanced practice nurse
ASALEE	Action de Santé Libérale en Équipe
AZ	Algemeen ziekenhuis
BIG	Beroepen in de Individuele Gezondheidszorg
BVVS	Belgische Vereniging voor Verpleegkundig Specialisten
CanMEDS	Canadian Medical Education Directives for Specialists
CFAI	Conseil Fédéral de l'Art Infirmier
CNO	Chief nurse officer
CNS	Clinical nurse specialist
CTAI	Commission Technique de l'Art Infirmier
EFN	European Federation of Nursing Associations
FPS	Federal Public Service
FRV	Federale Raad voor Verpleegkunde
GP	General practitioner
ICN	International Council of Nurses
IoM	Institute of Medicine
MD	Ministerial Decree
NC	Nurse consultant
NIHDI	National Institute for Health and Disability Insurance
NP	Nurse practitioner
PESTEL	Political – Economic – Social – Technical – Environmental – Legal

RD	Royal decree
RN	Registered Nurse
SD	Standard deviation
TCV	Technische Commissie voor Verpleegkunde
UZ	Universitair ziekenhuis
WHO	World Health Organization

SCIENTIFIC REPORT

1 INTRODUCTION

Healthcare is currently facing a number of challenging evolutions: a growing prevalence of chronic diseases and multimorbidity, an ageing population, an increasingly complex demand for care, a need for specialised and remote care, combined with budgetary challenges, often situated in fragmented healthcare systems.[3-5] In times of scarcity of certain care profiles (medical and nursing), the pursuit of high quality, safe, and efficient care becomes a significant challenge and also serves as a catalyst for adapting and optimising care models. Many countries are therefore exploring innovative care models, driven by value-based payment models, to improve efficiency, coordination, integration and collaboration within the healthcare system.[3, 6] As a result, the composition and roles of the healthcare workforce, including nurses, are changing in many countries.[3, 6-8] Due to the increasing professionalisation of nursing care and the presence of essential competencies within the nursing profession, advanced roles and expanded scopes of practice are increasingly being integrated and documented in models of care internationally. These advanced roles and scope of practice can entail the implementation of nursing consultations. Although not synonymous, this advanced scope of practice[a] or nursing consultations is commonly referred to as 'advanced practice nursing' or 'nurse-led clinics'.[9-13]

Nursing consultations and advanced practice nursing are two interconnected but different concepts. Advanced practice nursing involves a broader range of roles and responsibilities, such as independent practice and expanded clinical decision-making in various settings. Nursing consultations are a specific component of nursing care that can take place in different healthcare contexts, including nurse-led clinics. Despite their differences, these practices also share common aspects. For instance, nurse-led clinics can incorporate advanced practice nursing roles, where APNs lead and manage the clinic's activities. Moreover, both advanced practice nursing and nursing consultations involve providing specialised

[a] The scope of practice encompasses the legal authorisation and reimbursement for healthcare services provided by professionals.[1] The American Nursing Association defines the scope of nursing practice as "… the description of the who, what, where, when, why, and how associated with nursing practice and roles".[2]

nursing expertise, patient assessment, care planning, and collaboration with other healthcare professionals. In this report, we will primarily focus on the direct clinical practice of advanced practice nursing by focusing on nurse-led clinics and/or nursing consultations. Throughout the report, we will use the term 'nursing consultations' to encompass both of these practices.

Previous cross-country research comparing advanced practice nursing identifies that the primary rationale is to address the issue of limited physician availability and to improve access to healthcare services.[6] Furthermore, the development of advanced practice nursing or nursing consultations roles aims to augment the quality of care provided. This can be achieved through the establishment of new positions dedicated to providing comprehensive follow-up and counseling to patients with chronic and/or complex conditions, as well as through setting up and supervising quality improvement initiatives. In some countries, the introduction of advanced practice nursing has been driven by cost containment. By delegating specific responsibilities from more costly physicians to less costly advanced practice nurses, it is possible to deliver comparable services at a reduced cost. Additionally, improving quality of care has the potential to reduce long-term healthcare expenditures by preventing complications and unnecessary hospital admissions.[2] Moreover, the expansion of advanced practice nursing roles is frequently seen as a strategy to enhance the attractiveness of the nursing profession and retention rates by offering enhanced career prospects.

Currently, there is no well-established theoretical framework specifically designed for nursing consultations. Nevertheless, as mentioned above, the concept of 'advanced practice nursing' is closely related to nursing consultations, and several of its core principles can be applied to nursing consultations. To provide a clear foundation for this report, we start by defining advanced practice nursing and its key principles. Afterwards, we go into more depth into criteria for nursing consultations we used during this scientific report.

1.1 Defining advanced practice nursing

The first reference to advanced practice nursing dates back from the 1980s.[14] However, currently, the concept of advance practice nursing is being defined in various ways in the nursing literature, stemming from the fact that they encompass a wide and growing variety of competencies and practices.

1.1.1 Definition International Council of Nurses (ICN)

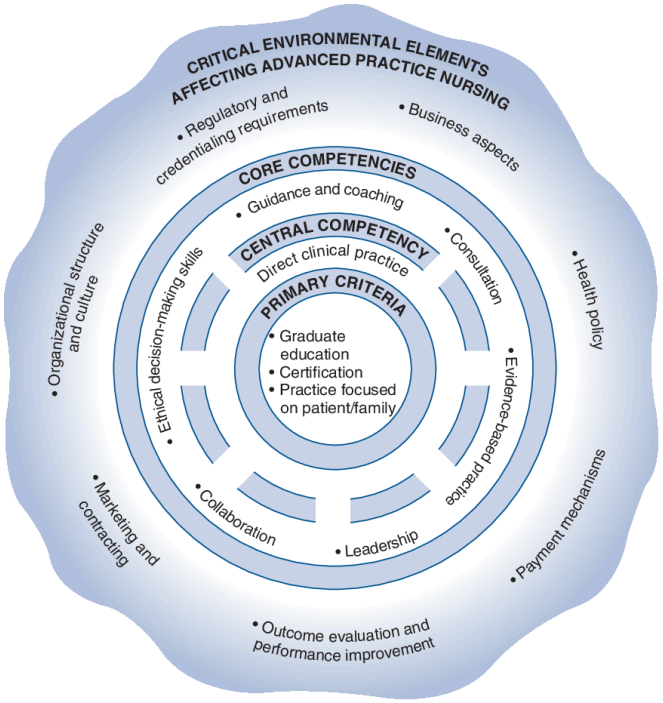
The existing body of evidence frequently refers to the definition of the International Council of Nurses (ICN): *"An advanced practice nurse (APN) is a generalist or specialised nurse who has acquired, through additional graduate education (minimum of a master's degree), the expert knowledge base, complex decision-making skills and clinical competences for advanced nursing practice, the characteristics of which are shaped by the context in which they are credentialed to practice".*[15]

Current national definitions of advanced practice nurses are generally consistent with this broad ICN definition, although they are adapted to each national context.[6]

1.1.2 Hamric and Hanson's integrative model of advanced practice nursing

In addition to the ICN definition, the literature often mentions the integrative model of advanced practice nursing developed by Hamric and Hanson (Figure 1).[2] According to this model, advanced practice nursing is defined as *"the patient-focused application of an expanded range of competencies to improve health outcomes for patients and populations in a specialised clinical area of the larger discipline of nursing"*. The roles and competencies of an APN are described elaborately in Tracy et al.[2] However, for conciseness, we will only describe this model in summary in this chapter.

Figure 1 – Hamric and Hanson's integrative model of advanced practice nursing



Source: Tracy et al.[2]

Primary criteria

In order for a nurse to be recognised as an APN, specific criteria need to be met. While these initial criteria alone may not encompass the entirety of advanced practice nursing, they form the essential foundation for this specialised role. The three primary criteria are as follows: (i) attainment of a **graduate degree** (which can be a master's or a doctoral degree in nursing sciences) specialising in an advanced practice nursing role, (ii) **national certification** at an advanced level, and (iii) engagement in **practice focusing on patient and family**.

Central competency: direct clinical practice

In Hamric and Hanson's model, advanced practice nursing is further delineated by six core competencies.[2] Among these competencies, the first one, direct clinical practice, holds a central and integral position. Although APNs can perform many activities, excellence in direct clinical practice provides the foundation necessary for APNs to execute the other competencies. This direct clinical practice is characterised by the following elements:

- **Holistic perspective:** APNs adopt a comprehensive approach that considers the physical, emotional, social, and spiritual aspects of patient care.
- **Therapeutic partnership:** APNs establish a collaborative and trusting relationship with patients, fostering a therapeutic alliance that promotes optimal healthcare outcomes.
- **Expert clinical performance:** APNs demonstrate proficiency in their clinical skills and knowledge, showcasing advanced expertise in their specialised area of practice.
- **Reflective practice:** APNs engage in reflective thinking, critically evaluating their own practice to enhance decision-making and improve patient care.
- **Evidence-based practice:** APNs utilise the latest research and evidence to guide their clinical decision-making, ensuring the provision of high-quality, evidence-based care.
- **Health and illness management:** APNs employ diverse approaches to manage health and illness, encompassing preventive measures, disease management, and health promotion strategies.

Additional competencies

In addition to this central competency, five other competencies further define advanced practice nursing regardless of the function or setting: (i) guidance and coaching, (ii) consultation, (iii) evidence-based practice, (iv) leadership, (v) collaboration, and (vi) ethical practice.

Critical elements affecting advanced practice nursing

Lastly, advanced practice nursing does not exist in isolation or within a singular environment. This level of practice takes place in a wide array of healthcare delivery settings. These diverse environments are complex compositions of various elements. While not explicitly outlined in Hamric's core definition of advanced practice nursing, these environmental factors are crucial to consider in any practice setting. The following critical elements may significantly influence the implementation of advanced practice nursing: (i) reimbursement and payment mechanisms, (ii) marketing and contracting considerations, (iii) legal, regulatory and credentialing requirements, (iv) health policy considerations, (v) organisational structure and culture to support advanced practice nursing, (vi) technology to optimise patient care, and (vii) outcome evaluation and performance improvement.

1.1.3 Canadian Medical Education Directives for Specialists (CanMEDS)

Many documents on advanced practice nursing also refer to the different roles formulated within the CanMEDS framework. The CanMEDS model is a competency framework developed by the Royal College of Physicians and Surgeons of Canada to guide the education, training, and practice of healthcare providers, particularly physicians, during their training and practice. In advanced nursing practice, the CanMEDS framework emphasises the integration of advanced clinical knowledge and skills with a broader range of competencies. These competencies encompass not only the clinical aspects of nursing but also leadership, collaboration, communication, advocacy, scholarship, and professionalism. By applying the CanMEDS framework into advanced nursing practice, nurses are encouraged to develop expertise in their specific clinical domains while also assuming additional roles and responsibilities. This includes roles such as a clinical expert, communicator, collaborator, leader, health advocate, scholar, and professional. These roles are in line with the roles defined in the Hamric and Hansson model (Table 1).

Table 1 – Congruence between Hamric and Hanson competencies and CanMEDS roles

Hamric and Hanson's competencies	CanMEDS roles
Direct clinical practice	Clinical expert
Guidance and coaching	Health advocate
Consultation	Communicator
Evidence-based practice	Scholar
Leadership	Leader
Collaboration	Collaborator
Ethical practice	Professional

1.2 Heterogeneity in advanced practice nursing

1.2.1 Difference between clinical nurse specialist and nurse practitioner

APN is an umbrella term that includes both the clinical nurse specialist (CNS) and the nurse practitioner (NP) profiles. The CNS and NP are widely recognised as the two predominant types of APNs internationally.[3, 6, 15] Historically, the main distinction between the CNS and NP lays in the setting and focus of their practice. CNSs were primarily associated with acute care facilities, assuming roles such as clinical expert, consultant, educator, and researcher. NPs, on the other hand, practiced predominantly in primary care settings, providing comprehensive patient care. However, these distinctions have become less rigid in recent times. The CNS can now be found in various ambulatory settings, while NPs have expanded their practice into acute and residential care areas. These trends indicate that the roles of CNS and NP have evolved to meet the changing needs of clients.[16]

While there can be considerable overlap between these profiles, a distinction lies in the NP's role as a 'clinical expert' within the medical domain. ICN defines an NP as *"an APN who integrates clinical skills associated with nursing and medicine in order to assess, diagnose and manage patients in primary healthcare settings and acute care populations as well as ongoing care for populations with chronic illness".*[15] On the other hand, the CNS is characterised by the introduction of innovative practices in healthcare. The ICN defines a CNS as *"an APN who provides expert clinical advice and care based on established diagnoses in specialised clinical fields of practice along with a systems approach in practicing as a member of the healthcare team"*.[15] Both profiles provide advanced clinical care, but the CNS role extends beyond that to include implementing and evaluating changes in care, promoting evidence-based practices, offering peer support, and taking on leadership roles within interprofessional teams.

Although there may be international variations in the definitions of CNS and NP, Belgium uses in its legislation a single term for this advanced practice: *'verpleegkundig specialist – infirmière et infirmier en pratique avancée'*.

1.2.2 Task substitution versus task supplementation

In addition to providing a definition of advanced practice nursing, it is important to distinguish a difference in the type of activities that may be attributed to APN and the manner in which nurse-physician collaboration is structured.[3, 6]

- **Substitution of tasks:** a concept also referred to as 'task shifting', involves the transfer of certain activities previously conducted by physicians to APNs.[3] The primary objective of this collaborative model is to alleviate physicians' workload and potentially reduce costs.[6] In some literature, there is reference to the term 'physician assistant' (although it does not always involve healthcare professionals with a nursing background) when describing this care model.
- **Supplementation of tasks:** alternatively referred to as 'complementarity'. It refers to the situation where in an APN supplements or extends the care provided by a physician by offering a new service. Generally, this collaboration aims to enhance services through improved continuity of care or quality of care, rather than reduce cost or address workforce shortages.[3, 6, 17]

However, the distinction between task substitution and task supplementation is not always clear-cut in practice.[3, 6] Nonetheless, a consistent element is the advanced nursing education and expanded practice profile, beyond the conventional scope-of-practice of registered nurses.[3] When duties are transferred from physicians to nurses, there is also often a diversification or intensification of certain activities, such as increased time spent by APNs on providing health education and self-care advice.[6]

1.3 Scope

1.3.1 Nursing consultations

A nursing consultation may involve a variety of tasks, including but not limited to: diagnosis/advanced health assessment, ordering further tests or examinations, deciding on certain treatments, prescribing specific drug and non-drug related therapies, making referrals to other healthcare professionals/settings, being responsible for a panel of patients, acting as first point of contact and authority to admit/discharge patients.[3, 15] In this report, we have adhered to the nursing consultation criteria specified in Box 1.

Box 1 – Criteria of nursing consultations

Nursing consultations should meet the following criteria:

- **Purpose:** to provide patients and their environment with information, treatment, advice, support, and/ or follow-up from a holistic perspective. These consultations should be evidence-based and conducted – at least to some extent – autonomously.
- **Profile:** nursing consultations are carried out by a specialised nurse with advanced clinical expertise and competencies, such as advanced practice nurses or similar functions.
- **Initiation:** these consultations can be organised based on clear referrals from other healthcare providers, at the request of patients and their environment, or initiated by the nurse conducting the consultation. Nursing consultations can be planned, ad hoc, or unplanned.
- **Format:** nursing consultations can take different forms, including face-to-face consultations, telephone consultations, video calls, e-consultations or bedside consultations, etc.

The following scenarios are not considered nursing consultation in this report:

- Nurses performing specific technical examination (e.g. ultrasound) on behalf of physicians;
- Nurses who are part of a multidisciplinary team but do not take on a leadership role or do not conduct the consultation entirely or partially autonomously;
- One-time nursing consultations that can be charged by home nurses (nomenclature code: 429015);
- Nurses primarily involved in administrative and clinical support tasks (e.g. blood sampling) within in a general practitioner (GP) practice.

1.3.2 Complex health conditions

This report focuses on nursing consultations for patients dealing with complex health conditions. Various criteria can be employed to define such conditions, including the severity of illness, the number of co-occurring medical conditions or multimorbidity, the extent of impairment or disability, the level of comprehensive care needed, or consider a broader range of factors (such as age, frailty, socioeconomic status, cultural background, and environmental characteristics).[18 19] According to the Institute of Medicine (IoM), it is crucial to acknowledge that complex health conditions "*may* be serious and complex for *some* patients at *some* points during the course of their disease or disability.[18] These conditions will not necessarily be serious and complex for *all* patients at *all* times".

However, it is important to note that the IoM definition is disease-centred, while the concept of complex health conditions should primarily encompass the intricacies involved in managing the condition and the contextual factors that influence service delivery, rather than being solely tied to biological complexity.[20, 21] While there may be some association between biological factors and the complexity of treatment or service delivery, it is conceivable to have biologically complex conditions that are easily treatable due to the effectiveness of a simple intervention, such as a once-daily prescription drug. Conversely, certain biologically straightforward conditions, such as spinal cord injuries, can pose significant management complexities.[18] **In this report, the operationalisation of complex health conditions in the context of nursing consultations will focus on advanced illness and disability management, including the complexity due to non-medical aspects (including demographic, social, psychological or health behavioural aspects), and less on the underlying biology.**

1.4 Research questions and methods

The purpose of this report is to provide insights about and recommendations for the further implementation of nursing consultations to various stakeholders in Belgium, including public authorities, hospitals, primary care actors, nursing homes, mental health care providers, rehabilitation centres, and individual healthcare professionals. These insights and recommendations will assist in setting priorities and making informed strategic decisions regarding the implementation of nursing consultations for patients with complex health problems within the Belgian healthcare system.

To address the research questions, a variety of research methods were employed. The overall process and methods utilised are summarised in Table 2. Each specific research method is comprehensively described in its respective chapter, offering detailed information and insights into its application and outcomes.

Table 2 – Overview of the research questions and methods

	Research question	Methods	Chapter
1	What is the effectiveness of nursing consultations on patient and organisational outcomes in patients with complex conditions?	Umbrella review	Chapter 2
2	How are nursing consultations organised in international best-practices and what are the main drivers for successful implementation?	International comparison with document review and interviews with experts from the best-practice regions	Chapter 3
3	What is the legal base for nursing consultations in Belgium?	Document review of legislation and Belgian (grey) literature	Chapter 4
4	What is the current status of nursing consultations in Belgium? In what context, by whom and how (e.g. content, setting, division of tasks, responsibility, possible liability, financing modalities) are nursing consultations currently carried out for patients with complex conditions in Belgium?	Cross-sectional online survey	Chapter 5
5	What are the prioritised needs regarding nursing consultations for patients with complex conditions? What are the barriers and facilitators for implementing nursing consultations in Belgium?	Stakeholder interviews	Chapter 6

2 UMBRELLA REVIEW OF THE EFFECTIVENESS OF NURSING CONSULTATIONS ON PATIENT AND ORGANISATIONAL OUTCOMES

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2.1 Key points

- This umbrella review identified an extensive body of evidence reporting on the effectiveness for nursing consultations on patient and organisational outcomes; data was extracted and summarised from 50 systematic reviews that included 483 unique RCTs.
- Nursing consultations have the ability to achieve patient and organisational outcomes that are at least similar to those of physician-led consultations or usual care.
- The summary of effectiveness data suggests that nursing consultations are more effective than physician-led consultations or usual care in terms of quality of life, health behaviour, mortality, patient satisfaction, and medication adherence.
- Due to methodological heterogeneity and a limited number of effectiveness data, it remains difficult to state that nursing consultations indeed lead to lower costs.
- Sub-analyses of effectiveness data from meta-analyses showed that the majority and strongest evidence for nursing consultations was retrieved in patients with cardiac conditions. This included 13 reviews reporting on 73 meta-analyses of which 40 (55%) were statistically significant in favour of nursing consultations.

2.2 Introduction

Many healthcare systems of developed countries are challenged by ageing of the population and an increasing prevalence of complex and chronic conditions.[22, 23] As a result, patients not only need more care, but also need care that is more complex and with varying intensity over time. To obtain the most beneficial outcomes in these populations, clinicians should go beyond the traditional medical paradigm and also focus on non-medical aspects, such as psychological and social needs.[24, 25] At the same time, developed countries struggle with prolonged waiting times for diagnostics and medical treatment due to a reduced availability of physicians.[26] Hence, integrating a more holistic care approach in the routine clinical care of physicians might be challenging. In debates on how to build future-proof healthcare systems, policy makers and researchers often pose that nurses are well-positioned to help answer the emerging needs of patients with complex chronic conditions.[27] They can do so by taking on more advanced roles and setting-up nursing consultations.[28] Although these nursing consultations are very diverse across settings and countries, their activities can be situated on a continuum from complementary to substitutional when compared to traditional physician-led consultations.[3, 29] Complementary activities include extending traditional medical care, such as detecting unmet psychosocial needs, counselling and providing follow-up to increase adherence to the therapeutic regimen. Substitutional activities include (partially) taking over rather traditional actions of physicians. This can comprise, for example, risk assessment, treatment and medication management in populations with one stable complex chronic condition. Although setting up nursing consultations did show to be highly feasible, there is no comprehensive overview of the literature on their effectiveness.[30]

Systematic reviews published in the early 2000s already suggested that some care activities that were traditionally provided by physicians might be equally well (or better) performed by nurses.[31, 32] More specifically, these reviews reported that health outcomes, resource use and costs of nursing consultations were equivalent to those of physician-led consultations, while patient satisfaction was equivalent or even higher with nursing consultations. However, the low number of studies and the majority being observational studies (which come with higher risk for bias) included in these first

systematic reviews limited the possibility to draw conclusions on the strength and generalisability of findings.[33] Systematic reviews published in the early 2010s relied on a slightly stronger evidence base and revealed similar findings: nursing consultations have the ability to achieve outcomes that are at least similar to those of physician-led consultations with in general more beneficial effects of nursing consultations regarding patient satisfaction, hospital admission and mortality.[33-37] However, the lack of studies with limited risk of bias and incomplete details on the nurses' roles (e.g. educational profile, complementary versus substituting roles) still limited the interpretation of the findings. In an effort to improve the evaluation of nursing consultations' effectiveness, a large number of systematic reviews were published over the last decade that specifically focused on randomised controlled trials (RCTs). The aim of this chapter was to describe the effectiveness of nursing consultations based on the systematic reviews that specifically included RCTs on nursing consultations.

The research questions were the following:

- What is the effectiveness of nursing consultations on **patient outcomes** (i.e. quality of life, physical status, psychosocial health, health behaviour, medication (adherence), mortality, clinical outcomes and patient satisfaction) in persons with complex conditions?
- What is the effectiveness of nursing consultations on **organisational outcomes** (i.e. health care resources use and costs) in persons with complex conditions?

2.3 Methodology

2.3.1 Design

To summarise the available evidence, we performed an 'umbrella review' (i.e. a review of systematic literature reviews), following a review protocol that was based on the methodological guidance of the Joanna Briggs Institute.[38]

2.3.2 Search strategy

We developed a comprehensive search strategy to identify relevant systematic reviews in Medline (via PubMed), Embase, Cochrane Database of Systematic Reviews and CINAHL. We first developed the search string based on some exploratory searches using possible search terms in PubMed and by checking key words of relevant papers that were identified through these searches. The search string comprised a combination of MeSH terms (or similar index terms for other databases) and free text words related to the intervention (i.e. nursing consultations) and the design of the studies to be included (i.e. systematic literature reviews). Experts of the Biomedical Library of KU Leuven and a bibliographic expert from KCE were consulted to further optimise the search string. We also checked if our search string captured key references and made further adjustments before finalising the search string. After finalising the search string for PubMed, we adapted it for use in the other databases (Appendix 1.1). The final search was performed on February 15, 2023.

Given the dynamic character of healthcare systems with evolving roles of nurses in the last decades, the search was limited to systematic reviews published in the last 10 years (1 Jan 2013 – 15 Feb 2023).

2.3.3 Eligibility criteria

To be included in the umbrella review, in- and exclusion criteria were determined related to the publication language, the setting, the design of the review, the primary studies included in the review, the population and the intervention (Table 3).

Language. We only included systematic reviews published in English, Dutch, French, Spanish and German.

Setting. Systematic reviews covering interventions in various care settings (e.g., home care, primary or community care centres, nursing homes, rehabilitation centers, hospitals, mental health institutions and transitional care initiatives, such as outreach teams) were included. Settings with less care-related properties, such as prisons, schools or corporates, were excluded, as were reviews specifically focusing on low- or middle-income countries. As a result, the findings of the present umbrella review will be less heterogeneously by ruling out potential contextual differences between high-, middle- and low-income countries. The categorisation of countries into low-, middle- and high-income countries was based on the classification used by The World Bank at the time of the selection process.[39, 40]

Design. We included systematic literature reviews, both with or without meta-analysis, that only included RCTs. Non-systematic scoping reviews, narrative reviews, integrative reviews, realist reviews and meta-syntheses were excluded, as were all primary studies. Systematic reviews published by one author or when the search strategy was not transparent (i.e. detailed search strings not available to replicate the search) or performed in only one database were excluded, as were systematic reviews with a primary aim not focusing on the effectiveness of nursing consultations.

Intervention. Systematic reviews were eligible if they were studying consultations or clinics run by nurses, who had specific or advanced training and/or used competences beyond traditional nursing care. Hence, these consultations or clinics could be run by either specialised nurses or by APNs, such as CNSs and NPs. If the specific training or function of nurses was not mentioned in the systematic review, we evaluated the content and activities of the consultations or clinics and the level of autonomy by the nurse described in the systematic review to determine whether or not the review could be included in the umbrella review. More specifically, we excluded interventions carried out by multidisciplinary teams, because their effects could not be related to those of nurses' efforts only. We also excluded midwife-led consultations or clinics, systematic reviews exclusively focusing on primary prevention, systematic reviews in which nurses performed only one specific intervention (e.g. intravitreal injections) and systematic reviews focusing on nurse-led triage in the emergency department and preoperative anaesthesiology assessment. No distinction was made upfront between complementary or substitutional nursing consultations.

Outcome. Reviews were included if these reported on the effectiveness of the intervention on at least one of following patient or organisational outcomes: quality of life, physical status, psychosocial health, health behaviour, medication adherence, mortality, clinical outcomes, patient satisfaction, health resources use and costs.

Population. Systematic reviews were eligible if they focused on patients with a complex condition. As a guidance for this concept, we used the criteria derived from a non-exhaustive list of complex conditions provided by the Institute of Medicine.[41] These criteria indicated that complex conditions may be serious and complex for some patients at some points during the course of their disease or disability. This implicates that these conditions will not necessarily be serious and complex for all patients at all times. Additionally, it is important to recognise that disease complexity reflects the management of the condition rather than some inherent biological complexity. Hence, during the title and abstract screening phase, we were liberal in selecting articles for full-text screening and the team did not exclude papers on specific disease populations upfront, given that disease complexity might vary over time.

Table 3 – Eligibility criteria for systematic reviews to be included in the umbrella review

Element	In- and exclusion criterium	Specification
Time	IN	Published on 1/1/2013 or later
Language	IN	English, Dutch, French, Spanish or German
Setting	IN	Any kind of care setting
	EX	• Reviews focusing on prisons, schools or corporates • Reviews focusing specifically on low- and middle income countries
Design	IN	Systematic reviews (with or without meta-analysis) that only included randomised controlled trials.
	EX	• Systematic reviews published by one author or based on one database • Narrative reviews, realist reviews, non-systematic scoping reviews, integrative reviews, meta-syntheses. • Systematic reviews of which the primary objective is not to focus on the effectiveness of the intervention • Systematic reviews comprising a not transparent search strategy (i.e. search string not available to replicate search)
Intervention	IN	Consultations or clinics run by nurses, who had specific or advanced training and/or used competences beyond traditional nursing care. These consultations or clinics could be run by either specialised nurses or by advanced practice nurses, such as CNSs and NPs.
	EX	• Multidisciplinary team or clinics with no clear indication that the model was run by a nurse • Midwife-led consultation or clinics • Systematic reviews focusing on primary prevention • Systematic reviews focusing on nurse-led triage in the emergency department or preoperative anaesthesiology assessment • Systematic reviews focusing on nurses performing only one specific intervention (e.g. intravitreal injections)
Outcome	IN	One of following patient or organisational outcomes: quality of life, physical status, psychosocial health, health behaviour, medication adherence, mortality, clinical outcomes, patient satisfaction, health resources use and costs.
	EX	Systematic reviews not containing evidence on patient or organisational outcomes
Population	IN	Persons with a complex condition

2.3.4 Study selection

All studies were merged into one Endnote library and duplicates removed using Endnote functions. Next, the in- an exclusion process was pilot-tested in Rayyan. This was performed independently by two reviewers (PH and MC) who screened the first 100 titles and abstracts to test reproducibility and interrater agreement. After discussing the unclarities in the screening procedure, both reviewers continued screening the remaining titles and abstracts of the retrieved references. Those identified as potentially relevant by at least one reviewer, underwent a full-text screening.

To decide whether a manuscript could be included in the umbrella review, a hierarchical stepwise selection process was used. This included assessing each paper with a checklist and excluding a paper based on the first criterion on the checklist that was not fulfilled. As time restriction (i.e. published in the last 10 years) was a filter added to the search string, the checklist counted five criteria focusing consecutively on language, setting, design, intervention, and outcome. The reasons for exclusion of full-texts were documented and categorised according to the predefined in- and exclusion criteria (Appendix 1.1). In case of disagreement between the two reviewers, a third reviewer (MD) was consulted to determine eligibility or reason for exclusion, respectively.

For all included reviews, we performed a reference and citation search to identify additional relevant systematic reviews. This comprised an abstract and full-text screening of potentially relevant systematic reviews following the same hierarchical stepwise selection process as mentioned above. Reference and citation searching was performed using Web of Science. In addition, we checked whether results of published review protocols identified through the database search and fulfilling the selection criteria of the umbrella review were published already. The study selection process is presented using the PRISMA flowchart (Figure 1).[42]

2.3.5 Data extraction and synthesis

Study characteristics of the included reviews were extracted by one of six reviewers (MD, AVC, MC, ND, FD, and EP) in an Excel data extraction form and checked by a second reviewer (PH).This included the year of publication, the research questions or aim of the study (as reported in the paper), the databases searched, the time window covered by the search, the risk of bias tool used, the in- and exclusion criteria related to the setting, population and intervention, as well as the number of studies included in the study, the total sample size and sample size per intervention and control group, the countries in which the individual primary studies were conducted and the outcomes synthesised in the review.

We also performed table mapping of all primary studies included in the selected systematic reviews to evaluate the number of percentage of RCTs that were included more than once. No reviews were removed based on this analysis (see Appendix 1.3).

Outcome data relevant for the research questions of this umbrella review were extracted by a researcher (AVC or PH) and double-checked by a second researcher (FD or MD). Extracted outcome data were grouped using subcategories for outcome domain (i.e. quality of life, physical status, psychosocial health, health behaviour, medication adherence, mortality, clinical outcomes, patient satisfaction, health resources use and costs). For each meta-analysis reported in one of the included systematic reviews, we extracted the number of included primary studies, their effect (i.e. number of studies statistically significant in favour of nursing consultations, number of non-statistically significant studies/ number of studies statistically significant in favour of control) and overall effect estimates (e.g. odds ratio, standardised mean difference, risk ratio). For narrative outcome syntheses, we extracted the number of included primary studies and their effect (i.e. number of primary studies statistically significant in favour of nursing consultations / number of non-statistically significant primary studies / number of primary studies statistically significant in favour of control). All available data were extracted, even if outcomes were reported at multiple time points. Outcome data were not extracted if the effectiveness data of primary studies were not available or interpretable in the systematic review.

Outcome data based on findings of only one primary study were not extracted, as this was not considered a synthesis. Process outcomes, such as consultation duration, length of stay or medication use, were not extracted as this was out of the scope of this umbrella review. Data extraction was based only on information reported in systematic reviews. Primary studies were not consulted for this purpose.

Sub-analyses were performed to explore the effectiveness of nursing consultations on advanced level (i.e. systematic reviews focusing on APN) and the effectiveness of nursing consultations for specific disease groups (i.e. cardiovascular diseases, oncology, endocrinological diseases, and respiratory disease). Sub-analyses for specific disease groups included meta-analyses reported in systematic reviews focusing on that specific population as well as subgroup meta-analyses reported in papers focusing on a chronic disease population.

2.3.6 Quality appraisal

The quality of included reviews was assessed with the revised version of 'A MeaSurement Tool to Assess systematic Reviews' (AMSTAR 2).[43] This instrument comprises 16 items, of which seven are considered critical and 9 non-critical. The seven critical items concern protocol registration, adequacy of the literature search, justification of excluding individual studies, risk of bias from individual studies, appropriateness of meta-analytic methods, consideration of risk of bias when interpreting review results, and presence and impact of publication bias. As the differentiation between critical and non-critical items is advised, though less applicable in health services research, and given that it is recommended not to calculate a total score, we decided to report the pass rate for all 16 items per review separately. More specifically, we report the absolute and relative frequency of systematic reviews that did fulfil a specific AMSTAR 2 item. For some items, a score of partly fulfilled could be attributed. These frequencies were also provided where applicable.

Three reviewers (GAG, SO, PH) independently pilot-tested the quality appraisal process in five included reviews. Inconsistent scores were discussed in the presence of a fourth researcher (MD) with the goal to increase the uniform interpretation of all quality criteria. Two reviewers (GAG, SO) independently conducted the critical appraisal of the remaining systematic reviews. Reviewers were blinded to each other's assessment. Once initial appraisal of the included systematic reviews was completed by both reviewers, inconsistent scores were identified. These were discussed within the project team (GAG, SO, PH, MD). No reviews were removed from the synthesis based on the quality appraisal.

2.4 Results

2.4.1 Results of the search

The database search resulted in 5 906 references. After removal of 2 223 duplicates, the titles and abstracts of 3 683 papers were screened. Of the 338 full-texts that were screened, 56 were found to be eligible for inclusion in the review. We included another four systematic reviews through backward and forward citation searching, resulting in a number of 60 systematic reviews. As no effectiveness data could be extracted from ten out of the 60 identified systematic reviews, these ten were excluded[44-53]; resulting in a total number of 50 systematic reviews.[13, 17, 29, 33-37, 54-95] The PRISMA flow-chart is presented in Figure 1.

The 50 included systematic reviews were based on 473 unique primary studies. These primary studies were 669 times included in the selected reviews. The inclusion frequency of individual primary studies across all reviews varied between 1 and 11. Approximate four out of five (n=365; 77.2%) primary studies were included in only one systematic review. Sixty-four (13.5%) and 22 (4.7%) primary studies were included in two and three systematic reviews, respectively. The number of primary studies included per systematic review varied from three to 42.

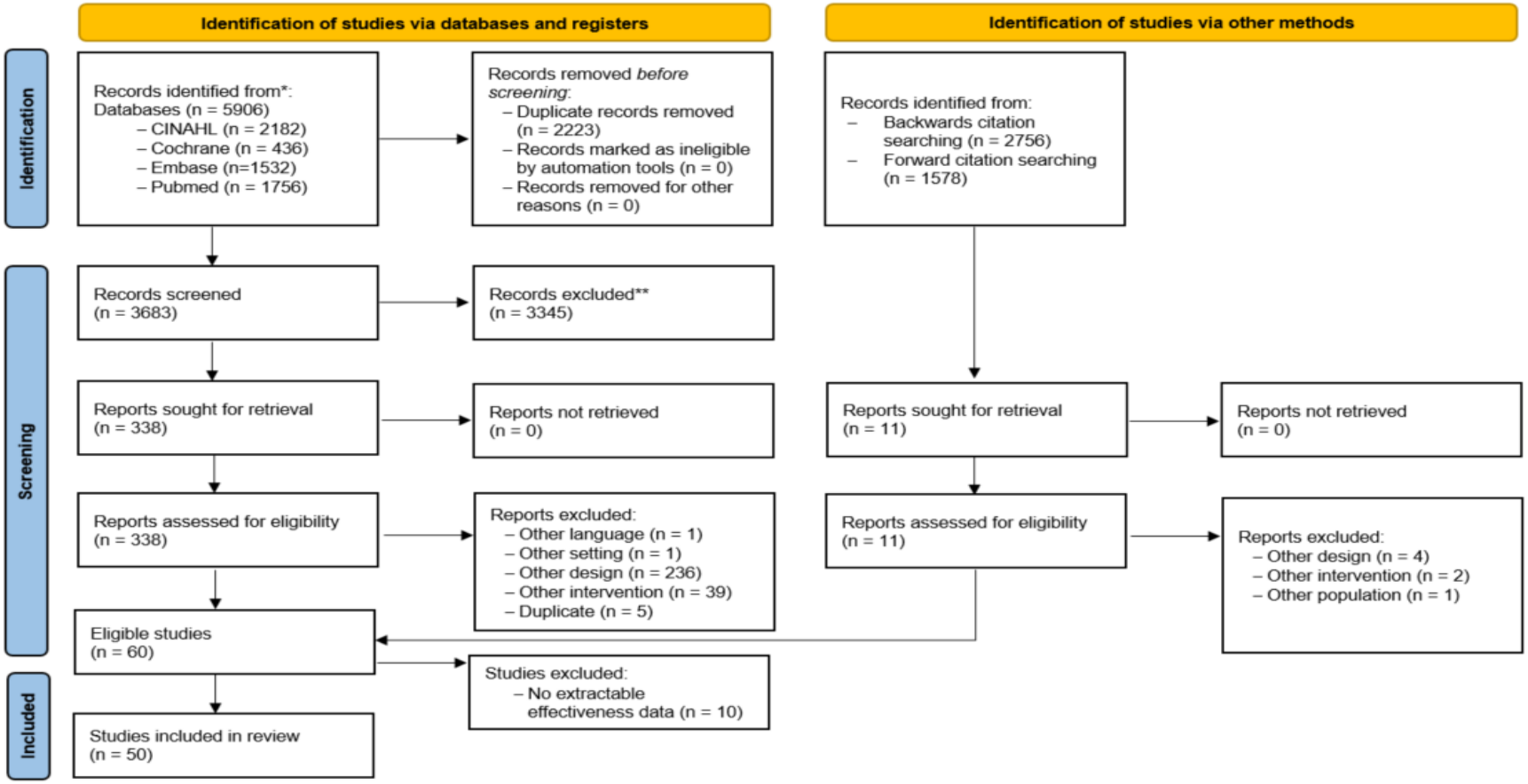
2.4.2 Characteristics of the included studies

Thirty-six systematic reviews (72%) reported at least one meta-analysis.[13, 17, 33-35, 37, 58-63, 65, 66, 68, 69, 71, 73, 75, 77-81, 83-89, 91-95] Fourteen (28%) reviews reported on a narrative synthesis only.[29, 36, 54-57, 64, 67, 70, 72, 74, 76, 82, 90]

Twenty-seven reviews (54%) evaluated interventions in outpatient care.[13, 17, 29, 33-37, 55, 56, 63, 66, 69, 70, 75-77, 79-82, 85, 89-93] Five reviews (10%) focused specifically on the hospital setting.[58, 64, 83, 84, 95] Eighteen reviews (36%) included RCTs conducted in more than one setting.[54, 57, 59-62, 65, 67, 68, 71-74, 78, 86-88, 94] Thirty-five reviews focused on populations in a specific disease group, being cardiovascular disease (n=10), oncological disease (n=7), endocrinological disease (n=7), respiratory disease (n=4), mental health disease (n=2), chronic kidney disease (n=2), rheumatoid arthritis (n=2) and HIV (n=1).[13, 54-57, 59-63, 65, 67-76, 78, 79, 81-89, 91, 93, 94] Fifteen systematic reviews (30%) included populations with any chronic disease (or rehabilitation).[17, 29, 33-37, 58, 64, 66, 77, 80, 90, 92, 95] Eight systematic reviews (16%) focused specifically on APN, including nurse practitioners and (clinical) nurse specialists.[37, 54, 58, 64, 74, 81, 86, 90] For more details on the study characteristics, see Appendix 1.4.

The pass rate for individual AMSTAR 2 items varied between 2 (4%) and 50 (100%) (Table 4). Five items had a pass rate above 80%, i.e. having research questions and inclusion criteria along the PICO components (100%), using appropriate methods for meta-analysis (97%), reporting conflict of interest (96%), providing **satisfactory explanation for observed heterogeneity (**88%) and **using satisfactory technique for assessing the risk of bias (88%)**. Three items had a pass rate below 20%. These were reporting funding resources (12%), a comprehensive literature search (8%) and a statement describing that methods were established prior to conducting of the review (4%) (Appendix 1.5).

Figure 2 – PRISMA flow diagram of the selection process



Adapted from: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372:n71. doi: 10.1136/bmj.n71. For more information, visit: http://www.prisma-statement.org/

Table 4 – Overview of quality appraisal per AMSTAR 2 item of included trials

Item	Yes	Partially yes	No
1. Did the research questions and inclusion criteria for the review include the components of PICO?	50 (100%)	NA	0
2. Did the report of the review contain an explicit statement that the review methods were established prior to the conduct of the review and did the report justify any significant deviations from the protocol?	2 (4%)	10 (20%)	38 (76%)
3. Did the review authors explain their selection of the study designs for inclusion in the review?	14 (28%)	NA	36 (72%)
4. Did the review authors use a comprehensive literature search strategy? (e.g. used different databases, justified publication restrictions or published the search string or key words)	4 (8%)	18 (36%)	28 (56%)
5. Did the review authors perform study selection in duplicate?	35 (70%)	NA	15 (30%)
6. Did the review authors perform data extraction in duplicate?	37 (74%)	NA	13 (26%)
7. Did the review authors provide a list of excluded studies and justify the exclusions?	15 (30%)	NA	35 (70%)
8. Did the review authors describe the included studies in adequate detail?	19 (38%)	30 (60%)	1 (2%)
9. Did the review authors use a satisfactory technique for assessing the risk of bias in individual studies that were included in the review?	44 (88%)	3 (6%)	3 (6%)
10. Did the review authors report on the sources of funding for the studies included in the review?	6 (12%)	NA	44 (88%)
11. If meta-analysis was performed did the review authors use appropriate methods for statistical combination of results?*	35 (97%)	NA	1 (3%)
12. If meta-analysis was performed, did the review authors assess the potential impact of risk of bias in individual studies on the results of the meta-analysis or other evidence synthesis?*	24 (67%)	NA	12 (33%)
13. Did the review authors account for risk of bias in individual studies when interpreting/ discussing the results of the review?	37 (74%)	NA	13 (26%)
14. Did the review authors provide a satisfactory explanation for, and discussion of, any heterogeneity observed in the results of the review?	44 (88%)	NA	6 (12%)
15. If they performed quantitative synthesis did the review authors carry out an adequate investigation of publication bias and discuss its likely impact on the results of the review?*	26 (72%)	NA	10 (28%)
16. Did the review authors report any potential sources of conflict of interest, including any funding they received for conducting the review?	48 (96%)	NA	2 (4%)

** 14 reviews did not perform any meta-analyses, so denominator of 36 instead of 50, NA = not applicable*

2.4.3 Impact on patient outcomes

The effect of nursing consultations on patient outcomes based on meta-analyses is shown in Table 5, while the narrative syntheses are shown in Figure 3.

Quality of life

Eighteen reviews reported on the effectiveness for nursing consultations on quality of life.[17, 33, 54, 56, 59-61, 63, 71, 72, 74, 75, 77, 80, 82, 85, 88, 95] Eight reported 15 meta-analyses.[17, 59-61, 63, 71, 75, 77] Eight meta-analyses (53%) reported a statistically significant effect in favour of nursing consultations and seven (47%) showed a statistically non-significant effect. Ten reviews reported 11 narrative syntheses.[33, 54, 56, 72, 74, 80, 82, 85, 88, 95] The majority (n=50, 78%) of the 64 RCTs included in these syntheses, reported a non-significant effect on quality of life.

Physical status

Fifteen reviews reported on the effectiveness for nursing consultations on physical status.[17, 29, 59-61, 68, 69, 71, 72, 82, 84-87, 90] This outcome was subdivided into eight subcategories, being physical functioning, pain, overall symptom burden, gastro-intestinal symptoms, sleep/insomnia, fatigue, dyspnoea and exercise capacity.

Nine out of 15 reviews conducted at least one meta-analysis.[17, 59-61, 68, 69, 71, 84, 86] In total, 33 meta-analyses were identified that described the effectiveness for nursing consultations on physical status. Nineteen (58%) meta-analyses described statistically non-significant effects in favour of nursing consultations. Meta-analyses specifically focusing on overall symptom burden, sleep, fatigue and exercise capacity reported predominantly statistically significant effects in favour of nursing consultations. No meta-analyses specifically focusing on gastro-intestinal symptoms or dyspnoea reported statistically significant effects.

Seven reviews reported on nine narrative syntheses within the overall category of 'physical status'.[29, 71, 72, 82, 85, 87, 90] Just over half (n=18, 53%) of the 34 RCTs included in all these studies, reported a beneficial impact of nursing consultations on physical status. One RCT reported a statistically significant effect on health-related quality of life in favour of the control group.

Psychosocial health

Twenty reviews reported on the effectiveness for nursing consultations on psychosocial health.[29, 54-61, 63, 66, 68-72, 77, 78, 82, 86] This outcome included seven subcategories, i.e. depressive symptoms, anxiety, self-efficacy, overall mental health, mental quality of life, cognitive functioning, and social functioning.

Eleven reviews conducted at least one meta-analysis.[58-61, 63, 66, 68, 69, 71, 77, 86] In total, 29 meta-analyses were identified that described the effectiveness for nursing consultations on psychosocial health. About half of the meta-analyses described either statistically non-significant effects (n=14, 48%) or statistically significant effects in favour of nursing consultations (n=13, 45%). Meta-analyses specifically focusing on depressive symptoms, anxiety and self-efficacy found predominantly statistically significant effects in favour of nursing consultations. No meta-analyses specifically focusing on cognitive functioning reported statistically significant effects in favour of nursing consultations. Two meta-analyses one focusing on depressive symptoms and the other on mental health, both reported by Bryant-Lukosius et al. (2015), found a statistically significant effect in favour of the control group, yet both analyses included data from only two RCTs.

Nine reviews reported a total of 15 narrative syntheses describing the effectiveness of nursing consultations on psychosocial health.[29, 54-57, 70, 72, 78, 82] About half of the 82 RCTs included in all the syntheses reported non-significant findings (n=43, 52%), while the other half (n=39, 48%) reported significant findings in favour of the intervention group.

Health behaviour

Eleven reviews reported on the effectiveness for nursing consultations on health behaviour.[54, 61, 62, 67-69, 71, 77, 78, 87, 89] This outcome included the subcategories smoking, physical activity, diet, self-care, self-monitoring, healthy life style, alcohol use and adherence to CPAP/cardiac rehab.

Eight reviews conducted at least one meta-analysis.[61, 62, 68, 69, 71, 77, 78, 87] In total, 14 meta-analyses were identified that described the effectiveness for nursing consultations on health behaviour. The majority of the meta-analyses (n=11, 79%) described a statistically significant effect in favour of nursing consultations. This was also the case for all subcategories of health behaviour, except for healthy lifestyle and adherence to CPAP, where only one meta-analyses was reported for subcategory reporting a non-significant effect.

Five reviews reported at least one narrative synthesis.[54, 61, 67, 87, 89] Also in the majority (n=28, 54%) of the 52 RCTs included the 14 narrative syntheses a significant effect was found on health behaviour in favour on the intervention group.

Medication adherence

Six reviews reported on the effectiveness for nursing consultations on medication adherence.[13, 70, 73, 76, 89, 92] Three of six reviews conducted at least one meta-analysis.[13, 73, 92] All seven meta-analyses (100%) reported statistically significant effects on medication adherence in favour of nursing consultations. Three reviews each reported one narrative synthesis on medication adherence.[70, 76, 89] The majority (n=15, 56%) of the of the 27 RCTs included reported a significant effect in favour on the intervention group.

Mortality

Ten reviews reported on the effectiveness for nursing consultations on mortality.[13, 17, 33, 58, 65, 80, 83, 87, 88, 95] Eight out of ten conducted at least one meta-analysis.[13, 17, 33, 58, 65, 83, 88, 95] In total, 13 meta-analyses were identified that described the effectiveness for nursing consultations on mortality. Eight meta-analyses (62%) described a statistically significant effect in favour of nursing consultations, while the remaining five reported a statistically non-significant effect. Two reviews reported one narrative synthesis each, one in cardiac patients and one in chronic disease patients.[80, 87] These included 6 RCTs, of which one third reported a significant effect in favour of the intervention and the remaining two thirds a non-significant effect.

Clinical outcomes

Twenty-six reviews (52%) reported on the effectiveness for nursing consultations on clinical outcomes, including 12 subcategories, i.e. lipid profile, blood sugar, systolic, diastolic and overall blood pressure, disease activity, cardiac outcomes, body mass index/weight, complications, lung function, thyroid function, kidney function.[13, 17, 29, 34, 36, 54, 56, 61-63, 68, 71, 73, 75-77, 79-81, 85, 87, 89-91, 93, 94]

Twenty out of 26 reviews conducted at least one meta-analysis with a total of 75 meta-analyses describing the effectiveness for nursing consultations on clinical outcomes.[13, 17, 34, 61-63, 68, 71, 73, 75, 77, 79-81, 85, 87, 89, 91, 93, 94] Forty (53%) and 33 (44%) meta-analyses reported statistically non-significant effects and statistically significant effects in favour of nursing consultations respectively. Two meta-analyses reported a statistically significant effect in favour of the control group. McCrory et al. (2018) assessed kidney function yet explained the observed effect in favour of the control by the large heterogeneity (I^2 = 90%) between the three included trials. De Thurah et al. (2017) evaluated disease activity after two year in patients with rheumatoid arthritis and based its finding on two RCTs. Meta-analyses specifically focusing on systolic blood pressure, diastolic blood pressure, body mass index/weight and thyroid function found predominantly statistically significant effects in favour of nursing consultations.

Twelve reviews reported on 29 narrative syntheses, including 110 RCTs. Two thirds of the trials (n=76, 69%) reported non-significant effects on any of the clinical outcomes.[29, 34, 36, 54, 56, 61, 75, 76, 80, 87, 89, 90]

Patient satisfaction

Thirteen reviews (26%) reported on the effectiveness for nursing consultations on patient satisfaction.[17, 33, 54-56, 58, 63, 72, 74, 82, 85, 90, 95]

Five conducted at least one meta-analysis.[17, 33, 58, 63, 85] Four of the six meta-analyses (67%) described a statistically significant effect in favour of nursing consultations. The two other (33%) reported non-significant effects.

Eight reviews reported on eight narrative syntheses.[54-56, 72, 74, 82, 90, 95] The majority of the 32 included RCTs (38%) reported a non-significant effect on patient satisfaction. None of narrative syntheses included a study describing effects in favour of the control group.

Table 5 – Effectiveness of nursing consultations on patient outcomes based on meta-analyses

Outcome (Number of reviews with min. 1 meta-analysis)	Subdomain	Meta-analyses			
		Number	+	NS	-
Quality of life (n=8)	**Quality of life**	**15**	**8**	**7**	**0**
Physical status (n=9)	**Physical status**	**33**	**14**	**19**	**0**
	Physical functioning	11	2	9	0
	Pain	5	2	3	0
	Overall symptom burden	4	4	0	0
	Sleep / insomnia	4	2	2	0
	Fatigue	4	3	1	0
	GI symptoms	3	0	3	0
	Dyspnoe	1	0	1	0
	Exercise capacity	1	1	0	0
Psychosocial health (n=11)	**Psychosocial health**	**29**	**13**	**14**	**2**
	Depressive symptoms	11	9	1	1
	Anxiety	3	2	1	0
	Self-Efficacy	2	1	1	0

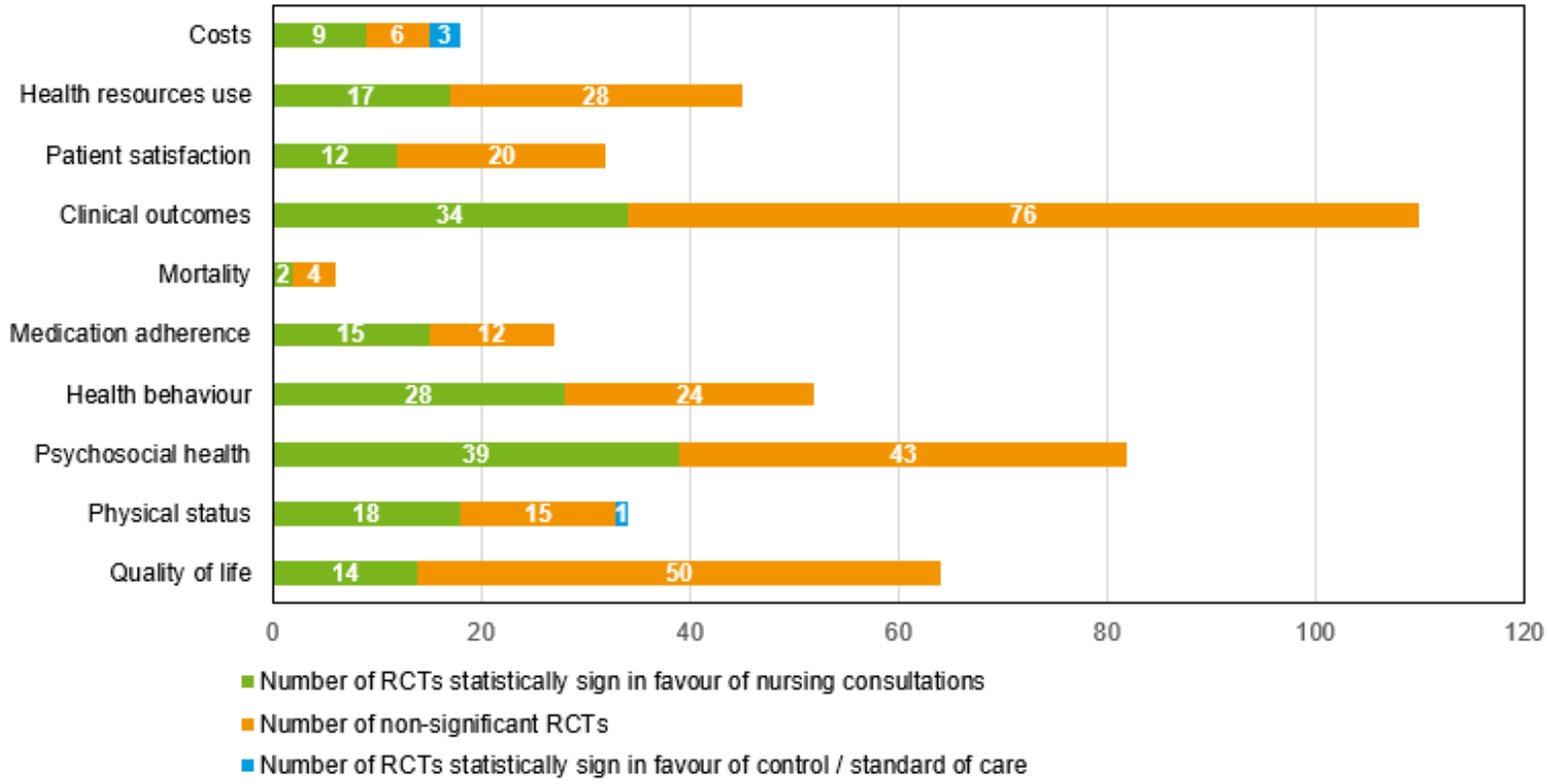
Outcome (Number of reviews with min. 1 meta-analysis)	Subdomain	Meta-analyses			
	Mental Health	4	0	3	1
	Mental QoL	4	1	3	0
	Emotional functions	1	0	1	0
	Cognitive functioning	3	0	3	0
	Social functions	1	0	1	0
Health behaviour (n=8)	**Health behaviour**	**14**	**11**	**3**	**0**
	Smoking	4	4	0	0
	Physical activity	2	2	2	0
	Self-care	4	3	1	0
	Self-monitoring	2	2	0	0
	Healthy life style	1	0	1	0
	Adherence to CPAP	1	0	1	0
Medication adherence (n=3)	**Medication adherence**	**7**	**7**	**0**	**0**
Mortality (n=8)	**Mortality**	**13**	**8**	**5**	**0**
	All-cause mortality	12	8	4	0
	Cardiovascular death	1	0	1	0
Clinical outcomes (n=19)	**Clinical outcomes**	**75**	**33**	**40**	**2**
	Lipid profile	17	4	13	0
	Blood sugar	14	6	8	0
	Systolic blood pressure	16	11	5	0
	Diastolic blood pressure	12	6	6	0
	Disease activity	4	1	2	1
	Body mass index / weight	4	3	1	0
	Complications	3	1	2	0
	Cardiac outcomes	3	1	2	0

Outcome (Number of reviews with min. 1 meta-analysis)	Subdomain	Meta-analyses			
	Lung function	2	0	2	0
	Thyroid function	1	1	0	0
	Blood pressure	1	0	1	0
	Kidney function	1	0	0	1
Patient satisfaction (n=5)	**Patient satisfaction**	**6**	**4**	**2**	**0**

+ = Statistically significant effect in favour of nurse-led consultations; NS = Non-significant effect; - = Statistically significant effect in favour of control group

	At least half of meta-analyses reported statistically significant effects in favour of nursing consultations
	Meta-analyses reported a mix of statistically non-significant effects and statistically significant effects
	None of meta-analyses reported effects statistically significant in favour of nursing consultations
	All of the meta-analyses reported effects statistically significant in favour of the control group

Figure 3 – Summary of the effectiveness of nursing consultations as reported in the primary RCTs included in the systematic review with narrative syntheses



2.4.4 *Impact on organisational outcomes*

Health care resources use

Eighteen reviews (36%) reported on the effectiveness for nursing consultations on health care resources use, including hospital (re)admissions, ambulatory consultations and emergency department visits.[17, 33, 35, 37, 54, 56-58, 64, 65, 75, 77, 83, 86-88, 90, 95] One review reported the effect on a composite outcome 'unplanned visits or admissions'.[57]

Thirteen reviews conducted at least one meta-analysis with a total of 30 meta-analyses.[17, 33, 35, 37, 58, 64, 65, 75, 77, 83, 86, 88, 95] Fourteen meta-analyses (47%) described a statistically significant effect in favour of nursing consultations. The other 16 (53%) described statistically non-significant effects. Meta-analyses specifically focusing on hospital readmissions and emergency department visits found predominantly statistically significant effects in favour of nursing consultations.

Five reviews reported ten narrative syntheses describing the effectiveness of nursing consultations on health resources use. The majority of the 45 RCTs (N=28, 62%) reported a non-significant effect.[54, 56, 57, 87, 90]

Table 6 – Effectiveness of nursing consultations on organisational outcomes

Outcome (Number of reviews with min. 1 meta-analysis)	Subdomain	Meta-analyses			
		n	+	NS	-
Health care resources use (n=6)	**Health care resources use**	**30**	**14**	**16**	**0**
	Hospital admissions	8	2	6	0
	Hospital readmissions	15	9	6	0
	Ambulatory consultations	6	2	4	0
	ED visits	1	1	0	0
Costs (n=2)	**Costs**	**2**	**2**	**0**	**0**

+ = statistically significant effect in favour of nurse-led consultations; NS = Not significant effect; - = statistically significant effect in favour of control group

	At least half of meta-analyses reported statistically significant effects in favour of nursing consultations
	Meta-analyses reported a mix of statistically non-significant effects and statistically significant effects

Costs

Seven reviews (14%) reported on the effectiveness for nursing consultations on costs.[37, 56, 58, 60, 82, 90, 95] Two of seven reviews conducted a cost-related meta-analysis and both described a statistically significant effect in favour of nursing consultations.[37, 60]

Five reviews reported at least one narrative synthesis on the effectiveness for nursing consultations on costs.[56, 58, 82, 90, 95] These narrative syntheses were difficult to interpret due to heterogeneous cost operationalisations between primary studies.

Swan et al (2015) described cost-related findings of four studies; three studies estimated costs using a provider salary approach and one developed a Utilization and Financial Index, including, for example, provider salary, diagnostic costs and admission related costs.[90] Two out of four studies reported that nursing consultations were less expensive compared to physician-led consultations. The two other studies described no cost differences.

Molassiotis et al (2020) summarised two studies, both showing no difference in the cost of physician-led and nurse-led follow-up care.[82]

Bryant-Lukosius et al (2015) tabulated numerous cost data which were difficult to aggregate due to heterogeneity.[58] The most homogeneous synthesis based on these data concerns the total cost of post-discharge care in patients with heart failure. Two studies reported this outcome. Both described that nursing consultations resulted in cost savings, however only one study reached a statistically significant effect in favour of nursing consultations. The other study reported a statistically non-significant effect. Despite the apparent similarity of outcome data in these two studies, Bryant-Lukosius et al (2015) did not pool the data for a meta-analysis, indicating important methodological differences.

Baker et al (2017) described cost-related data of four studies that used different cost perspectives (i.e. a societal cost perspective, cost-consequence analyses and an insurance cost perspective).[56] One out of four studies reported reduced costs for nursing consultations in comparison to usual care, while the other three studies showed increased costs for nursing consultations.

Zhu et al (2015) summarised cost data of three studies.[95] All reported lower total costs using different cost perspectives (i.e. an insurance cost perspective, an average cost of intervention during follow-up perspective and a cost-benefit ratio). Zhu et al (2015) also described two studies demonstrating lower readmission cost for patients subject to nursing consultations.

2.4.5 Nursing consultations on advanced level

We performed a subgroup analysis of the effectiveness data reported in the meta-analyses of the 8 reviews explicitly stating that the interventions were performed by APN-trained nurses (Appendix 1.5).[37, 54, 58, 64, 74, 81, 86, 90] Although we are aware of heterogeneity among countries regarding APN-training, in most high-income countries, APN-training is provided at Master's level.

In the 8 studies, a total of 23 meta-analyses were performed. Eight (35%) reported overall significant effects in favour of the group receiving nursing consultations, of which four on clinical outcomes, three on health resources use and one on patient satisfaction. Besides the 13 meta-analyses reporting non-significant findings, three reported an effect in favour of the control group, of which one on depressive symptoms, one on overall mental health and one on kidney function.

2.4.6 Nursing consultations per disease group

We also performed a subgroup analysis for following disease groups: cardiology, oncology, endocrinology and respiratory disease (Appendix 1.5).

The 13 reviews focusing on **cardiology patients** reported a total of 73 meta-analyses of which 40 (55%) reported statistically significant effects in favour of the patients subject to nursing consultations.[13, 58, 61, 65, 66, 68, 77, 80, 83, 86-89] For quality of life, physical status, health behaviour, medication adherence, mortality, patient satisfaction and health care resources use, at least half of meta-analyses reported statistically significant effects favouring the intervention group. A more mixed view was observed for clinical outcomes and psychosocial health within both categories 38% of the meta-analyses reporting statistically significant findings in favour of the intervention groups.

The 5 reviews focusing on **oncology patients** reported a total of 23 meta-analyses of which only 5 (22%) reported statistically significant effects in favour of the patients subject to nursing consultations.[58, 60, 66, 77, 78] For health behaviour and costs, at least half of meta-analyses reported statistically significant effects favouring nursing consultations. No statistically significant effects were reported for nursing consultations on quality of life (2 meta-analyses) and health resources use (1 meta-analysis). Also in the outcome categories physical status and psychosocial health, only 1 meta-analysis reported statistically significant findings favouring nursing consultations. One meta-analysis which focused on mental health, reported statistically significant effects in favour of the control group.

The 10 reviews focusing on **endocrinology patients** reported a total of 29 meta-analyses of which 16 (55%) reported statistically significant effects in favour of the patients subject to nursing consultations.[62, 66, 73, 77, 79, 80, 85, 91, 93, 94] Twenty-four meta-analyses (83%) focused on clinical outcomes. For psychosocial health, health behaviour, medication adherence and clinical outcomes, at least half of meta-analyses reported statistically significant effects favouring the intervention group. The only meta-analysis evaluating patient satisfaction, reported non-significant findings.

The 4 reviews focusing on **patients with respiratory disease** reported a total of 26 meta-analyses of which 11 (42%) reported findings in favour of the patients subject to nursing consultations.[69, 71, 75, 77] For quality of life and psychosocial health, at least half of the meta-analyses reported statistically significant effects favouring nursing consultations.

2.5 Discussion

In debates on how to organise future-proof healthcare systems, nursing consultations are often suggested as a potential solution to respond to the emerging needs of patients with complex chronic conditions.[3, 28] In this chapter, we described the extensive body of evidence regarding the effectiveness of nursing consultations based on 473 unique RCTs that were summarised in 50 systematic reviews and focused on a large variety of patient populations and settings.

Based on a thorough evaluation of available meta-analyses this umbrella review clearly shows that nursing consultations were able to achieve effects for all patient outcomes that are at least equivalent to physician-led consultations or usual care (i.e. findings suggesting non-inferiority). Moreover, for quality of life, health behaviour, mortality, patient satisfaction and costs, more than half of the reported meta-analyses also found statistically significant effects in favour of nursing consultations (i.e. a findings suggesting superiority), and for medication adherence, this was the case for all meta-analyses. For costs, however, the results need to be interpreted with caution: very few and heterogeneous cost-related data were extracted (i.e. two meta-analyses and six narrative syntheses extracted from seven reviews). In addition, the methodological quality of available cost-analyses is often questionable.[96] It was often unclear whether costs were calculated from the patient, organisational, insurance or societal perspective. Moreover, health care financing is very context-specific and a thorough understanding of the healthcare system and financing and insurance schemes is necessary to be able to aggregate data and come to valid overall conclusions. This should not hinder the implementation of effective interventions (e.g. nursing consultations) or models of care in general, yet requires that the context-specific financing structures are always taken into account and adapted if needed following pilot evaluations.

The interpretation of effectiveness based on meta-analyses provides a clear view on the current body of evidence due to the summary metric of each meta-analysis. Our umbrella review also summarised the evidence based on narrative syntheses reported in the included reviews, yet these findings lack this summary metric, and are hence more difficult to interpret. Consequently, authors of reviews were probably more likely to conclude that aggregated effectiveness data were inconsistent.

Still, effectiveness data from narrative syntheses are in line with the conclusion based on meta-analyses. More specifically, the effectiveness data in the narrative synthesis were occasionally statistically significant in favour of nursing consultations and most frequently statistically non-significant. So, also in narrative syntheses, we see signals of non-inferiority and possibly superiority for nursing consultations, when compared to physician-led consultations or usual care. The larger number of statistically non-significant studies in narrative synthesis could possibly be explained by underpowering.

The interpretation of effectiveness was limited by the heterogeneity of RCTs included in each systematic review, in terms of studied populations, conceptualisation of nursing consultations and the included interventions' components, type of control groups, and measurement of outcomes. Consequently, it is difficult to make data-driven statements on which intervention components were essential and which specific populations should be primarily targeted in countries or regions initiating or scaling up nursing consultations. While the majority of the evidence focussed on patients with cardiovascular disease (10 reviews), oncological disease (7 reviews), diabetes (6 reviews) and respiratory disease (4 reviews), sub-analyses of effectiveness data showed that most and the strongest evidence for nursing consultations was retrieved in patients with cardiac conditions, including 13 reviews reporting on 73 meta-analyses of which 40 (55%) were statistically significant in favour of nursing consultations. This does not imply that nursing consultations would not be effective in other patient groups as the ones listed above; they may have been understudied in general or in RCTs specifically. It is also noteworthy that, on a total of 224 meta-analyses, only four (1.8%) reported statistically significant effects in favour of the control group. Two of these evaluated clinical outcomes, while the other two focused on psychosocial health outcomes. The two meta-analyses evaluating clinical outcomes focused on patients with rheumatoid arthritis and patients with chronic kidney disease.[63, 81] Two other meta-analyses based their findings on data from two similar RCTs.[58] Although these findings suggested that these populations might be less eligible for nursing consultations, these two manuscripts reported that statistically significant differences did not reach clinically relevant levels.[63, 81] Hence, there seem to be no adverse effects of offering nursing consultations.

Due to the diversity within the interventions and unclear reporting of intervention characteristics at the level of the systematic reviews, this umbrella review could not provide clear guidance on whether nursing consultations should be in a (more) complementary role or in a (more) substitutional role when compared to traditional physician-led consultations. In order to be able to do this type of analysis, we should go back to analysing the interventions as reported in the original RCTs and not categorise interventions solely based on the in- and exclusion criteria of the systematic reviews which formulated the intervention components in a generic way. However, because complementary and substitutional care should not be considered a binary variable, but should be regarded as a continuum within care models with intervention components often lent from both sides of the spectrum, one could argue if the discussion between complementary and substitutional care should be at the centre of any debate regarding future-proof healthcare models. This is endorsed by Martinez and colleagues, who indicated in their systematic review on physician-nurse task-shifting, that physicians often supported these nurses.[35] This means there is no such thing as full substitution of physicians. In our opinion, the discussion whether nurses should be working more complementary or substitutional is partly a semantic one. We believe that the activities within nursing consultations should rather be viewed in relation to the needs of those who seek care in a specific health system. This implies that all dimensions of quality of care (i.e. person-centredness, effectiveness, efficiency, safety. accessibility, equity…) should be considered to determine to what extent nursing consultations can improve these.[97] From that perspective, it is more relevant to think about how a health system can be as efficient as possible in the management of complex chronic conditions and who can do what to achieve this goal in a high-quality manner (i.e. applying the subsidiarity principle). To ensure quality standards of consultations, minimum training and experience requirements are undoubtedly important. Sub-analyses of reviews focusing on nursing consultations performed by APNs exclusively, showed no clear trends, indicating that there are currently no data-driven arguments suggesting that nursing consultations should only be performed by APNs. Yet, evidence on nursing roles and their impact on effectiveness is more limited. Hence, it is too early to draw conclusions on nursing profiles being best positioned to deliver nursing consultations without having a closer look at the individual RCTs included in the reviews.

Methodological considerations

In this umbrella review, we only summarised the findings of systematic reviews that exclusively included (cluster)RCTs because these trials deliver the highest level of evidence. However, other study designs might also be of interest for evaluating nursing consultations, as classic outcome-focused RCTs are not able to grasp all effects and implications of innovative care models introduced within a healthcare system. For example, in case of single-centre studies, pre-post designs are often preferred, as these prevent effects that contaminate control groups. As these studies can deliver important findings, their results are of interest for the evidence base of nursing consultations. However, these studies were not within scope of this umbrella review, indicating the need to explore these in further research. It should also be added that the large number of retrieved reviews and RCTs on nursing consultations does not imply that new initiatives in this field do not require research-based elaboration. Empirical data will remain necessary to support and optimise the (further) implementation and evaluation of nursing consultations in specific fields and regions (e.g. the Belgian healthcare context). As health services research has been evolving towards a combination of effectiveness and implementation research over the last years, mixed-method hybrid type 2 effectiveness-implementation studies are definitely to be considered as a highly promising design to support the further implementation and evaluation of nursing consultations.[98]

Although the methodological appraisal of included systematic reviews globally indicated that the confidence in their results is moderate, researchers should pay more attention to adhere to quality appraisal criteria. Although these criteria are gradually becoming more demanding over time and the use of a recently updated quality appraisal instrument may have led to stringent ratings in reviews that were published less recently, quality appraisal showed that a basic requirement of a high quality systematic review, such as establishing and reporting review methodology before its conduct, was still rarely reported. Another important concern that emerged from the quality appraisal of included reviews relates to the comprehensiveness of the search strategies. Although, in our opinion, none of the included systematic reviews had a weak search strategy, we believe this finding was more driven by the increasing demandingness of quality appraisal criteria. For example, many articles could not meet the criteria of search comprehensiveness because restrictions in selection criteria were insufficiently justified or because it was unclear whether experts in the field were consulted. Increased attention to these newer criteria when performing and especially reporting systematic reviews will ensure that confidence in the evidence will improve.

Apart from the quality assessment of included systematic reviews, the quality of the primary studies is also important for the results of this umbrella review. However, interpreting the quality of the 473 unique RCTs was not part of this umbrella review. Therefore, we could not describe the methodological quality of RCTs included in the systematic reviews, which has implications for the findings of this umbrella review. For example, based on data from systematic reviews, we could not report whether a study had sufficient power and for which outcome power was calculated. Although some of the systematic reviews tried to differentiate between primary and secondary analyses, it was impossible to make this differentiation at the level of the umbrella review. This implies that we cannot be sure on whether or not studies included in the reviews were sufficiently powered for the outcomes they evaluated. Thus, perhaps inconsistent and statistically non-significant effects reported in the review can be partly explained by insufficiently powered studies. Another aspect limiting the results of this umbrella review is the overlap of included RCTs between systematic reviews. Although this does not seem a major limitation - 79% of primary studies were included in only one systematic review -, we cannot quantify or estimate its impact on the findings of this umbrella review.

The findings of this umbrella review suggest that performing new systematic literature reviews based on primary studies is highly recommended. This would allow for the calculation of pooled effect sizes, which is possible within the total group of RCTs or in relevant subgroups (e.g. specific settings, populations, training levels of nurses, intervention components, primary outcomes in RCTs, RCTs designed as non-inferiority or superiority trials). We assume that these analyses might not yet be able to describe with certainty which intervention should be delivered to which patient at which moment(s), but future intervention studies can incorporate these notions into new research methodology. Besides the need for effectiveness-implementation research, there is still work to be done on the

conceptualisation of nursing consultations as well. Mapping conceptual similarities and differences in definitions and operationalisations of nursing consultations could be a first step on which experts can start discussing towards a consensus-based taxonomy for nursing consultations.

2.6 Conclusion

The findings of this umbrella review show that nursing consultations have the ability to achieve outcomes that are at least similar to those of physician-led consultations or usual care. Moreover, the summary of effectiveness data suggests that nursing consultations might be more effective than physician-led consultations or usual care in terms of patient and organisational outcomes, such as quality of life, health behaviour, mortality, patient satisfaction, medication adherence and costs. Nonetheless, moderate study quality, diversity between and within systematic reviews and quality of reporting hamper the strength of the findings.

3 INTERNATIONAL COMPARISON OF THE ORGANISATION AND IMPLEMENTATION OF NURSING CONSULATIONS

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3.1 Key points

- The Netherlands, Ontario, Finland, Ireland, and France were selected as regions to gather insights in the way nursing consultations are organised and explore which contextual factors have been fuelling or hindering the implementation of nursing consultations.
- In all five regions, nursing consultations have been implemented in all different care settings (except for nursing homes in Finland).
- Nursing consultations are delivered by different types of nursing profiles, i.e. bachelor-trained registered or specialised nurses and master-trained advanced practice nurses (APNs).
- Four of the five regions show how bachelor-trained nurses and master-trained APNs can be of added value in primary care, with roles ranging from health educator, first point of contact, to being responsible for the entire organisation of a primary care-service.
- In regions with a longer history of APN, APNs are trained as autonomous clinical leaders to play a key role in the organisation of nursing consultations.
- The level of autonomy within nursing consultations is much higher for APNs compared to bachelor-trained nurses in all five regions.

- Having a certain level of autonomy seems essential to organise nursing consultations. Some regions realised this by the reinforcement or introduction of APN roles, other by introducing new nursing roles with extended legal rights like the nurse prescriber.
- Collaboration protocols on national or local level to organise nursing consultations, allow to extend the autonomy of nurses and can be a huge facilitator for the uptake of nursing consultation. The physician-dependency inherent to these protocols, can become a barrier in the long term.
- All regions allow nurses, nurse prescribers, specialised nurses or APNs to prescribe medication, ranging from full prescriptive authority to a list of predefined medication.
- Having clinical experience helps to train nurses to become autonomous health care professionals. In some regions, having working experience or a predefined place for their internship is a requirement to entry the master education to become an APN. Reflection on the (dis)advantages of entry requirements for the master education of nurses is needed.
- Two regions train APNs as independent health care providers with a broad range of legal rights to perform clinical tasks, who are expected to use their own clinical judgment to determine whether they are competent to perform those clinical tasks.
- A registration system for nurses and APNs, combined with requirements like a portfolio, ensures transparency and could support continuous learning and maintaining competences.
- All regions encountered the need to improve collaboration with the medical profession for the sustainable implementation of nursing consultations, using different strategies to lower resistance and obtain agreements.
- Documenting quality, safety and cost effectiveness of new responsibilities is needed, but awareness for the challenges to quantify the outcomes of an holistic approach and the time spent to register all activities is necessary.
- There is a lack of a clear description of the core components clarifying the organisation of nursing consultations in all included regions. This confirms the need for a conceptual clarification to facilitate a more widespread implementation.

3.2 Introduction

Nursing consultations, often performed by APNs or specialised nurses, have been introduced in several countries in response to the shortage of physicians and/or the changing care needs of the increasing number of patients with chronic diseases. Since the early nineties, nursing consultations for hospitalised and ambulatory patients have also been introduced in Belgium. As there is no definition and/or clear description of nursing consultations, there is a wide variety of how they are organised and how they are named in each organisation. In practice, these consultations are mostly performed by APNs (*verpleegkundig specialisten – infirmières et infirmiers en pratique avancée*) with a master level education, by nurse consultants (*verpleegkundig consulenten – infirmières et infirmiers consultant*) which are mostly nurses with several years of expertise within their field, or by specialised nurses with an educational postgraduate diploma (Chapter 5). Although autonomous nursing consultations can occur to some extent within the legal responsibilities of APNs and nurses, there is no specific legal framework for nursing consultations, nor were adjustments made to the legal responsibilities of nurses to facilitate the implementation of nursing consultations. Consequently, there is currently no clarity on what nursing consultations actually entail or should entail, nor are there formal federal requirements in terms of competency profile or educational degree that mandate who could perform these nursing consultations, or which medical or technical acts (apart from the A-B-C activities, Chapter 2) could be performed by which level of nurses. Several other countries have a longer history of nursing consultations within their healthcare system or have advanced faster in introducing the necessary educational and legal frameworks for nursing consultations and/or nursing roles performing these consultations.

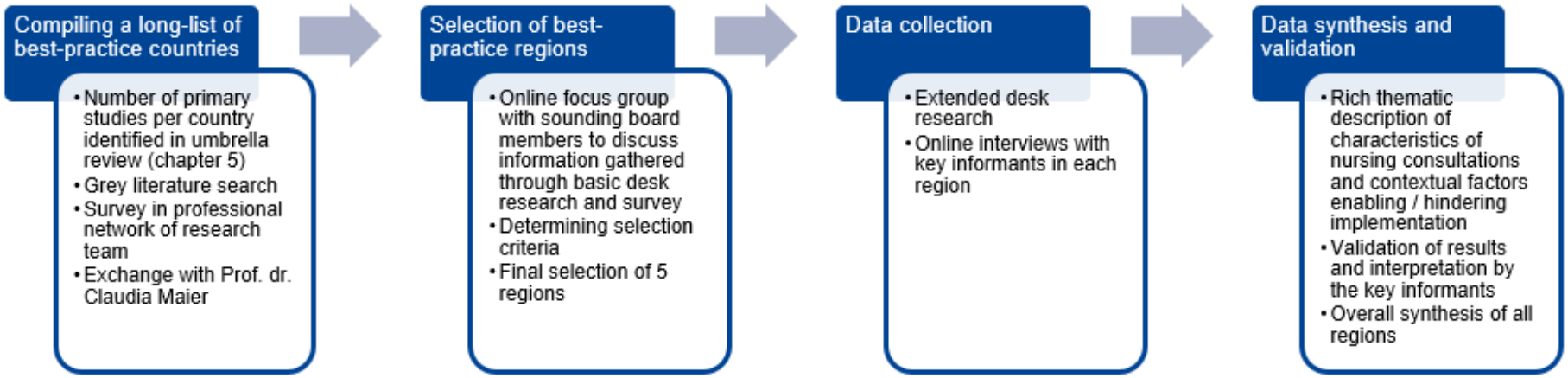
The aims of this study were to describe 1) how nursing consultations are organised in a selection of best-practice regions, 2) what the profile of nurses performing these consultations in these regions is, and 3) what the main drivers were for successful implementation of nursing consultations in best-practice regions.

3.3 Methodology

3.3.1 Design

We used a multi-step approach in order to identify and describe best-practice regions in terms of the organisation and implementation of nursing consultations for hospitalised, ambulatory, nursing home and primary care patients with complex conditions. This approach involved database and grey literature searching, expert surveying, conducting a focus group with national experts and structured interviews with international key-informants per best-practice region. The consecutive steps taken in this process are explained in detail below and visualised in Figure 4.

Figure 4 – Methodological process for selection of and data collection in best-practice regions



3.3.2 Identification and selection of best-practice regions

3.3.2.1 Compiling a long-list of potential countries of interest

We used four strategies that were conducted in parallel to compile a long-list of countries that would be interesting to explore more in-depth. We considered the establishment of all forms of nursing consultations when selecting countries as best-practice, regardless of setting. The selection was not limited to nursing consultations in the context of task shifting (i.e. delegating medical activities from physicians to nurses).

First, we analysed all 51 systematic reviews included in the umbrella review (Chapter 2) and listed the number of randomised controlled trials conducted per country. We assumed that the number of conducted studies in a particular country served as a proxy parameter for the real-world implementation of this care model. We extracted country data that was directly reported in the systematic reviews. If not reported, we checked the original studies included in the reviews. An overview of the number of studies per country can be found inTable 7.

Table 7 – Overview of the number of primary studies conducted in high-income countries (n=486)

Continent	Country	Number of RCTs	Continent	Country	Number of RCTs
North-America	USA	138	**Europe**	United Kingdom	64
	Canada	21		Netherlands	41
Asia	Korea	11		Sweden	19
	Hong Kong	6		Spain	12
	Taiwan	5		Denmark	7
	Israel	2		Norway	6
	Japan	1		Germany	6
Oceania	Australia	20		Italy	3
	New Zealand	1		Finland	2
				Austria/Belgium/ Estonia/Ireland/ France/Iceland/ Switzerland	1 each

Legend: Five trials did not report where they were conducted

Second, we conducted a grey literature search to identify countries where the implementation of nursing consultations was documented in policy reports, reports from professional nursing organisations or in legislative or educational frameworks. The grey literature search specifically focused on documents published by the European Commission, World Health Organization (WHO), European Observatory on Health Systems and Policies, Institute of Medicine, International Council of Nurses and OECD Health. The availability of grey documents was also considered a proxy indicator for real-world implementation of nursing consultations in that country.

Third, for the countries where the grey literature search did not give sufficient information to substantiate the in- or exclusion, we distributed a short survey by e-mail to international contacts of the professional network of the research team in the field of nursing. This survey aimed to gather initial insights on the extent of the implementation of nursing consultations in their respective country or region. Surveys were sent to contacts in Spain, Norway, Sweden, Switzerland, Scotland, France and New-Zealand. The survey included questions concerning 1) the actual implementation of nursing consultations in the country/region of the respondent, 2) the availability of documents (i.e. reports, legislation, papers) describing the structure and processes of nursing consultations within that country/region, and 3) the identification of potential key informants within the country/region who could provide more detailed insights into nursing consultations. It was emphasised that consultations in any setting (i.e. hospital, ambulatory, nursing home and primary care) were of interest.

Fourth, an online meeting with prof. dr. Claudia Maier was conducted as she has performed extensive work on the international implementation of advanced nursing roles. She was the lead author of an OECD report that examined task shifting between medical and nursing professions in 39 countries. She also authored the 2018 Eurohealth report 'Integrating nurses in advanced roles in health system to address the growing burden of chronic conditions'[3, 99], documenting a six-country analysis to map the worldwide growth of nurse practitioners. In this report, the highest absolute number of nurse practitioners and rate per population (40.5 per 100 000 population) was found in the United States, followed by the Netherlands (12.6), Canada (9.8), Australia (4.4), Ireland (3.1) and New Zealand (3.1, respectively). During the meeting, we discussed advances in those countries that were identified as having emerging or well-established nursing consultations (not limited to task-shifting).

We compiled all information collected through the above-mentioned strategies in Table 8.

Table 8 – Characteristics of nursing consultations in countries on the long-list

Characteristics of nursing consultations	Australia	Netherlands	Canada	Finland	Ireland	New Zealand	Scotland	USA	France	Switzerland	Spain	Norway	Sweden
Healthcare system	Decent	Cent	Decent	Decent	Cent	Cent	Cent	Decent	Cent	Decent	Decent	Semi-decent	Decent
Experience	Estab	Estab	Estab	Emerg	Estab	Estab	Estab	Estab	Emerg	Emerg	Emerg	Emerg	Emerg
Presence	++	++	++	+	+	++	+	++	+/-	+/-	+/-	+/-	?
Community care	++	++	++	++	+	++	+	++	+	+/-	+/-	+/-	?
Ambulatory care	++	++	++	+/-	++	++	+	++	+/-	+/-	+/-	-	?
Hospital care	++	++	++	+/-	++	++	+	+	+/-	+/-	+/-	-	?
General legislative framework	+	++	++	+	++	+	+	++	+/-	-	+/-	+	?
Legislation for nurses' authority to perform	++	++	++	+	+	++	++	++	+/-	-	+/-	-	?
Order tests	++	++	++	?	++	++	++	++	+	-	?	?	?
Diagnosis	++	++	++	+/-	++	++	++	++	+/-	-	?	-	?
Treatment	++	++	++	+/-	++	++	++	++	+/-	-	?	-	?
Prescriptions	++	++	++	+	++	++	++	++	+/-	+/-	-	+/-	?
Referral	++	++	++	++	++	++	++	++	?	-	?	-	?
Financing structures/ reimbursement schemes	++	+/-	++	+	-	++	?	+/-	+/-	+/-	-	-	?
Formal competencies profile	++	++	++	+/-	++	++	++	++	+	+/-	+/-	-	+/-
Recognised title	++	++	++	+/-	++	++	++	++	+	-	-	?	?
Specific training programs	++	++	++	+/-	++	++	++	++	+	+/-	+/-	+/-	+/-

Cent = Centralised health care systems with main level of control at a national level, Decent = Decentralised health care system with main level of control at the regionals level
Emerg = Emerging, Estab = Established

++	Strongly present	+	Present	+/-	Partially present	-	Absent	?	Unclear

3.3.2.2 Selection of countries/regions on the short-list

An online focus group was held with a sounding board composed of representatives from all Belgian Universities that offer a Master of Science in Nursing program and the Belgian Society for Clinical Nurse Specialists (BVVS) who all have extensive international networks in various care settings through active research collaborations and/or responsibilities as a (board) member of international professional organisations. Several members of the research team (KU Leuven, University Hospitals of Leuven, BVVS, KCE) also attended this meeting. During the meeting, we first gave an overview of all information collected per country. We then discussed whether this overview was in line with the insights or knowledge of meeting attendees.

To obtain rich and well-considered international perspectives on nursing consultations, participants in the sounding board meeting agreed that the short-listed countries should represent a mixture of countries that are both comparable to and different from Belgium regarding different features (e.g. healthcare system, experience with the topic of interest, educational system). Based on the discussion, the following selection criteria were determined:

- Mix between neighbouring countries and non-neighbouring countries of Belgium
- Mix between centralised and decentralised health care systems, with consideration to select at least one specific best-practice region within a decentralised health care system
- Mix of countries with established and emerging experience in the topic of interest
- At least one country with a long tradition in nursing consultations (e.g. USA, Canada, Australia)
- At least two countries having only recently initiated nursing consultations or being in the process of scaling up
- Short-listed countries should comprise nursing consultations in different settings (e.g. community care, ambulatory care, nursing home care or hospital care)

Based on these criteria, the following five countries were selected in consensus by the experts: the Netherlands, Canada, Finland, Ireland, and France. As Canada has a decentralised healthcare system, Ontario was selected as best-practice region. Ontario has a long tradition in organising nursing consultations and the highest volume of (grey) literature was identified from that region.

3.3.3 Data collection in the short-listed regions

3.3.3.1 Extended desk research

Following the initial desk research, a more in-depth search was done for the five regions on the short-list. We rigorously reviewed the documents that were already identified as well as the new documents collected through the short survey (section 3.3.2.1) to extend the information in the overview table (Table 8).

3.3.3.2 Interviews with key informants

Next, we performed interviews with key informants per region. To identify these key informants, we contacted people from the following groups: 1) people who responded to the short survey and identified themselves as key informants or individuals suggested by the survey respondents, 2) professional contacts of the sounding board members and the internal research teams or recommendations from these contacts, 3) contacts suggested by prof. dr. Claudia Maier, 4) contacts suggested by the professional nursing organisation in the included regions and 5) authors of important policy documents or peer-reviewed papers identified in the grey literature and database search of the umbrella review (Chapter 2).

Key informants were contacted via mail. Attached was a participant information form that described the aim of the project, the aim of the interviews and practical information regarding the interview planning and process. The participant information form listed also the components which should be met to be eligible as nursing consultation for this project. Minimally five working days prior to the interview, a first draft of the tabulated information from the desk research and an informed consent was provided to the participants. A reimbursement of €50 was offered to compensate for their time investment.

Interviews were performed in Dutch (the Netherlands) and English (Ontario, Finland, Ireland) by one researcher (MC). The interviews in French were performed by another researcher (MDa) - who is a native French speaker – and observed by the first interviewer (MC). An interview guide was developed by the core research team (MC, PH, MD) to guide the semi-structured interviews (Appendix 2.1). All interviews started with a description of the project, the aim of the interviews and a reminder of the what the researchers determined to be important elements of nursing consultations based on previous evidence. These elements were: 1) a healthcare delivery mode with a formalized structure involving a client who has healthcare needs that can be addressed by a nurse, 2) this nurse has relevant qualifications, advanced competence and experience to practice in a specific healthcare area with a high level of autonomy and independent caseload, and can function either independently or interdependently with other members of a healthcare team in at least 80% of the work, and 3) key interventions are nursing therapeutics, which encompass assessment and evaluation, health teaching/counselling, treatment and procedures, discharge and referral, and case management.

Interviews were performed using Microsoft Teams or Zoom and recorded with consent of the participants. After each interview, a methodological report was generated to evaluate the efficiency of the interview. This methodological report was discussed among the research team members to ensure accurate interpretation of the data and to adapt the interview guide to generate a richer dataset for the subsequent interviews.

3.3.4 Data analysis, synthesis and validation

The data on the nursing consultations' characteristics were analysed after each interview. The tabulated information from the desk research was discussed within the research team (MC, PH, MD), supplemented with additional desk research and adapted where necessary. This information focused on the availability of nursing consultations, competence profiles and educational requirements, nurses' autonomy, legal framework and financing structures. The tables were shared with all key informants for validation. Changes were made on the basis of these recommendations and additional documents provided by the key informants. The final tables with a description per region can be found in Appendix 2.2.

All information regarding contextual factors that can hinder or facilitate the implementation of nursing consultations was extracted from the interviews with the key informants. Using the audio recordings, the main interviewer (MC) categorised all the information in different themes according to the Context and Implementation of Complex Interventions (CICI) framework.[100] According to Pfadenhauer and colleagues, the context comprises of seven domains: the geographical, epidemiological, socio-cultural, socio-economic, ethical, legal and political. Except for the ethical context, we used all domains to map the context factors. This thematic grouping and the subsequent information per theme was discussed with a second reviewer (MD, Appendix 2.2).

Tabulated descriptions of characteristics and context factors per region were studied and compared. Commonalities and differences between the different regions are described in an overall data synthesis in the results section. When of added value, practical examples from one of the regions are described.

3.4 Results

3.4.1 Overview of key informants

Between April 19 and June 19 2023, we conducted interviews with 27 experts, ranging from four to nine per selected region. Experts were mainly APNs, professors in universities or university colleges offering nursing education programs at different levels, board members of professional nursing organisations, researchers and policy-makers. The majority of experts took up several of these roles. The interviews lasted for between 30 and 75 minutes.

We have integrated all information retrieved from the different steps in the data collection. A detailed description of each region, including information on the availability of nursing consultations, training requirements, autonomy and prescribing rights of nurses, as well as an overview of legislation and regulatory bodies can be found in Appendix 2.

3.4.2 Characteristics of nursing consultations

An overview of the characteristics of nursing consultations can be found in Table 9 and Table 10.

3.4.2.1 Presence of nursing consultations and profile and education of nurses performing nursing consultations

Nursing consultations have been implemented **in all different care settings** (community care, ambulatory care, hospital care and nursing home care)**, except for Finland** where they are not performed within the nursing home setting. Throughout the included regions, **nursing consultations are performed by nurses at different educational levels: by registered nurses** (Bachelor of Nursing), **specialised nurses** (Bachelor of Nursing and some additional training or expertise), and **master-trained APNs** (in some regions called nurse practitioners). In regions where consultations are performed by both master-trained and bachelor-trained nurses, master-trained nurses have a higher degree of autonomy.

In Ontario, Ireland and the Netherlands, nursing consultations are predominantly performed by APNs. In the Netherlands and Ontario nursing consultations are widely implemented in all settings while in Ireland, nursing consultations are more common in the hospital and outpatient setting. The reason behind nursing consultations occurring less often in primary and nursing home care in Ireland, is mainly physicians being less available in these settings and a collaborative practice agreement with a collaborating physician is needed to determine the level of autonomy of the nurses and physicians. In addition, the limited availability of nursing consultations in primary care in Ireland can also be explained by financial incentives. If a consultation of a general practitioner is completely replaced by a nursing consultation, the general practitioner cannot charge this consultation because the nurses performing the consultation work in a salary-based model without fee-for-service system. Hence, it is more attractive to hire a Bachelor nurse to increase the efficiency of their practice and to keep charging the full renumeration instead of working with an APN who takes over the entire consultation.

In France, the first APN only graduated in 2019, thus their role in nursing consultations is still growing. However, the implementation of nursing consultations by registered or specialised nurses has been facilitated since longer by the introduction of **'cooperation protocols'** in 2009. These protocols define which care is entrusted from one health care professional (e.g. a physician) to another health care professional (e.g. a registered nurse), the methods and frequency of information exchange and the methods and frequency of multidisciplinary discussions. The cooperation protocols are widely used in the hospital setting, in line with the hyper-specialisation within the medical disciplines. These cooperation protocols also form the basis of a form of cooperation between physicians and nurses in primary care, called 'Action de Santé Libérale en équipe' (ASALEE).

Nursing consultations in ASALEE are organised in relation to the physicians' consultations for patients with diabetes, cardiovascular risk, COPD, asthma, sleeping disorders or cognitive impairment with the goal of personalised education, enabling patients to take ownership of their condition and become more autonomous and active.

The cooperation protocol for ASALEE defines the tasks delegated from a physician to a nurse to ensure that the nurse has enough autonomy to perform the consultations. Some examples of delegated tasks in ASALEE are prescribing and carrying out electrocardiograms, performance and interpretation of spirometry and carrying out of memory tests for older adults.[101]

Box 2 – France

The **'protocole de coopération'** refers to the so-called cooperation protocols that enable healthcare professionals to transfer certain tasks to other healthcare professionals, including nurses. These protocols exist at a national and at a regional level.

Healthcare teams can apply to organise the care in their centre according to the national protocols. These protocols are published and authorised by the Ministry of Public Health (top down approach). Healthcare teams can also design protocols themselves according to their local needs (bottom-up approach). This is regulated by the law on local protocols. For the validation of local protocols, approval of the medical committee is needed.

The regional agencies for health care (Agence Régionale de Santé, ARS) will decide whether or not a team has the competences to work according to the regional or national protocol. The protocols define the care entrusted to a RN or APN (the 'delegee'), the methods and frequency of information exchange and the methods and frequency of multidisciplinary consultation. The protocols can include tasks related to chronic diseases, geriatrics, oncology, technical procedures, ophthalmology, emergency department management, unplanned care, imaging, vaccination and infectious diseases, or dietetics. The protocol defines how a nurse will work together with the physician, and thus, to what extent nursing consultations can be performed for the patient population targeted by the cooperation protocols. The decree of the cooperation protocol defines the requirements for quality and safety and the necessary training of delegates and delegators.[102]

In Finland, master-educated nurses are often working in management roles, rather than in clinical practice. However, the level of autonomous practice for all nurses is high compared to other regions. Nursing consultations are performed in primary care, specialist care in the hospital (e.g. cardiac care, pain management, asthma care, diabetes care) and mental health care. In practice, registered nurses generally work in close collaboration with physicians, while specialised nurses (e.g. public health nurses and midwifes) more often work independently.

In all five regions, there are strict criteria in terms of **working experience to enter an APN master education program.** In the Netherlands, two years within the field of specialisation is required. In Ontario, mostly two years in any field is required. In Ireland, this is two years (and preferably five years) within the field of specialisation. In France, a minimum of three years and in Finland a minimum of two years of working experience in any field is required. Moreover, in the Netherlands, Ireland and France, it is obligatory for students to have **a place for their internship** as the programs aim for the trainee to implement the new APN role at the place of the internship. In most of the regions, there are no entry criteria for starting a Bachelor in Nursing or specialised training, except for Ireland where one year of experience within the field of specialisation is required to start the specialisation to become clinical nurse specialist. In Ireland, the term 'clinical nurse specialist' is being used for the group of bachelor-trained nurses who follow a post-graduate training for becoming a specialised nurse. This might be confusing as this is not in line with international practice where both 'nurse practitioners' and 'clinical nurse specialists' are considered subgroups of master-trained APN roles.[2]

3.4.2.2 Level of autonomy and scope of practice

Based on the legal framework, the **level of autonomy** in all five regions is **much higher for APNs as** compared to bachelor-trained nurses.

In **Finland,** however, the level of autonomous practice is high for all nurses compared to other countries. In primary care, Finnish registered nurses and public health nurses always conduct the first assessments in a health centre before referring to a physician or nurse for further consultation. Finnish nurses perform consultations in health centres for acute health problems and non-communicable diseases such as wound care, follow-up of diabetes and health promotion. They cannot make a medical diagnosis (as this is limited to physicians according to the Finnish Health Care Professionals Act), but they can perform a health care assessment and start treatment based on their expertise, their education and the patient's needs. They can also discharge patients independently and refer them to other healthcare professionals. In the hospital context, nurses are performing their consultations mostly prior to, or after a physician's consultation and in a more dependent way than in primary care. Tasks can be delegated from a physician to a nurse if the physician approves the nurse's competences (e.g. pacemaker follow-up, placement of a deep venous catheter, …), the delegated tasks need to be documented in a written agreement and be signed by both parties. Nurses' rights to prescribe medication was included in the Finnish law in 2010, mainly driven by a shortage of physicians. To be allowed to prescribe, nurses need to have a special qualification in limited prescribing of medicines (45 ECTS), a minimum of three years of experience within the last five years in their prescription-related field and there needs to be a written order specifying which medications the nurses can and cannot prescribe. This means that the right to prescribe is always site-specific and in practice very limited.

In **Ontario**, the level of autonomy is higher in primary and long-term care as compared to hospital care, which is mainly due to the greater availability of physicians who take up a supervisory role in hospitals in contrast with the other care settings. APNs' autonomy is regulated by the Practice Standard for Nurse Practitioner practice and includes health assessment, diagnosis, therapeutic management, collaboration, consultation, discharge and referral. Nurses' autonomy is regulated by the overarching Standard of Practice, they cannot diagnose but they can identify an individualised plan based on patients' needs assessed through nursing assessment. All nurses are expected to use their clinical judgement to determine whether they are competent to safely provide care and refrain from performing any activity that they are not competent for. In 2018, the government of Ontario approved changes to the regulations of the Nursing Act, now enabling APNs to prescribe controlled substances. APNs who graduated before 2018 need to pass the 'Approved controlled substances education for Nurse Practitioners' course for prescribing controlled medication (except for opium, coco leaves and anabolic steroids). Currently, there are proposed changes to permit all nurses to prescribe medication for certain non-complex conditions according to a fixed list of medication, but governmental approval is still required for the regulation to take effect.

In **the Netherlands**, NPs have special expertise in the provision of complex nursing care and/or medical care of limited complexity. NPs are authorised to prescribe, diagnose, order tests, start treatments, discharge and refer. The authority to perform clinical activities varies per specialism. E.g. a NP in mental health care cannot perform endoscopies.[103] The right to prescribe is most elaborated in the Netherlands and regulated by the Individual Health Care Professions Act. NPs are allowed to prescribe any type of medication. Specialised nurses (with a bachelor training) are allowed to prescribe medication for specific patient groups: i.e. diabetes mellitus (i.e. blood glucose regulating medications), asthma and COPD (i.e. inhalation medication) or oncology (i.e. antidiarrheics, anti-emetics, benzodiazepines, laxatives, pain medication, secretion inhibitors). Yet, to acquire prescribing rights, specialised nurses need to complete a pharmacotherapy module. This can be part of the in-depth domain-specific training or can be completed as a separate module. Besides performing clinical activities, NPs are also authorised to supervise the entire care trajectory of patients. They function as **'coordinating practitioner'**, which includes overseeing the entire treatment, coordinating its delivery and referring to other professionals if necessary. However, despite their broad legal autonomy, all NPs are expected to self-assess their capabilities to perform activities.

This entails assessing whether own skills and actions are in accordance with required competences and professional standards, respectively. So, a NP is 'authorised if competent' to perform a variety of clinical activities.

In **Ireland**, APNs in theory work autonomously. They can cover a full patient case load, involving assessment, diagnosis, autonomous decision making regarding treatment, provision of interventions and referral and discharge. However, in practice, APNs need to have a **collaborative practice agreement** with a physician describing their authorities more precisely. The collaborative practice agreement needs to include all agreements like, among others, under which circumstances the APN can refer or discharge the patient, a list of the controlled drugs which the APN is allowed to prescribe and how the APN will report to the physician. A CNS works in close collaboration with and under supervision of a physician. They can perform clinical assessment and provide suggestions for diagnosis and treatment. If the APN or the CNS followed the postgraduate course 'Nurse Prescribing of Medicinal Products' or the Master of Science in Nursing-Advanced Practice they can register as a Nurse Prescriber. If so, they can in theory prescribe all medications following a decision-making framework according to the guiding principles enlisted in the Guidance for Registered Nurses and Midwives on Medication Administration.[104] Yet, the controlled drugs, which registered Nurse Prescribers are allowed to prescribe, needs to be additionally documented in the collaborative practice agreement with the supervising physician.

APNs in **France** are authorised to perform a list of acts, including technical acts, follow-up of patients, prescription of medical devices, medical biology exams and certain medications. E.g.: the list includes that an APN can prescribe medication not subject to compulsory medical prescription and renew or adapt certain drugs prescriptions, such as anticancer medication, anti-epileptics or opiate substitutions. However, this extended autonomy to perform nursing consultations needs to be additionally regulated in an **organisational protocol** with a physician**,** indicating the arrangement, procedures to exchange information and the conditions for the patient's return to the physician. Except for the organisational protocols which are established between a physician and an APN, there exist national and regional **cooperation protocols** which enable physicians to transfer medical tasks to other healthcare professionals, including nurses. The cooperation form in primary care between physicians and nurses, called ASALEE, is based on cooperation protocols. This idea of team-based care was piloted in 2004, expanded to a regional level in 2008 and subsequently expanded to a national level in 2019. These type of nursing consultations, currently implemented in 2 555 sites, are organised in relation to the physician's consultation for patients with diabetes, cardiovascular risk, COPD, asthma or sleeping disorders. Some cooperation protocols allow nurses to prescribe certain medication, e.g. if regulated in the protocol, nurses are allowed to prescribe 13 types of vaccinations.

Table 9 – Overview of characteristics of nursing consultation per region

Topic	Netherlands	Ontario	Ireland	France	Finland
Availability per setting	All settings	All settings	All settings (mainly in hospital or outpatient setting)	All settings	All settings, except nursing homes
Educational requirements	**Nurse Practitioner** • Master Advanced Nursing Practice (120 ECTS) • Requirements: working experience, place of internship **Specialised Nurse** • Bachelor of Nursing (240 ECTS) + domain specific advanced education • No entry criteria	**Nurse Practitioner** • Nurse Practitioner Program • Requirements depending on university; e.g. minimum overall average in Bachelor of Science in Nursing, working experience **Registered Practical Nurse and Registered Nurse** • Diploma Nursing Program or Bachelor of Science in Nursing • No entry criteria	**Advanced Nurse Practitioner** • Master of Science in Nursing-Advanced Practice (90 ECTS) • Requirements: working experience, place of internship **Clinical Nurse Specialist** • Bachelor of Nursing (240 ECTS) + Post Graduate Diploma (30-60 ECTS) • Requirement: working experience • + Post Graduate Diploma in Nurse Prescribing = Nurse Prescriber (30 ECTS)	**Advanced Practice Nurse** • Diplôme d'état Infirmier(e) en pratique avancée (first graduated 2019, 120 ECTS) • Requirements: working experience, professional project **Registered Nurse (RN)** • Diplôme d'état Infirmier(e) (180 ECTS) • No entry criteria • If RN works under a 'Protocole de cooperation', they need to fulfill the educational requirements described in the protocol.	**Nurse Practitioner** • Master in Health Care (90 ECTS) • Requirements: working experience **Registered Nurse** • Bachelor in Health Care (210 ECTS) • + 0,5-1y specialisation (30-60 ECTS) = Public Health Nurse and Midwife • + 3 years experience + Governmentally regulated education (45 ECTS) = Nurse Prescriber
Level of autonomy (for overview of the rights to perform clinical tasks)	**Nurse Practitioner** • Provision of complex nursing care and/or	**Nurse Practitioner** • Extensive authority to perform clinical	**Advanced Nurse Practitioner**	**Advanced Practice Nurse**	**(Nurse Practitioner)** • Not often seen in direct care, mainly in

Topic	Netherlands	Ontario	Ireland	France	Finland
	medical care of limited complexity. • Expected to self-assess their capabilities to perform activities ('authorised if competent') • Possibility to act as the coordinating practitioner: overseeing the entire treatment, coordinating its delivery and referring to other professionals if necessary. • Independent practitioners: able to establish independent treatment relationships with patients. **Specialised Nurse** • Nursing consultation is always in collaboration with NP or physician. • Prescriptive authority (diabetes, asthma and COPD, oncology) (if	tasks, for the promotion of health, the assessment and the provision of care, and the treatment of health conditions by supportive, preventive, therapeutic, palliative and rehabilitative means in order to attain or maintain optimal function. • Expected to self-assess their capabilities to perform activities ('authorised if competent') • Need to have followed the controlled substances educational course for prescribing rights. **Registered Practical Nurse and Registered Nurse** • Nursing consultation is always in collaboration with NP or physician. • Nursing assessment, suggestions for	• Extensive authority to perform clinical tasks, to practice at a higher level of capability as independent, autonomous, and expert practitioners, but always with the requirement of a Collaborative Practice Agreement. **Clinical Nurse Specialist** • Nursing consultation is always in collaboration with ANP or physician. • Nursing assessment, suggestions for diagnosis and treatment. • Prescriptive authority if Nurse Prescriber + Collaborative Practice Agreement.	• List of acts in addition to initial scope of nursing practice, which APN is allowed to perform; including technical acts, follow-up of patients and preventive acts, prescriptions of medical devices/medical biology exams/medications not subject to compulsory medical prescriptions and renewal or adaptations of limited medication prescriptions. • Requirement of an organisational protocol. **Registered Nurse** • Nursing consultation is always in collaboration with a physician. • Nursing assessment, education, empowerment of patients, smoother care pathways and	management positions. If working in direct care, NPs have the same autonomy as Registered Nurses. **Registered Nurse** • High autonomous practice compared to other countries. • Perform independent nursing consultations. • Nurse prescriber: limited right to prescribe (site-specific).

Topic	Netherlands	Ontario	Ireland	France	Finland
	pharmacotherapy module followed).	diagnosis and treatment • Expected soon: prescriptive authority for non-complex conditions.		support for relatives and caregivers. • Extended rights for clinical tasks possible according to the cooperation protocols.	

Table 10 – Overview of rights to perform clinical activities during nursing consultations per region

	First point of contact	Medical assessment	Nursing assessment	Medical diagnosis	Suggestions for medical diagnosis	Nursing diagnosis	Medical treatment	Medication prescriptions	Nursing treatment	Referral	Discharge
The Netherlands											
Nurse Practitioner (Somatic Health Care or Mental Health Care)[105]	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Specialised Nurse[105]	?	No	Yes	No	Yes	Yes	No	Yes (limited)	Yes	?	?
Ontario											
Nurse Practitioner (Primary Health Care, Pediatrics or Adult)[106]	?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Registered Practical Nurse and Registered Nurse[107]	?	No	Yes	No	Yes	Yes	No	Expected	Yes	?	?
Ireland											
Advanced Nurse Practitioner[108]	?	Yes	Yes	?	Yes	Yes	?	Yes	Yes	Yes	?
Clinical Nurse Specialist[109]	?	No	Yes	No	Yes	Yes	No	Yes (Nurse Prescriber)	Yes	Yes	?

France											
Advanced Practice Nurse (5 fields of specialisation)[110]	?	Yes	Yes	No	Yes	Yes	No	Yes (limited)	Yes	?	?
Registered nurse	?	No	Yes	No	?	Yes	No	Yes (very limited)	Yes	?	?
Finland											
Registered Nurse	Yes	No	Yes	No	Yes	Yes	No	Yes (Nurse Prescriber)	Yes	Yes	Yes

? = not found in documents describing scope of practice

3.4.2.3 Registers for nurses

In the Netherlands, all nurses are registered in the 'BIG (*Beroepen in de Individuele Gezondheidszorg* – Individual Health Care Professions) register'. In addition, APNs are legally required to subscribe in the specialism register either in General health care or Mental health care. Without this registration, they are not authorised to practice nor to bear the title. Re-registration is obliged every five years and requires having worked at least 4 160 hours within the nursing specialty with a minimum of 2 080 hours in direct advanced clinical care. Although not mandatory, healthcare professionals are encouraged to register into the '**quality register**', a tool allowing them to record their learning and developmental activities in a personal portfolio.

In Ontario, all RPN, RN and APN need to renew their membership at the College of Nurses of Ontario annually. To be able to register, nurses need to fulfil some requirements, such as successfully completing the necessary examination for the practice domain they want to practice and showing proficiency in English or French. To re-register nurses need to fulfil requirements for renewal, i.e. following the requirements of the College's Quality Assurance Program where they are obliged to show maintenance of continued competences by an annual learning plan, and declaring to have recent experience practicing as a nurse or APN.

In Ireland, all nurses need to register annually with the Nursing and Midwifery Board of Ireland. Besides the registration as a 'Registered General Nurse' or a 'Registered Advanced Nurse Practitioner', nurses also can register as 'Registered Nurse Prescriber' if they have followed the course in Nurse/Midwife Prescribing of Medicinal Products. If the registrations are not renewed, a removal letter is sent to the nurse. In the past, to obtain annual renewal of registration each APN was obliged to submit a portfolio presenting evidence of meeting the competency to retain their registration. However, due to financial constraints withing the Nursing and Midwifery Board this was no longer considered feasible. Evidence of competency follow-up is now done by the employing organisation.

In Finland, nurses need to apply for licencing, the right to practice and right to use an occupational title. Hereafter, they need to register as 'Nurses' in the national Terhikki Register and if applicable – depending on further education – also as 'Midwife' or 'Public Health Nurse'. If nurses have followed additional education for nurse prescribing, and have received the special qualification in limited prescribing of medicines, they can additionally enrol in the Terhikki Register as Nurse Prescriber. Renewal of this registration is not necessary.

In France, nurses need to register immediately after graduating with the French Order of Nurses, which is mandatory since 2006. If nurses work under a cooperation protocol, they also need to register this. Reregistration is not necessary, unless the nurse obtains an additional degree.

Once registered, all nurses have a personal space where they can register their work experience, continued education and acquired competences, but this is not mandatory.

3.4.3 Context factors influencing implementation of nursing consultations

The implementation of nursing consultations differs in speed across different regions, yet the main drivers for introducing nursing consultations were similar. All regions faced challenges such as physician shortages, increased patient waiting times, and a rise in the numbers of patients with complex health needs (often with multiple chronic diseases and biological, psychological and social health care needs). To address these issues and to better serve the population, nurses were considered for **advanced** and **complementary** roles in patient consultations. Nurses are trained to provide holistic care based on the **biopsychosocial model of care**, which aligns with meeting patients' needs. However, determining the rights, responsibilities, and level of autonomy for these new nursing roles required reflection how to ensure nurses can fully practice. Several experts indicated that having enough autonomy is an essential driver for implementing nursing consultations successfully. Some regions focused on extending the autonomy of all nurses. Experts in Finland and Ireland for instance reported that the introduction of the Nurse Prescriber-role, in which trained nurses could prescribe medication autonomously, facilitated the implementation of nursing consultations. Other regions invested in the introduction or reinforcement of the master-level education for APNs. The experts from regions where APNs have been introduced for a longer time (i.e. the Netherlands, Ontario, and Ireland), emphasised that APNs are well suited for delivering holistic consultations autonomously.

3.4.3.1 Clear role delineation

The experts emphasised the importance of clear role delineation when introducing new healthcare profiles and roles. At the policy level, there should be clear descriptions of what each (nursing) role entails, including the legal rights and responsibilities. In the regions with a longer tradition of advanced nursing roles, those descriptions were included in formal **competence profiles**. However, some experts indicated that general competence profiles remain broad, making additional site- and role specific agreements at the organisational level necessary. Such agreements with different healthcare professionals supported the creation of a shared vision on nursing consultations at the organisational level, which in turn facilitated their implementation. Factors that were mentioned to facilitate site- and role specific agreements were a network of colleagues with experience in nursing consultations, and a team that gives specific support for elaborating new nursing roles. Some regions, such as Ireland and France, made **role- and site-specific agreements** mandatory. Each APN performing nursing consultations in these countries needs to have a protocol which defines the collaboration with the physician(s) with whom they are working, outlining their role and expectations in patient care. Furthermore, these protocols are useful in preparing the field for the extended autonomy of nurses. However, an expert from Ireland stated that the protocols also emphasise the dependency on the physician. Indeed, a physician is needed to create the collaboration protocol in order to enable a nurse to work to their full scope of practice. This might hinder the implementation of nursing consultations as physicians are not equally present in all settings. Furthermore, the nurse's autonomy and authorities also depends on the physician's knowledge and attitude towards new nursing roles. In addition to the competence profiles at policy level and the site- and role specific agreements at organisational level, experts mentioned some other facilitators for reaching a clear delineation of these nursing roles. Several experts, for example, mentioned the importance of the APN's or nurse's communication about their role, legal rights and responsibilities and the need for them to make nursing consultations known to their peers, other health care workers, patients and to the public in general. Several initiatives were mentioned that support raising awareness about these new health care profiles and roles: in the Netherlands, a documentary about APNs produced by Gwen Jansen will be launched this

year. In France, through the support of the professional nursing associations and APN unions, APNs are often visible in different media, which helps to make the public acquainted with this specific role.

3.4.3.2 Education and working experience

As mentioned earlier, experts stress the importance of having a formal competence profile for new healthcare profiles or nursing roles in place. The experts mentioned the need to adapt curricula for the **education of nurses and APNs** to the responsibilities and competences described in those competence profiles. Different experts recommended to actively involve all relevant stakeholders in the development or adaptation of curricula, such as the medical profession, nurses working in the field, the government and other institutions offering APN training. Involvement of different stakeholders supports creating a shared vision, which in turn facilitates the implementation of new nursing profiles. For all regions, except for Finland, there are **entry requirements, in terms of having working experience** required to start the master-level education for becoming an APN. Several experts indicated that having clinical experience helped to train nurses to become independent, autonomous health care professionals. In addition, in France, the Netherlands and Ireland, applicants for the master programme need to have a professional project or dedicated internship place where they will master and embed their APN role. Experts from France indicated that having a secured position as APN prior to training, is a major facilitator for implementation as they can mature in their role during their training, while the team where the role is implemented knows the APN and at the same time the APN will be able to continue working at their internship place after graduation. In contrast, an expert from Ireland brought up some disadvantages of this system, as this individualised training path and role creation makes it harder for APNs to move to similar positions in other settings, as they build out nursing consultations in a very specific setting and receive less generic training.

3.4.3.3 Continuous education and competence training

Experts highlighted that it is crucial to invest in continuous education and competence training after graduating as a nurse or APN. It was indicated that the presence of a **nursing board,** with a registration system or learning plans, supports continuous learning tremendously. Ontario, Ireland and the Netherlands work with a mandatory recurrent registration for all nurses, which ensures transparency about the number of nurses at each level within the health care system. More importantly, the experts from Ontario and the Netherlands indicated that the registration tool also helps to ensure that competencies are maintained. Nurses in the Netherlands, for instance, are obliged to proof they worked at least 4 160 hours within the nursing specialty during the past five years with a minimum of 2 080 hours direct clinical practice. Nurses in Ontario are obliged to **prove recent experience of** practicing as a nurse and they should establish a learning plan in order to be able to renew their registration, which is controlled by the College of Nurses of Ontario. In the past, this was also the case in Ireland, where a portfolio was evaluated by the Nursing and Midwifery Board of Ireland. However, due to a lack of funding to mandate someone to evaluate the registration, the portfolio is no longer required. The experts from Ontario and Ireland were all positive about the **benefits of the learning plan/portfolio**. They indicated that it gave support to developing nursing roles, to nurses' growth towards autonomous practitioners and to challenge nurses to take up their full scope of practice. Alongside the role of nursing boards in ensuring that competencies are maintained, experts also mentioned their importance in view of advocacy for the nursing profession in general. Nursing boards and professional nursing organisations also advocate for the nursing profession and push the political agenda when needed.

3.4.3.4 Collaboration with the medical profession

A recurrent theme in the interviews was the need to improve **collaboration with the medical profession**. There was agreement among the experts that consultation, collaboration and finding a common goal are key to implementing sustainable services. Experts mentioned different ways to improve the collaboration with physicians, like providing the medical profession insight into the training and scope of practice of (advanced) nurses, or implementing mandatory collaboration protocols that clarify the

responsibilities of the different health care professionals involved in patient care. Some experts also mentioned that the presence of physician assistants helps to ensure that nurses can maintain their focus on providing complementary comprehensive care alongside medical care, because physicians can shift medical tasks to physician assistants and not to APNs. Experts from Ireland mentioned that knowledge, insights and good experiences helped physicians to **accept new nursing roles**.

They saw physicians in Ireland being more receptive for new collaborations with nurses if they have had good experiences during their training abroad such as the United States, where advanced nursing roles are well implemented. Furthermore, several experts highlighted the importance of revising the legislation for the medical profession when adapting the legislation for the nursing profession. According to the Health Care Professionals Act In Finland for example, only physicians can make a medical diagnosis. In the legislation for the nursing profession, it is outlined that nurses can perform a nursing health care assessment and initiate treatment, but they cannot medical diagnose. Furthermore, an expert from Ontario highlighted that it might be beneficial to keep new legislations broad as this allows for more flexibility when healthcare professionals' roles, as well as patient populations evolve. For instance, it took a long time to establish a list of all medications an APN is allowed to prescribe, yet, when new medications become available, this list needs constant revision, which is time-consuming and not very efficient.

Box 3 – Physician assistant

Physician assistants are health care professionals collaborating with physicians to provide health care. Physician assistants are medical health care professionals who execute tasks to support a physician. Under the overall supervision of a physician, physician assistants take histories, conduct physical examinations, order and interpret tests, diagnose and treat illnesses, counsel on preventive health care and may assist in surgery. Their expertise is solely focused on a medical specialism.[111] This report does not include information about consultations performed by physician assistants.

3.4.3.5 Organisational readiness and practical support

Not only a constructive collaboration with the medical profession is important, but **organisational readiness and practical support** are also crucial. To work to their full scope of practice, nurses for instance need to have access to online academic libraries and have dedicated time and resources for attending educational courses. Logistic support, such as having access to a proper (separate) consultation room and laptop, and support from colleagues for administrative tasks, were also mentioned as facilitators.

3.4.3.6 Research to demonstrate impact of nursing consultations

A last theme that was frequently addressed during the interviews was the importance of **research** to demonstrate the impact of nursing consultations. Some experts elaborated on how impact could be measured. Experts from Ireland suggested using logical models that have been developed by Brady & Drennan. These logical models describe how APNs work in certain settings (acute medical assessment units, emergency department, older persons, respiratory care, rheumatology) can make their activities identifiable and quantifiable.[112] Another expert from Ontario recommended to demonstrate impact via small-scale projects, as this enables to obtain fast results, and generates information allowing for a quicker implementation and scaling-up. In all regions, experts unanimously stressed the importance of documenting the quality, safety and cost-effectiveness of new responsibilities, for example when implementing nurse prescribing. However, there were also some concerns about the importance of demonstrating impact of nursing consultations. For instance, it is challenging to quantify outcomes of a holistic approach. Furthermore, experts from France and the Netherlands mentioned that it would be more logical to follow effects of health care models as a whole, instead of delineating the effect of one profession within the system. Another concern was the necessity of registering performed activities to quantify contribution. Having sufficient time to document and address all needs of patients with complex needs takes time and registration systems might take away valuable time from patient care. It might also be challenging to break up all activities in registrable items.

3.5 Discussion

Based on extensive desk research and interviewing a large group of key experts, we were able to provide useful insights into how nursing consultations are organised and which contextual factors have been fuelling or hindering the implementation of nursing consultations in five regions of interest. In all regions, nursing consultations are well-established in certain settings, and progress is made for other settings. It is clear that there was given attention in all regions to reflections on how to ensure nurses to work to their full scope of practice, which resulted in implementation of modalities to facilitate nursing consultations. All regions implemented or elaborated nurses' education: some ensured master-educated APNs to have enough legal rights to work autonomously, other implemented education to receive prescribing rights for medication. Some regions implemented national disease-specific protocols for task-delegation or a collaboration protocol to ensure clarity about nurses their scope of practice.

In all regions, nursing consultations are delivered by different types of nursing profiles, i.e. registered nurses/specialised nurses and advanced-practice nurses (APNs). Registered nurses received their education at bachelor level (sometimes supplemented with additional training), whereas APNs are trained at master-level. The difference between both nursing profiles with regard to their scope of practice, is mainly reflected in their level of autonomy. APNs have a longer and more in-depth (clinical) training, and most regions require working experience before entering the APN master-education, explaining why APNs are taking up more autonomous roles than specialised nurses (except for Finland, where APNs mainly work in management roles). In Belgium, the role of *'verpleegkundig specialist – infirmières et infirmiers en pratique avancée'*, which is comparable to APN, is formally embedded within the coordinated law on the Practice of the Healthcare Professions in Belgium since 2018.[113] Subsequently, all Belgian master education programs adapted their curriculum and now offer an orientation/major preparing nurses to take up their role as APN after some additional supervised training in the specialisation area of their choice. The latter should happen after graduation at their workplace and is not under supervision of university programmes. The approval of the APN competency framework and the requirements for the Belgian context regarding 'level of training' and 'clinical experience' required for the Belgian context is on its way.

Notably in none of the regions, there is a nursing role in-between the specialised nurse and APN, which is comparable with **the role of nurse consultants** in Belgium. As reported in Chapter 5, 25.4% of the nurses doing nursing consultations in Belgium have 'nurse consultant' as job title or describe themselves as such. These nurses are typically found in hospitals and are generally trained at Bachelor-level and followed often post-graduate courses in line with their specialisation. However, the title of 'nurse consultant' is not formally recognised in Belgium. This complexity might hinder the further implementation of nursing consultations, yet if Belgium would follow the international trend of legalising nursing consultations with a clear delineation between the role and competencies of specialised nurses and APNs, important considerations are needed regarding how to deal with the current group of nurse consultants in our healthcare system.

The observation that other regions require having **working experience** before entering the APN education is much stricter than the education programs in Belgium that advice students entering the Master of Nursing program to first acquire significant working experience or combine their studies with a part-time employment as a nurse (not necessarily in nursing consultations). Yet, this remains a recommendation and to date, it is not possible in Belgium to set specific entry criteria in view of working experience or competencies other than having a bachelor degree in nursing when starting the master education.

Some countries require APNs having an **internship place** when starting their training, yet, there was no international consensus on whether or not this is supporting the implementation of nursing consultations. An advantage mentioned is that organisations can decide for which patients or settings having an APN can be of added value, and in the Netherlands for instance, these organisations financially support the training of these nurses. As such, the APN-in-training can acquire her expertise and implement it directly at his/her internship place, stimulating the expansion of nursing consultations in different settings. However, the disadvantage is that the APN is trained specifically for this population and setting, offering more limited opportunities for APNs to change jobs as their expertise might be too focused.

It might also be difficult for organisations to find a replacement in case the APN is absent or retires. Furthermore, there can be role confusion for the employer where the internship take place, being the employer or the educator. In countries where nursing consultations are emerging, including Belgium, it might be an option to work with fixed internship places as it may have the advantage to rapidly role out these consultations in a diversity of settings, ensuring that nurses are properly trained and guaranteeing that clinical care directly benefits from the investments made. But if doing so, the disadvantages stated above need to be taken into account.

The experts interviewed expressed mixed feelings towards **competence profiles** for different roles of nurses: on the one hand, they were clear that competence profiles are much needed to have clarity about the scope of practice and (legal) responsibilities within patient and organisational care. On the other hand, they found the competence profiles rather generic, imposing the need to further specify these profiles for specific settings and patient groups. This is, however, a quite common observation, not only for the competence frameworks for the nursing profession, but for all other healthcare professions. Indeed, as would be the case for Belgium also, different settings and organisations might have different needs in view of professional roles, so striving towards very detailed competence profiles would presumably be very time-consuming and more likely be unrealistic.

In addition, some regions were using **cooperation and/or collaboration protocols**, which are agreements between APNs - or sometimes specialised nurses and registered nurses - with the collaborating physician. Some of these protocols are mandated by the government. Other protocols are team-based and setting-specific. France has a longstanding experience with these protocols and experts are very positive about these, as they help to describe which tasks can be delegated to other professionals, including nurses, and also describe how healthcare professionals can take up complementary roles within a team, supporting the autonomy of e.g. APNs. These protocols can build trust between physicians and nurses and strengthen their collaboration over time within the clear boundaries and playing field that these agreements provide. In Ireland, where nursing consultation have been established for a much longer time, experts also expressed that the agreements have been instrumental in the earlier years of implementing nursing consultations. However, at the same time they warned for using these agreements as, over the years, they have become a hindering factor in further expanding the scope of practice and autonomy of nurses. In their opinion, the nurse's autonomy and legal rights remain limited to and dependent of the opinion, trust and willingness of physicians. In Belgium too, the difference between specialised nurses and APNs might be insufficiently known to physicians and other healthcare professionals, and especially physicians might question whether APNs can take up an autonomous role, while having specialised nurses in mind. Hence, working with cooperation and collaboration protocols might be a good starting point and move patient care forward, but clear competence profiles for the different nursing profiles remain crucial. In any case, educating healthcare professionals about the competencies and added value of specialised nurses and APNs are needed if one wants to facilitate working together in interprofessional teams with complementary roles (bearing in mind that the competences of APNs go beyond advanced clinical care, but for example also include setting up quality improvement initiatives and evaluating their effect, taking up leadership roles internally and externally, and sharing their expertise through educating or training other nurses.

A specific competence that is often part of the above-mentioned cooperation or collaboration agreements is **prescribing medications**. In all countries, nurses are allowed to prescribe certain types of medication or devices, provided a pre-specified training is completed and with differences in prescription rights depending on their level of education and area of expertise. Agreements make it transparent what nurses can or cannot prescribe, yet experts in several regions warn that creating detailed and long lists of all products a nurse can prescribe might again be very time-consuming and contra-productive in a rapidly changing healthcare environment.

Experts were in favour of keeping **registers** to monitor where nurses are employed and which training and continuous education they have completed, because it also allows to guarantee that the competence level of nurses at each level keeps meeting their scope of practice. Experts also addressed that resources are needed to monitor these registers, and there were some differences between regions with regard to whether reregistration at regular time intervals (e.g. yearly) was needed. There was consensus that defining requirements for reregistration can be used as a

tool to ensure that patient care remains safe, efficient and evidence-based by expecting e.g. a certain number of direct clinical practice hours and a minimum level / type of continuous education. In case of setting up a register for the Belgian healthcare system, it is important to carefully consider who will manage this register and evaluate the reregistration criteria or portfolio (at the federal, regional, sector or organisational level) and what will be the consequences if the criteria are not met.

Finally, we concur with the experts in the concerns shared about the need to demonstrate the **added value of nursing consultations.** As has been pointed out by many experts and as we also learned from our umbrella review (Chapter 5), nursing consultations are at least as effective as physician-led or usual care on most patient outcomes and are even superior for quality of life, health behaviour, medication adherence, mortality and patient satisfaction. Moreover, nursing consultations should be characterised by interprofessional collaboration and complementary expertise. Therefore, to evaluate the impact of a single component of interprofessional health care delivered to a patient, which consist of several intervention components and target patient, provider and organisational outcomes simultaneously, will always remain challenging. In some cases it will be unfeasible to disentangle which effects can be attributed exclusively to the nurses providing these consultations. Rather we plea for mixed-methods evaluation of an interprofessional model of care and for investing in small-scale projects when expanding nursing consultations in one setting or for one patient population, where useful combined with mixed-methods evaluation.

Methodological considerations

We used a rigorous methodology to select five geographically spread regions with diverse healthcare systems to learn from their experience with implementing nursing consultations. We selected regions with both established and emerging experiences. An in-depth analysis of nurse consultations in other countries, like the ones presented in table 6.2 could have been interesting as well; yet, time and resource restrictions prevented us from targeting more regions. Given the purpose of this KCE report to provide guidance on the wider implementation of nursing consultations in Belgium, the team decided that a mixture of countries that are both comparable and different from Belgium regarding different features would give the richest information.

We performed 27 interviews with several key informants per region (range four to nine per region) to ensure that the factual information related to the desk review was checked by several people per region and ensure that risk of bias inherent to expert interviews was minimized with findings not based on opinions or views of single participants. However, expert interviews are inherently at risk for bias. One could argue why only APNs but not specialised nurses have been interviewed, as this could have introduced bias. However, in the selected regions, APNs are most often responsible for more autonomous nursing consultations, where the scope of practice of nurse specialists seems to be more limited. Additionally, we also involved representatives from professional organisations and educational institutions, who typically have a very good understanding of clinical practice, the scope of practice of different nursing profiles within their region, as well as their educational needs. Finally, we gave all participants the opportunity to review the report, ensuring that we conveyed the messages correctly. Alongside a thorough analysis of available policy documents, this relatively large number of interviews with experts with various backgrounds allowed us to present a detailed description on the organisation of nursing consultations, which could be informative for setting up nursing consultations within Belgium. The context factors addressed during the interviews in particular could provide guidance on factors that could facilitate or hinder a wider implementation of nursing consultations in Belgium.

Although the research team has a clear understanding of what nursing consultations entail, this might not be the case for everybody. There might be different views on what entails a nursing consultation, as we also learned from the findings in other chapters. Some might for instance rather see this as nurses assisting physicians based on task delegation or might narrow this down to nurses being responsible for routine activities (e.g. drawing blood, checking parameters), whereas others might focus more on the autonomous and complementary role of registered nurses and/or APNs within treatment teams providing holistic care. To deal with the conceptual ambiguity, essential elements of nursing consultations to be included for this research were provided and discussed with all interviewed experts.

However, as a clear definition or description of nursing consultations was missing in all countries, the impact of own interpretations and views of the interviewed experts on nursing consultations are unavoidable. This highlight the need for a conceptual clarification to facilitate a more widespread implementation of nurse consultations in different countries, including Belgium.

It was of interest to learn how some regions set up cooperation and/or collaboration agreements. We did not ask for concrete examples of such agreements, which could have been informative to understand the content and level of detail provided in such agreements. Also, although the experts discussed educational entry level, we did not conduct an in-depth analysis of the curricula for APN, nor did we discuss which criteria internship places need to fulfil before hosting an APN student or which content for instance is covered in the courses providing nurses with some prescription rights in the different countries. Moreover, the experts focused exclusively on the clinical role of nurses, but were not asked to reflect upon the other CanMeds roles registered nurses or APNs take up. One should realise that especially APNs also take up additional leading roles in initiating, implementation and evaluating innovations in care, leadership and mentoring of peers, along advanced clinical practice.

Finally, although we zoomed in on legal aspects, we did not ask if nurses delivering nursing consultations need to take a separate insurance (especially when working autonomously) or whether other legal aspects need to be taken into consideration. Yet, soliciting for information on these often complex and healthcare system or context specific aspects would have led us too far from the purpose of our work, that is learning how other established or emerging regions organise and implement nurse consultations as an evidence-based source of inspiration for the Belgian healthcare system.

4 NURSING CONSULTATIONS IN BELGIUM: CURRENT CONTEXT

4.1 Nursing care in Belgium

4.1.1 Nurse education

The information presented in this section is an updated summary of the description of nursing practice and education in Belgium in KCE report 325 and Bruyneel et al.[114, 115] For a more comprehensive understanding of general nursing practice and education, we refer the reader to the detailed information provided in the aforementioned report.

The practice of nurses is regulated at the federal level. People can carry the title of 'nurse' after completing a nursing education programme that complies with the minimal qualification criteria as specified in Article 45 of the coordinated law (Royal Decree [RD, *Koninklijk Besluit – Arrêté Royal*] of 10 May 2015) that regulates the healthcare professionals' practice in Belgium are considered as nurses.[116] It should be noted that there are differences in the implementation of these legal requirements between the federated entities.[115]

4.1.1.1 Pre-registration education

In Belgium, nursing education is regulated by the federated entities. Currently, there are two pathways to become a nurse: (i) the bachelor-level program *(Bachelor verpleegkundigen – Bachelier en soins infirmiers)* and (ii) the diploma-level program (*"Hoger Beroepsonderwijs niveau 5 [HBO-5] verpleegkundigen"* in Flanders and *"Brevet infirmier"* in the French-speaking community [Fédération Wallonie-Bruxelles]).[115] For simplicity, we will refer to them as bachelor level nurses and graduate level nurses in this report.

In all communities, the graduate level program (European Qualifications Framework [EQF] level 5) used to be a 3-year vocational training after completing secondary education. However, in the French-speaking community, it was decided to extend the program by an additional 6 months to comply with the EU Directive. This reform has not yet been implemented in the Flemish community.

The bachelor level education is offered by higher education institutions affiliated with universities, known as university colleges. To meet the requirements of EU Directive 2013/55/EU (EQF level 6), the three-year program (180 European Credit Transfer System [ECTS] points) was expanded to a four-year program (240 ECTS points) starting from the academic year 2016-2017. This program includes a total of 4 600 hours of training, with 2 300 hours dedicated to practical training.

However, at the time of writing this scientific report, there are ongoing amendments to the coordinated law on the Practice of the Healthcare Professions. These changes involve the introduction of two new function titles: 'basic nurse' *(basisverpleegkundige – assistant en soins infirmier)* for student graduating from nursing programs at EQF level 5, and 'nurse responsible for general care' *(verpleegkundige verantwoordelijk voor algemene zorg – infirmier responsable des soins généraux)* for those graduating from nursing programs at EQF level 6. We come back to these new function titles in section 4.1.3.8.

The 'license-to-practice' for both graduate and bachelor level nurses is issued by the Recognition Commission of the Federal Council of Nursing Practitioners. Technically, this license is supposed to be issued for a period of five years, but in practice, it is granted indefinitely.[115]

4.1.1.2 Post-registration education

After graduating as a nurse, there are various opportunities for further education and skill development in the nursing field. We will outline some of these options below. Although the list is not exhaustive, it provides an overview of the educational opportunities available to nurses for further professional development.

- **Bridging program:** graduate level nurses have the option to enrol in this bridging program to upgrade their qualification to a bachelor level nurse. Previously, this program required 120 ECTS points, but since 2016, it has been increased to 150 ECTS points.
- **Specialised courses:** are available to enhance bachelor level nurses' expertise in specific domains such as intensive care and emergency care, oncology, geriatric care, wound care, diabetes education, or palliative care. The number of ECTS points associated with these courses can range from 20 to 60. While some of these programs, like intensive and emergency care, used to be organised as a bachelor-after-bachelor program, many of them have been restructured to post-graduate courses in Flanders since the introduction of the 4-year Bachelor education. It is also worth noting that, from 2020-2021 onwards, the Flemish budgets for organising 'Second Bachelor' programs have been discontinued. In the French community, there are still bachelor after bachelor programs available in fields such as radiotherapy, oncology, paediatrics, operative department nursing, public health, mental health care and psychiatry, or intensive and emergency care. Some of these postgraduate courses are also open to graduate level nurses. Upon completion, they receive a certificate rather than a postgraduate degree.
- **Master degree:** bachelor level nurses in Flanders can pursue a master of science degree in nursing and midwifery after completing a one-year bridging program at the university level. Currently, this master programme is organised at four universities (i.e. KU Leuven, Ghent University, University of Antwerp, and Hasselt University). The master in nursing and midwifery offers several specialisation options, among which management in nursing and midwifery, implementation expert in healthcare, researcher in care and health, with the universities offering different specialisation options. In the French Community, the master degree in public health offers specialisation options such as health promotion, health management, intensive and emergency care, and cardiovascular expertise. Starting from the 2019-2020 academic year, a new specialisation called 'advanced practice nurse' has been introduced within the master's degree in nursing and midwifery in Flanders (EQF level 7). This program focuses on teaching students

advanced skills in clinical assessment, clinical reasoning, and pharmacology/prescribing. To further enhance this expertise, students are required to complete internships in their chosen specialisation field. In the French-speaking education system, a similar reform has taken place since 2022, offering a master degree in nursing sciences (EQF level 7) that prepares students for the APN profile.117

- PhD: after successfully completing a master degree, nurses can pursue a doctoral program.115

4.1.2 Nursing workforce

Belgium has 11.1 practising nurses[b] per 1 000 inhabitants, this is 2.7 more than the EU-19 average (8.4 nurses per 1 000 inhabitants, Figure 5).[118] The ratio of nurses to physicians was 3.6 in 2018.[119] However, approximately 31% of the nurses who are licensed to practice are currently inactive in healthcare.[120] In December 2022, Belgium had 210 079 nurses licensed-to-practice. Of these, 13 248 held an advanced professional title in intensive and emergency care, 5 347 in paediatrics and neonatology, 3 339 in oncology, 2 287 in geriatrics, 2 786 in mental health care and psychiatry and 2 351 in peri-operative care. Furthermore, 3 707 held an professional qualification in geriatrics, 2 337 in mental health care and psychiatry, 1 333 in palliative care and 1 195 in diabetes.[121] These numbers are stratified by region and visualised in Figure 6.

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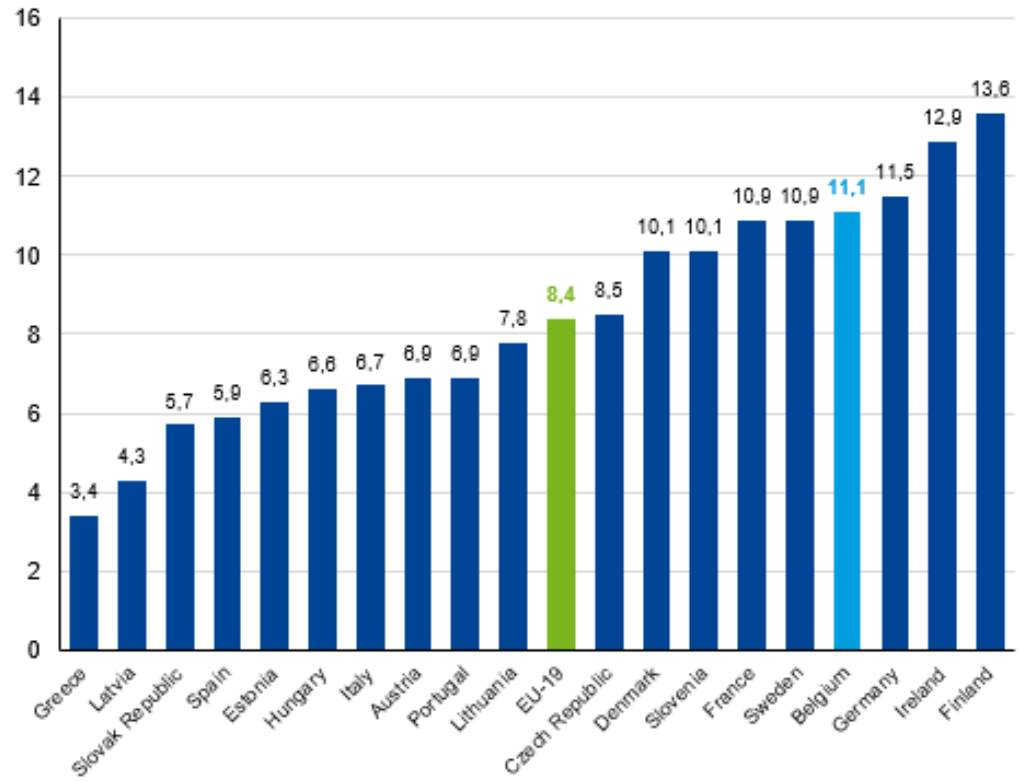
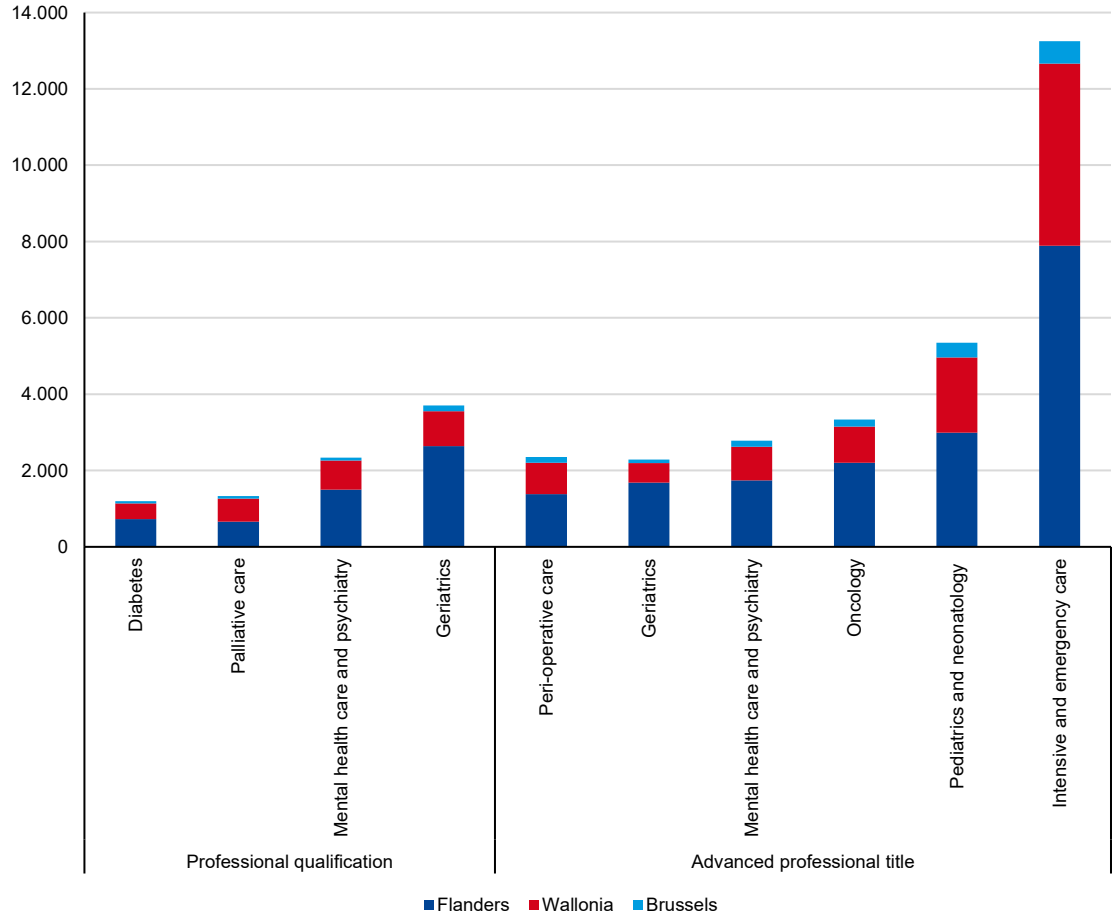
[b] Nurses providing direct health services to patients, including self-employed nurses.

Figure 5 – Number of practicing nurses in European Union (per 1 000 inhabitants, 2018)



Source: OECD Health Statistics[118]

Figure 6 – Number of nurses in Belgium with professional qualification and/or advanced professional title, per region



Source: Federal Public Service (FPS) Health, Food Chain Safety and Environment[121]

4.1.3 Legal framework of the nursing profession

In order to better understand the context and the approach taken by the Belgian legislator regarding task differentiation in nursing, it is important to first provide a concise summary of the recent developments within the nursing profession in Belgium. This will lay the foundation for a deeper exploration of the various nurse profiles involved in nursing consultations.

It is important to note that the implementation of legal requirements, such as providing the necessary education for the basic training as nurse or in order to obtain a title as specialist-nurse, differs between the federated entities. In terms of healthcare organisation, both the federal level and the federated entities are partially competent authorities. Therefore, it depends on the specific healthcare context or setting (e.g. hospital, primary care, etc.) to determine which authority is competent to regulate it.

4.1.3.1 Legal competences of nurses

Since 1995, the legal competencies of nurses – meaning the concrete nursing tasks related to diagnostics and treatment of the patient – and the educational conditions to be legally competent are regulated at the federal level. At the federal level graduates of a nursing education programme that comply with the minimal qualification criteria, as specified in Article 45 of the coordinated law (Law of 10 May 2015), that regulates the healthcare professionals' practice in Belgium were considered as nurses.[116]

The legislator approaches the definition of nurses' authorised activities in a twofold manner. First, Article 46 of the coordinated law on the Practice of the Healthcare Professions provided a general definition of nursing.[116] Through a RD, the nursing acts can be defined, as well as the modalities of implementation (e.g. prescription or non-prescription) and the qualification required. The latter means that the legislator can reserve certain nursing acts to a certain level of qualification (section 4.1.3.2). These nursing acts, modalities and qualifications are defined in the RD of 18 June 1990 on Nursing.[122]

The nursing activities are divided in Article 46 into three categories: general or A acts, technical or B acts and entrusted (or delegated) or C acts.[116]

- **A acts** involve a series of comprehensive nursing activities such as observation, recognition and assessment of psychological, physical, or social health status.[c] A acts can be autonomously performed by nurses and differ from B and C acts in this regard.
- **B acts** are the technical nursing acts, divided into B1 acts that do not require a medical prescription and B2 acts that do require a prescription (as outlined in Article 46, 2° concerning the coordinated law on the Practice of the Healthcare Professions).[116] These acts are associated with the establishment of a diagnosis by the physician or a dentist or with the application of the treatment prescribed by the physician or a dentist or of measures in the field of preventive medicine. Annex 1 of the RD on nursing contains a list of technical nursing acts. The annex is made up of 7 main sections[d], each divided into subsections[e] that are

[c] A acts include (i) observing, recognising and documenting an individual's health status both psychologically, physically and socially, (ii) describing nursing problems, (iii) contributing to the physician's medical diagnosis and carrying out the prescribed treatment, (iv) informing and advising patients and their families, (v) continuously assisting, performing and helping to perform actions, through which the nurse aims to maintain, improve and restore the health of healthy and sick persons and groups, (vi) providing counselling during the grieving process, (vii) independently taking urgent life-saving measures and responding to crisis and disaster situations, (viii) analysing the quality of care with the objective of improving one's own professional practice as a nurse.

[d] These are the seven main sections: (i) treatments, (ii) food and fluid administration, (iii) mobility, (iv) hygiene, (v) physical security, (vi) nursing activities related to diagnosis and treatment, and (vii) assistance with medical procedures.

[e] The 'treatments' section is divided into the following sub-headings: respiratory system, circulatory system, digestive system, urogenital system and

further subdivided by B1 or B2 acts. For example, the main heading '1. Treatments' includes the subheading '1.2. Circulatory System'. In this subheading, there is a thematic subdivision into B1 and B2 provisions. An example of a B2 provision is "the application of bandages and stockings for the prevention and/or treatment of venous disorders".

- **C acts** are medical acts that can be entrusted to a nurse by a physician or a dentist (Article 23 and Article 46, 3° concerning the coordinated law on the Practice of the Healthcare Professions).[116] These acts are defined in Annex II of the RD on Nursing.[122] For example, the preparation and administration of chemotherapeutic agents and isotopes are considered C acts. The legislator provides for the possibility of establishing conditions under which physicians can delegate certain medical acts to nurses (Article 23 concerning the coordinated law on the Practice of the Healthcare Professions[116]), as is being done through Article 7*bis* of the RD on Nursing that reserves the delegation of certain medical acts to nurses with a specific professional title or specific professional competence.[122]

With regard to the B- and C- acts, it is important to refer to Article 4*bis* of the RD on Nursing.[122] This article lays out the requirements for performing these technical nursing acts. Essentially, it states that a nurse can only do these tasks if they have the right practical skills, education, and/or experience to do them correctly and safely. It appears that the regulations place the responsibility to determine their own competence on the nurse (section 4.1.4). The physician, however, must provide necessary and clear instructions about any associated risks to ensure the proper execution of the act.[123]

It is generally agreed that there is little difference between the activities listed under B-acts and those listed under C-acts.[124]

In addition, there is also an obligation for the physician to provide *supervision and guidance* when a nurse performs a delegated task. This does not necessarily require constant physical presence, unless explicitly stated. Depending on the act, on call presence or accessibility in case of any problems suffices.[125] Once the delegated act is completed, there is also an obligation for the physician to *verify* that the act has been carried out properly.

According to the RD on Nursing, technical nursing acts that require a medical prescription (B2 acts) and the entrusted medical acts (C acts) must be described in standard nursing plans or procedures.[122] These plans and procedures are developed through collaboration between the physician and the nurse. In the hospital setting, it is the responsibility of the head of the nursing unit, in consultation with the head of the medical department to achieve this task.[125] The purpose of a standard nursing plan is to provide a systematic approach to caring for and treating patients with specific conditions. A procedure describes how to perform a particular medical or nursing technique (e.g. giving an injection). Optionally, one or more procedures may be part of a standard nursing plan or standing order. These standard nursing plans and procedures serve as guidance for patient care and treatment, and the nurse must adapt them to the individual needs of the patient. A standing order is a predetermined treatment schedule, such as insulin administration, established by a physician. This treatment schedule may refer to standard nursing plans or procedures. The physician sets out specific conditions in the standing order that must be met by the nurse before carrying out the prescribed plan or procedure. The nurse assesses whether these conditions are met, and only then proceeds with the prescribed actions. Unless in urgent cases, the physician must explicitly specify the patient's name for whom the standing order applies.

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obstetrics, skin and senses, metabolism, drug administration, and special techniques.

For technical nursing acts that require a medical prescription (B2) and entrusted acts (C), authorisation is necessary by means of a written medical prescription, an orally communicated medical prescription, or a standing order (Article 7*quater*).[122] If a physician verbally communicates a prescription to a nurse and carried out in the physician's presence, the nurse is required to repeat the prescription and inform the physician when executing it. The physician should subsequently confirm the prescription in writing as soon as possible.

Only in urgent cases, a verbally communicated prescription can be carried out in the absence of the physician. In such cases, the prescription can be communicated via telephone, radio, or webcam, with reference to a standard nursing plan, standing order, procedure if needed. However, if a nurse considers that the presence of a physician with the patient is necessary, they cannot be forced to execute the prescription. In this case, the nurse is obligated to inform the physician accordingly. The physician confirms the prescription in writing as soon as possible (Article 7*quater*, § 3 and 4).[122]

When preparing a written prescription, the physician must adhere to specific guidelines for clarity and completeness. This includes ensuring that the prescription is fully filled out, clearly written, and legible, and it should be documented in the patient's record accordingly. If the prescription refers to a standard nursing plan, standing order, or procedure, it should identify the item by its agreed-upon name or number. Additionally, the prescription should include the patient's full name, the physician's name and signature, along with their National Institute for Health and Disability Insurance (NIHDI) number. When prescribing medication, the prescription must specify the physician's specialty, the quantity, posology, concentration in solution (if applicable), method of administration, and the duration or frequency of administration.

4.1.3.2 Special professional titles and qualifications

Until recently, nurses had the opportunity to obtain a level of specialisation by acquiring particular professional qualifications or obtaining a specific professional title.

A list of these special professional titles and special professional qualifications was defined in the RD of 27 September 2006.[126] The RD covers the following special professional titles (applicable to individuals holding a diploma or degree as a graduate nurse or bachelor nurse, with the exception of the "graduate nurse - HBO5" awarded in the context of higher professional education by the Flemish Community):

- nurse specialised in pediatrics and neonatology;
- nurse specialised in mental health and psychiatry;
- nurse specialised in social health care;
- nurse specialised in geriatrics;
- nurse specialised in intensive care and emergency care;
- nurse specialised in oncology;
- nurse specialised in medical imaging;
- nurse specialised in ostomy therapy and wound care;
- nurse specialised in peri-operative care, anesthesia, surgical assistance and instrumentation (abbreviated "peri-operative care");
- nurse specialised as a perfusionist;
- nurse specialised in anesthesia.

In addition to special professional titles, **special professional qualifications** were also granted. These qualifications are available to individuals holding a degree of graduate nurse, bachelor in nursing, those with a nursing diploma [for holders of the "Diploma of graduate nurse" delivered in the context of higher professional education by the Flemish Community], as well as those with a brevet or title of nurse, as defined in the RD. These qualifications include:

- nurse with special expertise in mental health and psychiatry;
- nurse with special expertise in geriatrics;
- nurse with special expertise in wound care;
- nurse with special expertise in palliative care;
- nurse with special expertise in diabetology;
- nurse with special expertise in the evaluation and treatment of pain.

The procedures with regard to the recognition of these special professional titles and special professional qualifications are regulated by a Decree of the Flemish Government of 15 January 2016 and a Decree of the French Community Government of 19 October 2016.[127, 128]

To hold a special professional title or special professional qualification, nurses must meet specific recognition criteria established in a Ministerial Decree (MD, *Ministerieel Besluit – Arrêté Ministériel*). These criteria clearly outline the requirements for both the theoretical and practical aspects of continuing education. Yet, there are no additional competences specified that are necessary to fulfil the role of the respective professional title.

- Special professional title: this requires at least 900 effective hours of education, which corresponds to 60 ECTS credits. It consists of a theoretical part comprising at least 450 effective hours (equivalent to 30 ECTS credits) and a clinical part with at least 450 effective hours (also equivalent to 30 ECTS credits).
- Special professional qualification: this requires at least 150 effective hours, which corresponds to 10 ECTS credits. It consists solely of a theoretical part of with a minimum of 150 effective hours.

Currently, seven MDs have been published, which encompass six out of eleven special professional titles and four out of six special professional qualifications.[f]

As mentioned in the description of the different types of nursing acts (section 4.1.3), certain nursing acts are restricted to individuals holding a special professional title and/or qualification. For example, nurses who hold the special professional title of 'specialised nurse in intensive care and emergency care' (under certain conditions and when working in the intensive care, specialised emergency care, mobile emergency group and emergency medical assistance functions) are authorised to perform certain additional technical nursing acts and delegated medical acts.[g] These nursing acts are outlined in Annex IV of the 1990 RD on Nursing.[122] Similarly, nurses with the special professional title of 'specialised nurse in paediatrics and neonatology' can perform these additional acts in the paediatric and/or neonatal intensive care, specialised emergency care, and emergency medical assistance settings (Article 7*bis*).[122]

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[f] These special professional titles are mental health care and psychiatry; geriatrics; intensive and emergency care; oncology; pediatrics and neonatology; perioperative care. Special professional qualification are mental health care; geriatrics; in diabetology; palliative care.

[g] These additional technical nursing acts are cardiopulmonary resuscitation by invasive means (B1), assessment of parameters belonging to the cardiovascular, respiratory and neurological functional systems (B1), use of devices for monitoring the cardiovascular, respiratory and neurological functional systems (B1); reception, evaluation, triage and orientation of patients (B1). The delegated medical act is placement of an intraosseous catheter (C).

Furthermore the presence of nurses with special professional titles and/or qualification is frequently required in the recognition criteria for hospital services, functions and programs. For instance, one of the recognition criteria for an emergency department is that it should be staffed by at least two nurses, of whom at least one should hold the special professional title of 'intensive and emergency care' (Article 11).[129] Similarly, in an intensive care department, there should be a minimum of two nurses for every six beds, and at least one of them should possess the special professional title of 'intensive and emergency care' (Article 18).[130]

4.1.3.3 Clinical function model

In May 2018, the Federal Council for Nursing *(Federale raad voor verpleegkunde – Conseil fédéral de l'art infirmier)* introduced a new function model (Figure 7) for nursing care of the future describing various (new) nursing expert functions.[131] This function model, known as the 'clinical function ladder', outlines distinct function profiles and associated competences, including the specialised nurse, nurse consultant, APN, and clinical nurse researcher. Since then, several initiatives have been undertaken towards the implementation of this model.

Figure 7 – Clinical function model for nursing care of the future

Source: adapted from Federal Council for Nursing[132]

4.1.3.4 Advanced practice nurse

Since 22 April 2019, the position of advanced practice nurse (APN) *(verpleegkundig specialist – infirmière et infirmier de pratique avancée)* has been officially added to the coordinated law of 10 May 2015 on the Practice of the Healthcare Professions (Box 4).[116] To qualify as an APN, individuals must hold at least a master's degree in nursing sciences, are deployed in the context of complex nursing care and perform medical and/or psychotherapeutic interventions aiming at maintaining, improving, and/or restoring the health of the person seeking care (Article 46/1 §2). APNs are specialising in a particular field or patient group and collaborate closely with (general) practitioners and other healthcare professionals.

Although this new legal framework marks an important first step towards officially recognising advanced positions in the nursing profession, there are several uncertainties and unclarities that leave room for interpretation (section 0). These ambiguities are expected to be clarified through executory RDs. Furthermore, before the function of APN can be legally implemented, criteria for obtaining, maintaining and regaining the APN title must be defined by the Crown, following the non-binding advice of the Federal Council for Nursing. Regarding the medical interventions that APNs will be allowed to perform, as well as the conditions to which these medical interventions must be carried out, the Technical Commission for Nursing *(Technische Commissie voor Verpleegkunde – Commission Technique de l'Art Infirmier)* and the High Council of Specialised Physicians and General Practitioners *(Hoge raad van artsen-specialisten en van huisartsen – Conseil supérieur des médecins spécialistes et des médecins généralistes)* have an advisory role. The Council of Federal Ministers has the final authority to decide which medical interventions will be allowed. Consequently, both political approval and non-binding advice of the professional organisations of nurses and physicians are required, making the further execution of Article 46/1 challenging.[133]

Box 4 – Article 46/1 of the coordinated law on the Practice of the Healthcare Professions[116]

Artikel. 46/1. § 1. Niemand mag de titel van verpleegkundig specialist dragen als hij niet in het bezit is van een in Artikel 45, § 1, bedoeld diploma of titel van verpleegkundige verantwoordelijk voor algemene zorg en als hij niet aan de bepalingen van dit artikel beantwoordt.

De Koning bepaalt, na advies van de Federale raad voor verpleegkunde, de criteria om de titel van verpleegkundig specialist te verkrijgen. Deze criteria voorzien minstens een masterdiploma in verpleegkundige wetenschappen.

§ 2. Bovenop de uitoefening van verpleegkunde zoals vermeld in Artikel 46 verricht de verpleegkundig specialist, in het kader van *complexe verpleegkundige zorg, medische handelingen met het oog op het behoud, de verbetering en het herstel van de gezondheid van de patiënt*.

De in het eerste lid bedoelde zorg wordt verricht met betrekking tot een *welbepaalde patiënten doelgroep* en gebeurt in *nauwe afstemming met de arts en de eventuele andere gezondheidszorgbeoefenaars.*

De Koning bepaalt bij een besluit vastgelegd na overleg in de Ministerraad, na advies van de Technische commissie voor verpleegkunde en de Hoge Raad voor Artsen-specialisten en Huisartsen, de activiteiten die de verpleegkundig specialist kan uitvoeren. Hij kan eveneens, na advies van de Technische commissie voor verpleegkunde en de Hoge Raad voor Artsen-specialisten en Huisartsen, de voorwaarden bepalen waaronder de verpleegkundig specialist deze activiteiten kan uitvoeren.

§ 3. De specialistische verpleegkundige verstrekkingen bedoeld in paragraaf 2, worden opgetekend in een verpleegkundig dossier.

Article. 46/1. § 1. Nul ne peut porter le titre d'infirmier de pratique avancée s'il n'est porteur d'un diplôme ou d'un titre d'infirmier ou d'infirmière responsable de soins généraux tel que visé à l'Article 45 et s'il ne répond pas aux dispositions du présent article.

Le Roi fixe, après avis du Conseil fédéral de l'art infirmier, les critères pour obtenir le titre d'infirmier de pratique avancée. Ces critères prévoient au minimum un diplôme de master en sciences infirmières.

§ 2. En plus de l'exercice de l'art infirmier tel que visé dans l'Article 46, l'infirmier de pratique avancée pratique, dans le cadre *des soins infirmiers complexes, des actes médicaux en vue du maintien, de l'amélioration et du rétablissement de la santé du patient.*

Les soins visés dans le premier alinéa sont pratiqués par rapport à *un groupe cible de patients bien défini* et sont *posés en étroite coordination avec le médecin et les éventuels autres professionnels de soins de santé.*

Le Roi fixe, par arrêté délibéré en Conseil des ministres, après avis de la Commission technique de l'art infirmier et du Conseil supérieur des médecins spécialistes et des médecins généralistes, les activités que l'infirmier de pratique avancée peut pratiquer. Il peut également, après avis de la Commission technique de l'art infirmier et du Conseil supérieur des médecins spécialistes et des médecins généralistes, fixer les conditions dans lesquelles l'infirmier de pratique avancée peut accomplir ces activités.

§ 3. Les prestations infirmières de pratique avancée, telles que visées dans le paragraphe 2, sont consignées dans un dossier infirmier.

4.1.3.5 Ambiguities related to the roles, tasks and competences of APNs

Solely focus on clinical roles

Advance practice nursing covers a variety of roles in which nurses work at an advanced level. In addition to providing nursing consultations (involving of various tasks such as clinical care, coaching and education of the patient and his environment), APNs can also take up other roles. These roles include organiser of quality care and innovation leader, clinical and professional leader, collaborator, researcher, communicator and health promoter (section 1.1.3).[113] A competent APN seamlessly integrates the competencies associated with all these roles alongside providing advanced clinical care.

However, the current Belgian legal framework (Article 46 § 2 of the coordinated law on the Practice of Healthcare Professions) appears to primarily address the clinical roles (as it refers to medical interventions in order to maintain, improve or restore the health of the person seeking care, Box 4) and not the other roles. The explanatory report of the law, however, explicitly states that the description of the role of the APN in the law is not exhaustive and only covers clinical activities that are part of the coordinated law on the Practice of Healthcare Professions.[134] The other roles, covering the organisation of care, evidence-based nursing research, and implementation of innovative practices are not encompassed by the federal legislation in Belgium because the regulation of broader care organisation falls under the jurisdiction of the Communities. Therefore, a legal framework that completely addresses all APN roles would necessitate a collaboration (and development of a framework) at the level of the Communities.

No clear organisational relationship to other nursing roles

The explanatory report of the law explicitly highlights the distinctions between an advanced practice nurse (APN) and a general or specialised nurse, emphasising the higher level of education and practice associated with the APN role. In the explanatory report of the law, it is specified that the APN differs from a general nurse or a specialised nurse because of the

higher level of education and a higher level of practice of the profession.[134] The latter probably refers to more legal competencies related to the clinical practice and the ability to work autonomously.[133] At least, the explanatory report seems to go in that direction as it refers to the need for nurses, beyond those other than nurses with a special professional title or qualification, who can perform certain complex medical interventions for which other nurses are not qualified.[134] Yet, at the same time, the explanatory report highlights that there is no hierarchical relationship between the APN and the other nurses (regardless of their special professional title or qualification). It stresses that APNs are considered to work complementarily to other nurses. This raises questions regarding the organisational relationship to other nursing roles.

Unclarity in notions: need for clarification in RDs

There are several areas in the current provisions of Article 46/1 that lack clarity and need further clarification through executory RDs.[116] For example, the law states that the APN works in the domain of **complex nursing care**, but it does not provide a clear definition of what this entails.

In addition, the APN is allowed to perform **medical interventions** with respect to a **well-defined patient target group, in close concertation with** physicians and/or other healthcare professionals. However, there is ambiguity about which medical interventions are included in this, as the explanatory report refers to these medical interventions (for which other nurses are not qualified) without specific details.[134] As mentioned before, the Technical Commission of Nursing and the High Council of Specialised Physicians and General Practitioners have an advisory role in determining which medical interventions an APN can perform and the conditions for doing so.

The law also lacks specification of what constitutes 'a well-defined group of patients'. Furthermore, it is anticipated that the APN will take place in 'close concertation with the physician and/or other healthcare professionals', but this formulation raises questions about the nature of their working relationship (i.e. hierarchical or not) and the extent of the APN's autonomy.

The notion 'in close collaboration' is a novel concept in Belgian health legislation, as the existing terminology only refers to 'under supervision' and 'based on medical prescription' (section 4.1.3.1). However, the law on quality practice in health care (hereafter referred to as the 'Quality Practice Act') introduces the concept of 'partnerships between healthcare professionals' *(samenwerkingsverbanden – accords de coopération)*.[135] The notion is embedded in a provision of the group prescription.

Group prescriptions can be drafted for a partnership as a whole, where different diagnostic and therapeutic interventions of different disciplines can be asked for or instructed (Article 29).[135] In that sense, it includes a delegation of competencies to the healthcare professionals of the partnership. Possibly, the notion 'partnership' refers to existing interdisciplinary collaborations such as in community health centres[136], but it could also refer to the collaboration form between nurses and physicians or between several nurse profiles within a care trajectory of a patient. The executory decrees that are necessary to define the exact meaning and modalities of these partnerships (i.e. the healthcare professionals that can be part of a partnership, the collaboration between healthcare professionas within a partnership (Article 32) are not yet existing at the moment of the writing of this scientific report.[135] However, it seems that there are opportunities to make a link with the 'close collaboration' stated in the law introducing the scope of the APN.

Furthermore there is inconsistency in the terminology used in paragraphs 2 and 3 of Article 46/1 in the coordinated law on the Practice of Healthcare Professions.[116] In paragraph 3, it mentions 'specialist nursing interventions' – as meant in paragraph 2 – should be recorded in the nursing record, whereas in paragraph 2 the term 'medical interventions' is used instead of 'specialist nursing interventions' (Box 4).

4.1.3.6 Nurse consultant

While the clinical function ladder (Figure 7) also foresees the role of 'nurse consultant' *(verpleegkundig consulent – infirmière et infirmier consultant)* within the category of 'specialised care', there is no intention of the Belgian legislator to establish a separate legal framework for this role. In the previous legislative term, Minister of Public Health and Social Affairs, Maggie De Block, expressed her opposition to differentiate nurse consultants from specialised nurses, as these two profiles closely align.[137] Nonetheless, this does not prevent specialised nurses from taking on the function of a nurse consultant. The current Minister, Frank Vandenbroucke, seems to maintain a similar perspective.

The title of nurse consultant lacks legal regulation but has been defined by various stakeholders in the field as a particular type of specialised nurse with distinct roles.[138-140] Nurse consultants operate at an organisation-wide and/or cross-organisational level, providing patient care with specialised expertise. Their activities can be patient-oriented or colleague-oriented, but often involve a combination of both. They can focus on a specific patient population, care programme, or certain care domains. Examples of nurse consultants include diabetes educator, breast nurse practitioner, palliative support consultant, psychiatric or geriatric liaison, aggression management consultant, fall prevention consultant, lifting consultant, etc.

Nurse consultants frequently participate in patient education and training, as well as the training of other healthcare providers within their expertise. They may also participate in nursing scientific research (e.g. data collection) and collaborate on research projects with APNs. Although nurse consultants may perform nursing duties, their specialised responsibilities require dedicated time and attention. A number of responsibilities overlap with those of reference nurses (section 4.1.3.7), but are more at the organisational level or broader. For instance, a nurse consultant might coordinate the activities of reference nurses in a specific healthcare domain. In practice, healthcare settings typically require nurse consultants to hold at least a bachelor's degree in nursing, supplemented by specific training in their area of expertise.

Although the function of nurse consultant is explicitly foreseen in the clinical function ladder, it has not been integrated into the coordinated law on the Practice of Healthcare Professions.[116] There are currently no plans to include it in the ongoing reform. As a result, nurse consultants are likely to be categorised as specialised nurses.

Once the legal framework for APN will be implemented, specific medical and complex nursing interventions will be reserved for APNs. This was confirmed in the preparatory work related to the APN legal framework, where it was stated that "*In addition to nurses with a special professional title and/or qualification, there is a need for a nurse who, given thorough training, can perform complex nursing care and perform certain medical acts (for which other nurses are not competent) with a view to maintaining, improving and restoring the health of the patient".*[134] While the exact definitions of complex nursing care and the medical interventions reserved for APNs is yet to be determined (section 0), it is highly likely that these reserved medical interventions will often be part of nursing consultations. This would imply that some (parts of) nursing consultations will be exclusively the domain of action of APN. It remains an open question how this evolution will impact the role of nurse consultants (and other nurses currently involved in nursing consultations).

4.1.3.7 Reference nurse

Similar to the nurse consultant, the function of a reference nurse lacks legal regulation but has been defined by multiple stakeholders in the field.[138, 139, 141] Reference nurses are specialised nurses with expertise in a specific nursing-related domain, patient group, or aspect of nursing care. Unlike nurse consultants, reference nurses primarily service within their nursing team, rather than being organisation-wide and/or across organisations. Some examples of reference nurse roles include wound care, geriatrics, lifting coach, pain management, infusion therapy, psychoeducation, incontinence management, etc.

Reference nurses are mainly active as a nurse and typically have limited or no dedicated time for their reference role. Their responsibilities encompass both patient-focused and colleague-oriented tasks.

They offer guidance and support to patients and their families in managing straightforward self-care issues due to illness or treatment. Additionally, they organise appropriate nursing care within their specialised area and assist with specific technical diagnostic or therapeutic procedures. Reference nurses actively promote a patient-centred approach among colleagues, encouraging higher-quality observations, participation in decision-making, and adherence to protocols, standards, and clinical pathways. They also provide instruction and training to fellow nurses. Furthermore, within their specialised domain, they serve as crucial communicators, collaborating with healthcare professionals from other disciplines within their department or team. They maintain regular communication with nurse consultants, APNs, or nurse middle managers, facilitating information exchange among their peers. In cases where multiple reference nurses exist within an organization for a specific care domain, coordination, quality improvement initiatives, and collaboration are typically overseen by a nurse consultant, APN, or nurse middle manager.

As the function of APNs becomes fully established, reference nurses will confront similar considerations as nurse consultants regarding the nursing and medical tasks they are authorised to perform. Some actions that currently fall within the scope of nursing consultations will be reserved for APNs.

4.1.3.8 Basic nurse and nurse responsible for general care

At the time of writing this scientific report, an amendment to the coordinated law on the Practice of Healthcare Professions was accepted (Law of 28 June 2023) to include the positions of 'basic nurse' and 'clinical nurse researcher' in the legal framework.[142] The newly introduced title of **'basic nurse'** *(basisverpleegkundige – assistant en soins infirmier)* will allow individuals holding a nursing degree that do not meet the minimum training requirements established at the European level to practice nursing within specific competencies and activities established for them. This primarily refers to nursing programs equivalent to EQF level 5.[143] The specific limits of their competencies and activities will be defined by RD, scheduled for Autumn 2023.

Furthermore, the existing title of 'nurse' referred to in Article 45 of the law concerning the Practice of the Healthcare Professions has been modified. It is now replaced by the title of **'nurse responsible for general care'** *(verpleegkundige verantwoordelijk voor algemene zorg – infirmier responsable des soins généraux*, EQF level 6). This change is made to align with the designation used at the European level for the nursing profession in European Directive 2005/36 on the recognition of professional qualifications (following its amendment by the European Directive 2013/552. This amendment aims to clearly identify nurses who hold a diploma meeting European training requirements for this profession. Consequently, these nurses can be recognised at the European level as nurses and are eligible for professional mobility within the European Union.

It should be mentioned that the adapted regulation has introduced several unclarities, especially concerning the role of the basic nurse:

- Article 45, §1/2 mentions that the basis nurse is competent to perform nursing acts as outlined in Article 46 (section 4.1.3.1) within the limits of the competencies and activities defined by the Crown. Therefore, a RD is required to clarify the extent of the legal competencies of the basic nurse.
- It is also stated that the basic nurse can carry out nursing acts 'autonomously' in contexts with lower complexity. Similar to the criticisms raised regarding APNs, the legislator did not provide a clear definition of what contexts with lower complexity entail. In light of the requirement to perform B- and C- acts "under supervision", it is also not clear what performing acts 'autonomously' means, as nursing acts encompass all three types of acts (A-B-C).
- In complex care contexts, the basic nurse works within a structured care team, in close collaboration with a nurse responsible for general care or a physician. Yet, it remains unclear what complex care contexts, structured care teams, or in close collaboration signify. This ambiguity must be addressed, especially in the context of the hierarchy discussion between APNs and other nurses.

4.1.3.9 Clinical nurse researcher

The **clinical nurse researcher** is available to individuals holding a diploma or degree as a nurse responsible for general care and a PhD. The role of a clinical nurse researcher involves being a clinical expert with advanced academic competencies.

In this capacity, the clinical nurse researcher primarily engages in teaching and research activities, including the development of new knowledge and the implementation of evidence-based practices in nursing and care. They focus on enhancing knowledge in the nursing field, optimising care processes in specific care settings or specialty domains, and improving clinical care outcomes for patients. By combining clinical expertise and advanced academic teaching and research skills, the clinical nurse researcher acts as bridge figure between the healthcare and education sector, offering advisory support to improve the quality of care and the nursing profession.[142] We will not explore this role any further due to the clinical nurse researcher's scope of practice and the likely reduced focus on direct clinical practice.

4.1.4 General conditions for healthcare professionals

In order to become a healthcare professional, certain general conditions must be met. Each healthcare professional most meet the educational requirements relevant to their profession, which can vary between healthcare professions.

Once a healthcare professional obtains a valid diploma, they need a visa. Typically, the Federal Ministry of Public Health grants this visa automatically based on the information received from educational institutions (e.g. universities, college universities, etc.). As of 1 January 2022, healthcare professionals are also required to maintain a portfolio demonstrating their competences and experience.[135] This portfolio requirement was introduced to emphasise the importance of continuing education for maintaining quality healthcare.[136] However, the legislation provides limited guidance on the specific content and format of a valid portfolio. The explanatory memorandum suggests that this entails “additional information beyond the information that is kept by the government, such as proof of participation in continuous education to stay updated with the relevant healthcare techniques”.[135]

Since the legislator did not define the content of the portfolio, each field of professionals can provide input regarding its relevant content. For APNs, for instance, the portfolio can include activities contributing to the development of CanMEDS areas of competence in a specific domain, such as academic degrees, relevant work experience, participation in continuing education, teaching activities, involvement in quality initiatives and, memberships in relevant advisory and governing boards, attendance at conferences, and publications.[144] Continuous education will become one of the requirements to maintain the professional title of APN once Article 46/1 is executed.

With regard to the format of the portfolio, Article 8 of the Quality Practice Act prefers electronic storage.[135] It is also important to stress that there is a direct link between the portfolio and the legal competence to perform healthcare tasks. Article 8 clearly states that a healthcare professional can only carry out tasks for which they can demonstrate actual competence and sufficient experience.[135] Therefore, just because a healthcare professional is legally permitted to perform certain tasks based on the Law on the Practice of Healthcare Professionals, it does not automatically imply they can carry them out (i.e. is competent). This restriction limits a healthcare professional's legal competence to acts falling within their healthcare domain and for which they can prove they possess the necessary competence and experience to perform safely and effectively.

To ensure the quality of healthcare services, the Directorate-General Healthcare of the FPS Public Health, Food Chain Safety, and Environment will establish a register of practices. The Quality Practice Act (Article 42) requires healthcare practitioners to report the type of healthcare they provide, the location, and whether it involves collaboration with other healthcare practitioners.[135] However, at the moment of the writing of this scientific report, the register of practices is not yet active, and it remains unclear which collaboration modes will require registration, such as collaborations following group prescriptions.

4.1.5 New opportunities

Upon the government's request, the Minister of Social Affairs and Public Health commissioned a working group of experts to provide recommendations regarding the possibilities of task differentiation, task delegation and task shifting with regard to nursing care.[117] Their final report, issued in March 2023, outlined various nursing and medical actions that APNs could incorporate into specific phases of patient care or particular care contexts. It also identified the target patient population and the meaning of concertation with physicians. For example, the report emphasised that APNs can make a significant impact on the quality of care for chronic patients, particularly those whose primary diagnosis was made by a physician. In these cases, APNs could perform less complex or clearly defined medical actions and complex nursing tasks, always within interprofessional collaborative arrangements and in close collaborative arrangements *(samenwerkingsafspraken – accords de coopération)* with involved physicians.

While the federal working group on task differentiation, delegation, and shifting did not precisely define the terms 'collaborative agreements' and "close collaboration', it suggests that APNs should have the autonomy to work independently.[117] The group provided examples to illustrate the potential responsibilities of APNs, one of which pertained to oncology. APNs could take on the role of monitoring patients during treatment, enhancing their self-sufficiency, ensuring therapy adherence, proactively addressing severe adverse events, facilitating care coordination, and delivering accessible psychosocial support. To achieve this, the APN's scope of practice might expand to include the ability to autonomously initiate diagnostics for treatment-related toxicities, request additional tests, and promptly administer peripheral medications (e.g. for nausea and vomiting). The alignment of these recommendations with the advice from the High Council of Specialised Physicians and General Practitioners remains to be seen.

The elaboration of the implementing decrees for APNs, in which the autonomous initiatives in the area of the eight competences within interprofessional partnerships can be integrated, is also an option, given that the APN function already anchored as a healthcare profession in the Law on the practice of the healthcare profession.

4.1.5.1 Regulatory sandboxes

As became clear from the overview of Belgium's current legal framework for the nurse profession, it lacks flexibility, often adhering to the principle "if it is not explicitly listed, it is not allowed". Modifying the lists related to nursing, such as A-B-C acts, professional titles, and competencies, is a complex process due to mandatory consultations and political procedures. Consequently, adapting the legal framework to evolving healthcare contexts proves challenging. In light of these constraints, the federal working group on task differentiation, delegation, and shifting explored the concept of "regulatory sandboxes".[117]

The notion of a regulatory sandbox draws inspiration from the concept of medical experiments. It involves creating a specific legal context to introduce a new healthcare profession or incorporate new competencies into an existing profession.[117] The purpose is to address emerging healthcare challenges, but not indefinitely. Instead, it operates within a defined time frame. During this period, experts assess how this new profession aligns with the existing system and evaluate the initially established legal framework. The key question at the sandbox's conclusion is whether this new legal framework effectively resolves the issue and, if so, within which legal parameters.

The concept of regulatory sandboxes already exists within the Dutch legislation on healthcare professions, using a so-called experiment-article makes it possible to set them up. A professional with an experimental profession may perform certain designated reserved actions autonomously during this period. The exercise of reserved actions is monitored during the experimental period and an evaluation study takes place. If evidence shows that the registration ensures effective (patient satisfaction) and efficient (care tasks are performed by the right professional) care, the experimental

profession will be included in the BIG register as a healthcare profession and definitive independence will therefore be granted. If the experiment shows that there is still insufficient added value, the registration in the BIG register will lapse. The Dutch Minister for Medical Care takes the final decision.[145] Within the Dutch healthcare system these regulatory sandboxes have already lead to the introduction of the physician assistant and the dental hygienist. It should however be mentioned that the Dutch legal framework for healthcare professions is less strict than the Belgian law on the practice of the healthcare profession, raising doubts about the acceptance of a similar article in Belgian legislation.

Nevertheless members of the federal working group on task differentiation, delegation, and shifting indicated that these sandboxes can be important for APNs.[117] It can offer the possibility to (i) provide a secure framework for APNs who already, whether in research contexts or not, perform tasks within the eight competencies and (ii) facilitate the natural evolution of their scope of practice. Applied to APNs, in a regulatory sandbox or an experimental article, the APNs could take autonomous actions regarding the aforementioned eight competences, within a defined time frame. Within this time frame, this 'new' way of working could be evaluated. If the evaluation study shows that granting legal authority (or the broadening of the scope of practice) contributes to the care and the care organisation, and that these APNs handle the powers they have been given with due care, a decision can be made to convert these temporary experiments into definitive regulations. This can lead to the definitive embedding of the ability to take autonomous initiatives with regard to the previously mentioned eight powers for the APN, along with full responsibility for these actions.

4.1.5.2 Privileging

The federal working group on task differentiation, delegation, and shifting discussed the concept of privileging or authorisation, which involves granting individual healthcare providers permission to perform specific procedures and services based on an assessment of their actual professional competences, even if they are from a legal point of view not competent to perform these acts. To a certain extent, this is similar to the C-nursing acts, meaning that medical acts can be delegated to a nurse.

The difference is that within the concept of privileging the ‘privileged acts’ are not listed in a RD, but are privileged or delegated based on the actual professional competency of a healthcare professional.

The members of the working group raised several concerns regarding this topic, including bureaucratic and administrative burden, limited applicability in all sectors, the risk of healthcare professionals being 'forced' to take on tasks that they may not be suitable for due to the shortage of nurses, a strong focus on technical medical actions that could potentially be performed earlier by medical support professions, and potential restrictions in actions that may be performed in the context of privilege. Due to these concerns, the federal working group on task differentiation, delegation, and shifting does not currently view this option as suitable for further exploration. Instead, they suggested that competence can be demonstrated through the portfolio, which may include micro-credentials or other training attested by healthcare professionals with legal competence. Additionally, the 2022 advice from the Federal Council for Nursing and Technical Commission for Nursing regarding the addition of medically entrusted acts can provide valuable insights in this context.

It is worth noting, however, that the Law of 22 April 2019 on the Quality Practice Act does offer some possibilities in this regard.[135] Specifically, when it comes to qualifying the illegal practice of medicine between official healthcare professions, the Commission of Control established by this law will only categorise it as illegal medicine if the unauthorised practice raises concerns of serious consequences for the patient or public health. For example, if a nurse performs a medical intervention that is not officially a C-act, the Commission of Control can only intervene when the medical intervention raises concerns about serious consequences for the patient or public health.

By placing the control of illegal exercise in the Quality Practice Act, the legislator has given a new approach to the control of this crime. The criterion for healthcare professionals is no longer solely whether an action is legally allowed or not, but also whether there is a significant risk to patients or public health. This places a new responsibility on healthcare professionals to consider whether an unauthorised practice can still be justified from a safety

perspective. This shift aligns with the underlying goal of the Quality Practice Act, which is to provide high-quality care, and it allows for a more practical response to immediate organisational challenges. Healthcare professionals are entrusted with a responsibility that is not precisely defined due to the open terms "serious" and/or "imminent" consequences. Moreover, this approach does not negate the criminal nature of illegal medical practice, even when conducted safely and responsibly.[146]

4.2 Nursing consultations

Currently, there is no specific legal framework for nursing consultations in Belgium. The exact definition of a nursing consultation and its covered activities remains undefined. In practice, the content of the nursing consultations varies, but basically consist of clinical, educational, support, and/or coordinating activities. Depending on the region (Wallonia, Flanders, Brussels), the care domain (e.g. wound care versus oncology), the setting (e.g. hospital versus ambulatory), the scale of the setting, etc. the specific content of the consultations differs (Chapter 5). Moreover, the practice of nursing consultations is **not legally reserved** to particular nurse profiles. Hence, nursing consultations are currently performed by a heterogeneous group of nurse profiles, such as APNs, NCs or specialised nurses with a special professional title or professional competence. Some of these profiles are overlapping: NCs for instance are often specialised nurses.

While some profiles have a specific legal framework, nurses engaged in nursing consultations are restricted to performing authorised nursing and medical activities outlined in existing legislation (section 4.1.3.1). Although there is a claim by nurses involved in nursing consultations to be able to work autonomously (e.g. diagnostics, follow-up of patients) and independently (i.e. without the involvement of a physician) in certain less complex medical procedures (such as catheterisations or puncture) and have prescriptive competencies regarding specific medication, they are currently **legally constraint from doing so**.

Despite the legal constraints that exist due to the strict legal framework provided by the Law on the Practice of the Healthcare professionals, it is not forbidden to do nursing consultations. The lack of a specific legal framework for these nursing consultations can be seen rather as an opportunity than a challenge. It allows nursing care and healthcare practices to establish nursing consultations wherever they are deemed necessary, adapting the format accordingly.

If nursing consultations were rigidly defined by law, the flexibility necessary for evolving healthcare needs would be lacking. In light of ongoing changes in legal frameworks for various nursing professions and the influence of the Quality Practice Act, developing a framework for nursing consultations should involve assembling the necessary components rather than creating an entirely new structure.

5 SURVEY ON THE IMPLEMENTATION OF NURSING CONSULTATIONS IN BELGIUM

5.1 Key points

- This chapter provides an overview of the implementation of nursing consultations in Belgium through an open survey: respondents are nurses that identified themselves as performing nursing consultations. A total of 638 respondents completed the survey, including 107 respondents (16.8%) working as advanced practice nurses (APNs), 162 (25.8%) working as nurse consultants, 222 (34.8%) working as specialised nurses, and 147 respondents (23.2%) working as other type of nurses. Most of the respondents work in a general hospital (42.2%) or in a university hospital (26.5%). There are 23.2% of respondents working in primary care: 9.1% conduct nursing consultations in a community health centre, 8.0% in a general GP practice and 7.1% in a home care organisation.
- The top four areas or setting of specialisation of respondents providing nursing consultations are wound care (21.3%), primary care (21.2%), oncology (19.7%) and/or diabetes (19.0%).
- Most of the respondents who provide nursing consultations in Belgium have a considerable level of formal education. Specifically, 84.5% of the respondents have a bachelor's degree. However, 10.2% of the respondents who report providing nursing consultations only hold a graduate degree. Furthermore, 72.1% of the respondents have pursued additional qualifications beyond their initial nursing degree and 14.3% are currently undertaking further education. These additional qualifications tend to focus on specialisation areas such as diabetes, oncology, ostomy and/or wound care, healthcare management, and intensive and emergency care.
- Respondents self-evaluate their level of autonomy as moderate to high (mean score of 7.6 on a scale of ten). APNs exhibit the highest level of self-rated autonomy, with a mean score of 7.85, followed by specialised nurses (mean 7.7), nurse consultants (mean 7.51) and the other category (mean 7.33).
- The operationalisation of nursing consultations shows considerable variability in terms of organisational structure, financing, remuneration, accessibility, and availability. Respondents' answers to several organisational questions indicate that they tailor their nursing consultations to the specific needs of patients and their environment.
- Respondents appear to be generally very positive about the structural (e.g. legal and financial aspects, profile of the workforce and physical and organisational aspects) and process-related (e.g. communication and feedback, relational and psychosocial aspects and perception of other partners in the care process) aspects of nursing consultations.
- A considerable proportion of nurses who provide nursing consultation appear to be dissatisfied with the support they receive from their direct supervisor and/or organisational management. Furthermore, almost half of the respondents indicate that, in Belgium, there is a lack of a financial and legal framework for nursing consultations and a lack of coaching opportunities.
- Respondents indicate the following priority areas for the further implementation of nursing consultations in Belgium: a financial and legal framework, sufficient time to follow up scientific research, and adequate infrastructure or technology. Regional differences in these priority areas are observed. Respondents working in Flanders prioritise a financial and legal framework, while those in Wallonia prioritise supervision and the legal framework for nursing consultations. The respondents working in Brussels identify a financial framework and time constraints as priority areas for improvement.

5.2 Introduction

Despite the legal constraints that exist due to the strict legal framework provided by the Law on the Practice of the Healthcare professionals, it is currently not forbidden to perform nursing consultations in Belgium (section 4.2). However, at the moment, there is no comprehensive overview of the implementation of these nursing consultations available. It is important to gain insight in the current organisation and problems encountered to identify areas for improvement.

Therefore, the chapter focusses on two main research questions:

- What is the context in which nursing consultations are currently carried out in Belgium, and by whom and how (e.g., content, setting, division of tasks, responsibility, possible liability, financing modalities)?
- What are the current problems encountered in the implementation of nursing consultations and what are the priority areas for improvement?

5.3 Methods

5.3.1 Data collection tool and process

5.3.1.1 Survey development

A survey was developed by KCE using a combination of multiple-choice questions, open-ended questions, and ranking items in order of importance. The survey was composed of four primary sections, namely:

- General section that included descriptive questions such as age, education, place of employment, employment rate, etc.
- Section on the context of nursing consultations that contained questions concerning the implementation of nursing consultations in the organisation where the respondent is employed
- Section on nursing consultation activities (based partly on Hamric's integrative model of advanced practice nursing[2] and partly on the function/competence profiles of APNs[113] and nurse consultants[147])
- Section on statements regarding the implementation of nursing consultations: there were deived from a specific ad-hoc review of implementation literature, focusing on factors that hinder or facilitate the process.[148-152] These statements were graded on a five-point Likert scale ranging from "totally disagree" to "totally agree," and respondents were given the option to indicate 'not applicable' for each statement.

The draft of the survey was sent to other team members from KU Leuven and several Belgian academic and professional experts in the research domain. Based on their feedback, the survey was revised. Afterwards, the survey was translated from Dutch to French. To ensure consistency in structure and content of the survey in both languages, a KCE researcher translated the survey into French from its original Dutch version. The research team proofread both versions after comparing them for structural and content similarity. Subsequently, the survey was imported in the LimeSurvey software. To assess the understandability of the questions and user-friendliness of the online version, the survey was pre-tested by seven KCE colleagues who were not part of the research team. The survey can be obtained upon request.

5.3.1.2 Recruitment of respondents

The survey was launched on 12 January 2023 and ran until 15 February 2023, with a call for participation distributed via several communication channels: email to chief nursing officers (CNOs) of all Belgian hospitals, primary care networks, home care organisations, and professional organisations, social media channels of the KCE, etc. Respondents who met the criteria for nursing consultations (self-reported) and recognised themselves in the definition were able to access the survey through a weblink.

The nursing consultations performed by the respondents had to meet the following criteria:

- The purpose of the consultation is to provide patients and their environment with information, advice, support, and/ or follow-up from a holistic perspective. It is evidence-based and performed in an autonomous way;

- It is carried out by a specialised nurse with advanced clinical expertise and advanced competencies (e.g. APNs, nurse consultants, onco-coaches, breast care nurses or similar functions);
- It can be organised on the basis of a clear referral from other healthcare providers, at the request of patients and their enviroment, or on the initiative of the nurse who conducts the consultation. Nursing consultations can be planned, ad hoc, or unplanned;
- Nursing consultations can occur in different forms: face-to-face, telephone, video call, e-consultation, consultation at the bedside, etc.

If the nursing consultation of the respondent did not meet these criteria but one of the criteria below, they were asked not to complete the questionnaire:

- A specific technical examination (e.g. ultrasound) performed by a nurse on behalf of the physician;
- Nurses who are part of a multidisciplinary team but do not take on a leadership role or do not carry out the consultation partially or entirely autonomously;
- A one-time nursing consultation that can be charged by home nurses (nomenclature code: 429015);
- Nurses who perform primarily administrative and clinical support tasks (e.g. blood sampling) in a general practitioner practice.

5.3.2 Data-analysis

Data were subjected to statistical analysis using SPSS software, version 29, and graphical representations were created using Microsoft Excel. Whenever deemed appropriate, subgroup analyses were performed based on the setting and job title. A p-value of < 0.05 was considered as statistically significant. The setting was re-categorised as a general hospital, university hospital, primary care (GP practice, community health centre, and home care organisation), and other (psychiatric hospital, rehabilitation centre, and other). Likewise, job titles were regrouped into advanced practice nurse, nurse consultant, specialised nurse (with or without professional title and oncology nurse) and other (nurse in GP practice, nurse, occupational nurse, midwife, chief nurse, and other related professions).

5.4 Results

This chapter gives an overview of how nursing consultations are implemented in Belgium. Regional variations are mentioned if they are significant or relevant. For detailed results per variable and region, we refer the reader to Appendix 1.

5.4.1 Description of the respondents

In total, 638 respondents[h] completed the questionnaire of which 428 respondents worked in Flanders, 148 in Wallonia, and 62 in Brussels (see Table 11 for description of respondents' characteristics). The majority of the respondents (86.5%) are women (Figure 8) and the mean age is 44.1 years (standard deviation [SD] 10.3). The mean number of years of experience in performing nursing consultations and experience in the specialisation domain is 7.9 (SD 7.5) and 11.6 (SD 9.1) years, respectively. The median total employment rate among respondents is 72.5% (SD 31.1). Most of the respondents conduct nursing consultations in the provinces of Antwerp (20.7%), East Flanders (16.3%), and Flemish Brabant (12.4%). The provinces with the least representations of respondents are Luxembourg (3.6%), Namur (3.0%) and Walloon Brabant (2.4%).

[h] A total of 1 275 respondents started with the questionnaire, but 637 did not complete it. These incomplete responses were excluded from the analysis.

Figure 8 – Age distribution by gender

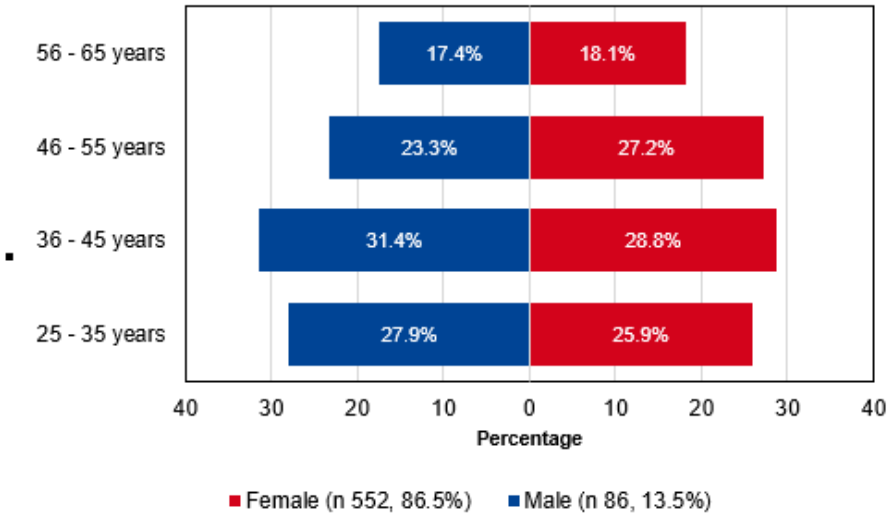


Table 11 – Description of the respondents

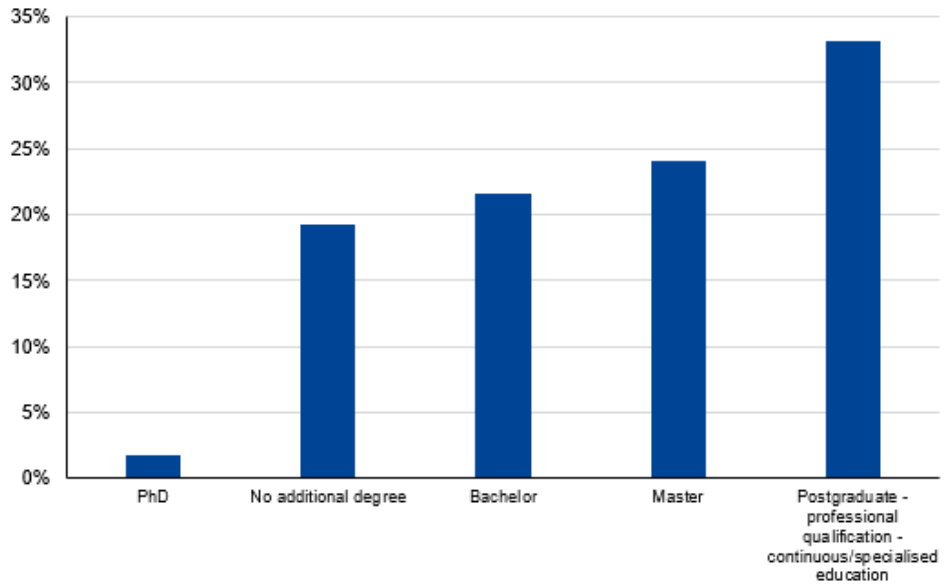
	Total	Flanders	Wallonia	Brussels	p
Number of respondents	638	428	148	62	
Mean age (years)	44.1	43.4	45.9	44.5	**0.035**
Sex (%)					0.122
Female	86.5	84.6	90.5	90.3	
Male	13.5	15.4	9.5	9.7	
Nursing degree (%)					**0.002**
Graduate degree in nursing	10.2	8.4	13.7	14.5	
Bachelor degree in nursing	84.5	85.0	84.5	80.6	
Bachelor degree in midwifery[j]	4.9	6.5	1.4	1.6	
Other	1.1	0.2	2.7	3.2	
Mean experience in performing NCs (years)	7.9	7.2	9.6	9.0	**0.001**
Mean expertise in specialisation domain (years)	11.6	11.5	11.5	12.8	0.535
Median total employment rate (%)	72.5	70.0	80.0	76.5	0.452

Note: multiple answers possible for the question on nursing degree

Regarding education (Table 11), 10.2% of the respondents obtained a graduate level degree in nursing, 84.5% a bachelor level degree.[i] Additionally, 4.9% of the respondents hold a degree in midwifery[j] and 1.1% hold a non-nursing degree (e.g. medical degree from foreign countries). We observe that a significant proportion of respondents who perform nursing consultations have followed or are following additional education on top of their nursing degree. Specifically, 72.1% of the respondents have obtained an additional degree and 14.3% are currently pursuing additional education.

Among the respondents who pursued additional education, 33.2% of those with a bachelor level degree obtained a postgraduate, professional qualification or continuous/specialised education as their highest additional degree. Meanwhile, 21.6% earned an additional bachelor degree, 24.1% achieved a master degree, and 1.8% attained a PhD[k] (Figure 9). Furthermore, 64.7% of graduate-level respondents obtained a postgraduate, professional qualification or continuous/specialised degree, which is not surprising given that graduate-level nurses typically cannot enrol in bachelor, master, or PhD programs. Most of the respondents have received additional training in various areas, including diabetes, oncology, ostomy care and/or wound care, healthcare management, and intensive and emergency care.

Figure 9 – Highest additional degree for bachelor level nurses



[i] Of which 0.8% followed the bridging program first had a graduate degree in nursing and followed the bridging program. In addition, 0.3% have a bachelor level degree from France or the United Kingdom.

[j] We kept these respondents in the sample because, according to Belgian law, midwives who obtained their degree before 1 October 2018, are permitted to practice nursing under the same conditions. [116]

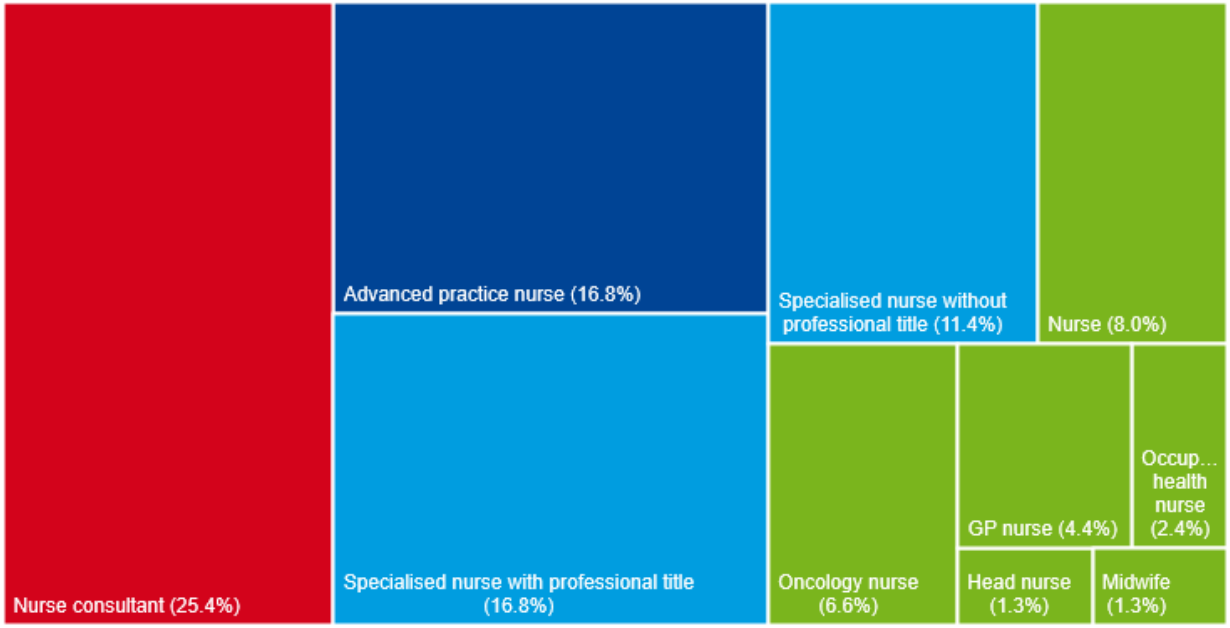
[k] This equals seven participants, all of whom are advanced practice nurses working within Flanders. Two of the respondents are employed in a general hospital, while the remaining five are affiliated with a university hospital. In addition, three of the participants have obtained a postgraduate degree, one finished a, additional continuous/specialised degree, and six have acquired an additional master degree.

5.4.2 Context of nursing consultation

5.4.2.1 Job title and type of organisation

Figure 10 shows the different job titles used among the respondents who perform nursing consultations. The most common job title is nurse consultant (25.4%), followed by an advanced practice nurse (16.8%) or a specialised nurse with a professional title (16.8%). Other job titles include specialised nurse without professional title (11.4%), nurse (8.0%), oncology nurse (6.6%), GP nurse (4.4%), occupational nurse (2.4%), head nurse or midwife (1.3%) and other (5.8%).

Figure 10 – Job title



Note: For further analyses, we have categorised these self-declared job titles in nurse consultants (highlighted in red), advanced practice nurses (highlighted in dark blue), *specialised nurses (highlighted in light blue), and other job titles (highlighted in green).*

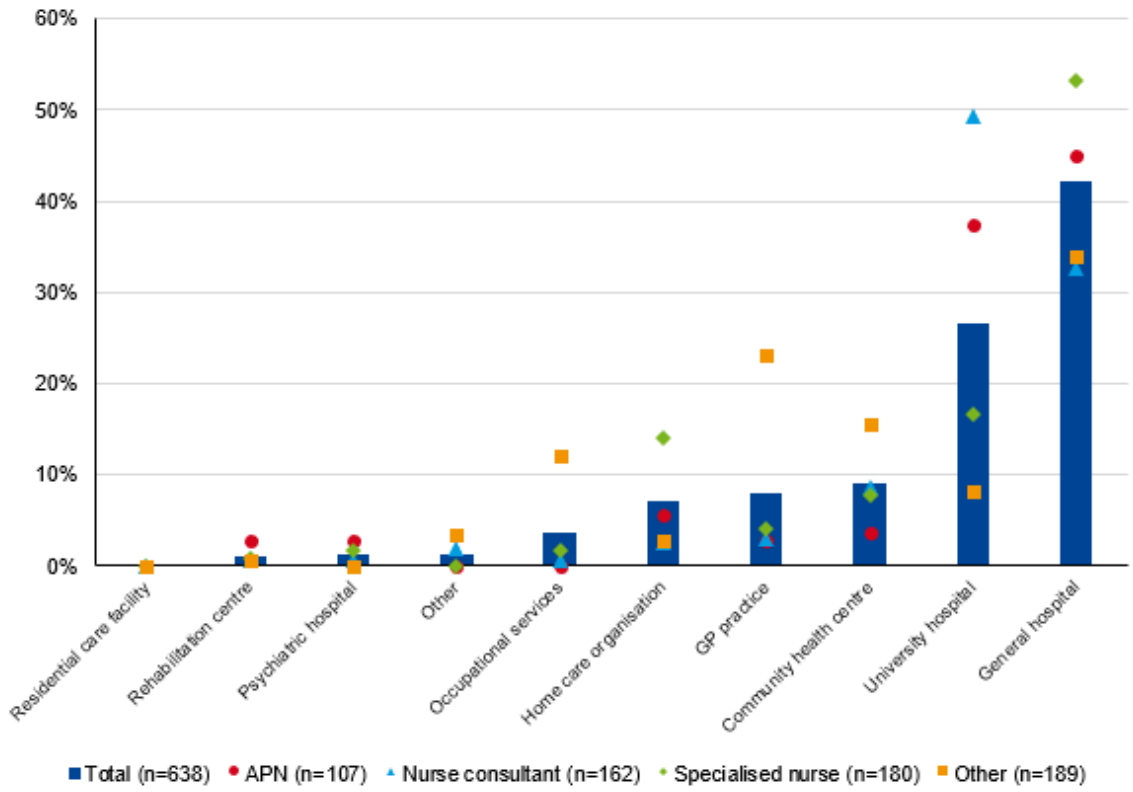
Respondents who perform nursing consultations work in a wide variety of organisations, including hospitals[l], primary care organisations (such as community health centres, general practices, and home care organisations), and occupational services (Figure 11). Most of the respondents (70.0%) work in the hospital setting (42.2% in a general hospital, 26.5% in a university hospital, and 1.3% in a psychiatric hospital). 24.2% work in the primary care setting: 9.1% conduct nursing consultations in a community health centre *(wijkgezondheidscentrum – maison médicale)*, 8.0% in a GP practice, and 7.1% in a home care organisation. Furthermore, 3.6% of the respondents work in occupational services, 1.1% in a rehabilitation centre and 1.3% in other care organisations. No respondents working in a residential care facility are present in our sample.

If we examine the functions of those who work in these organisations (Figure 11), we notice that in general hospitals specialised nurses and advanced practice nurses were the most common job titles. In university hospitals, nurse consultants and advanced practice nurses were more prevalent. The 'other' group, often identified by the job title of 'nurse', dominates the respondents working in community health centres, GP practices, and occupational services. Furthermore, specialised nurses are more frequently in home care services.

[l] The top five general hospitals where respondents work are Algemeen Ziekenhuis (AZ) Groeninge with 16 respondents (2.5%), Jessa Ziekenhuis and Centre Hospitalier de Mouscron with both 14 respondents (2.2%), Vivalia with 13 respondents (2.0%), Ziekenhuis Netwerk Antwerpen with 12 respondents (1.9%) and CHR Citadelle with 11 respondents (1.7%).

The top six university hospitals where respondents work are Universitair Ziekenhuis (UZ) Leuven with 51 respondents (8.0%), UZ Gent with 45 respondents (7.1%), Cliniques Universitaires Saint-Luc with 19 respondents (3.0%), CHU-UCL Namur (Mont-Godinne) with 12 respondents (1.9%), Universitair Ziekenhuis Antwerpen with 12 respondents (1.9%), and Hôpital Erasme with 12 respondents (1.9%).

Figure 11 – Type of organisations, stratified by job title



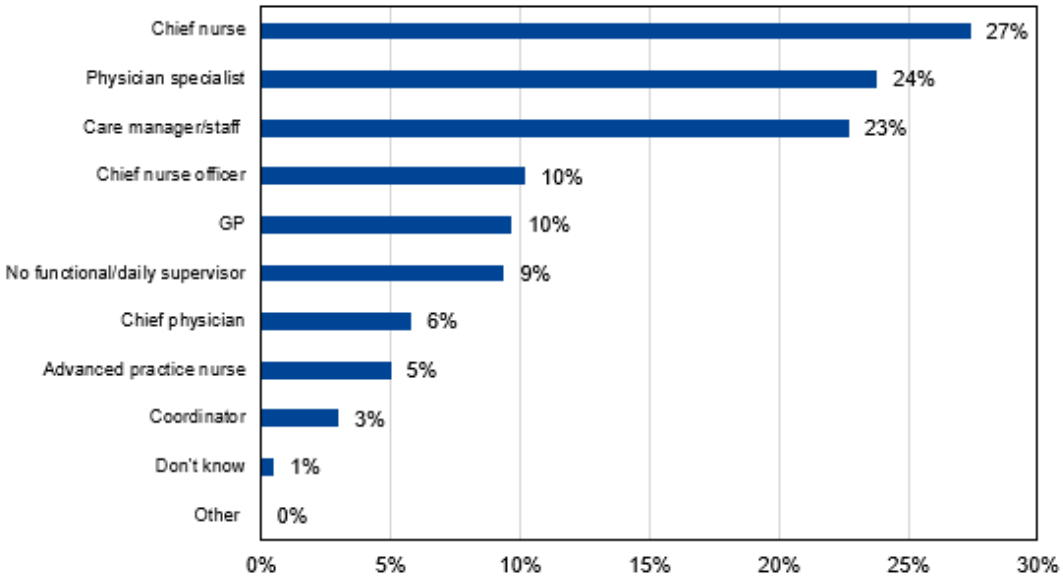
Note: multiple answers possible, χ2 job title: 224.5 (p < 0.001)

5.4.2.2 Supervision

The chief nurse *(hoofdverpleegkundige – infirmières ou infirmiers-chef)* is in 27.4% of the cases the functional or daily supervisor of the respondent, 23.8% the physician specialist *(arts-specialist – médecin-spécialiste)*, or 22.7% the care manager *(middle management, zorgmanager/stafmedewerker – infirmières ou infirmiers-cadre)*.

To a lesser extent, the supervisor is the CNO (*verpleegkundig directeur – direction des soins infirmiers*, 10.2%), GP (*huisarts – médecin généraliste*, 9.7%), chief physician of the unit (*medisch diensthoofd/supervisor – médecin superviseur du service medical*, 5.8%), APN (*verpleegkundig specialist – infirmières ou infirmiers de pratique avancée,* 5.0%) or a coordinator (3.0%)[m]. 9.4% of the respondents have no supervisor and 0.5% do not know who their supervisor is.

Figure 12 – Functional/daily supervisor



Note: multiple answers possible

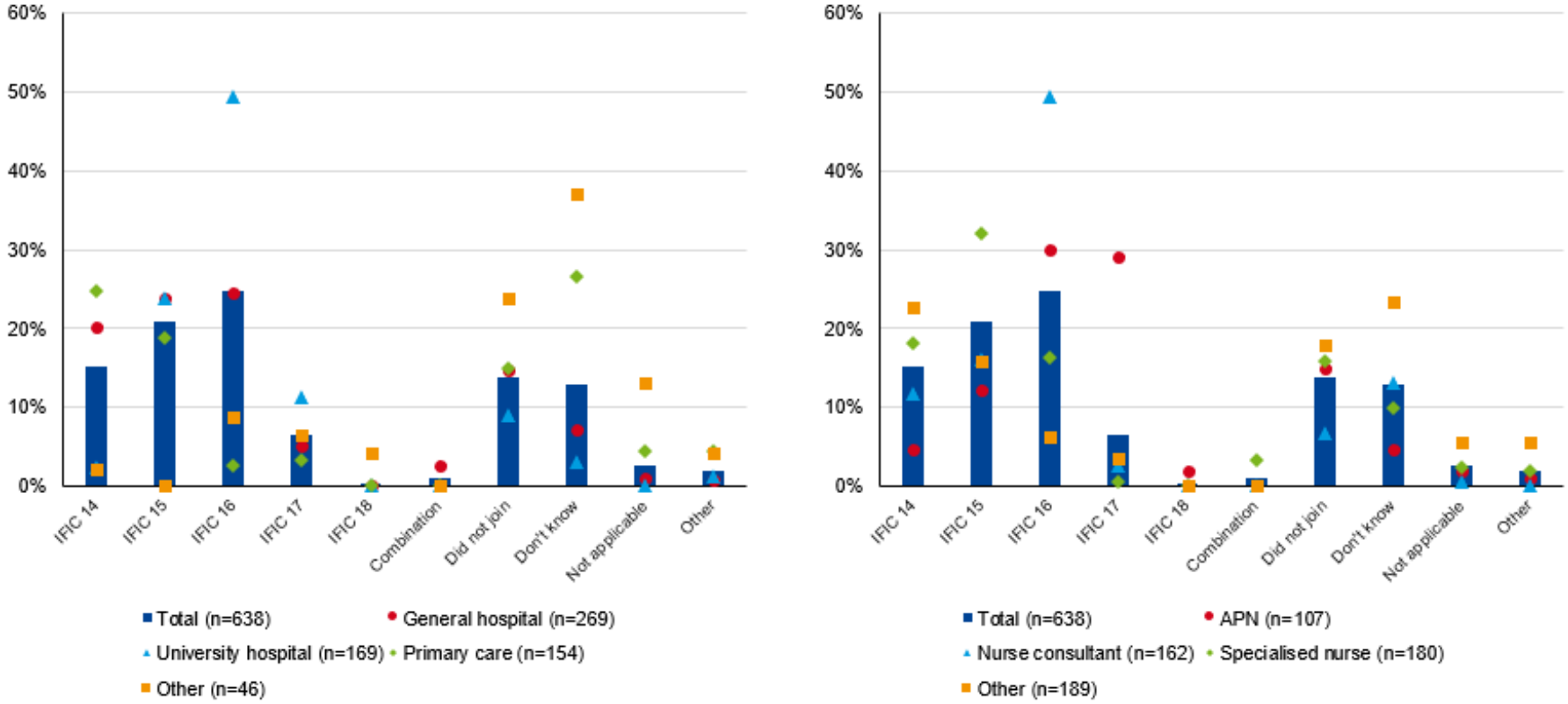
[m] This was most prevalent in community health centres.

5.4.2.3 Financing and remuneration

The majority of the respondents who perform nursing consultations are remunerated by IFIC function classification 14 (15.2%), 15 (20.9%), and 16 (24.7%). A smaller proportion is remunerated by IFIC 17 (6.4%), 18 (0.3%) or a combination of IFIC function classification scales (1.1%). In addition, 13.8% did not join the IFIC function classification, for 2.5%, the IFIC function classification is not applicable, and 12.9% did not know their renumeration scale.

In Figure 13, we stratified the answers by the work setting and job title. About 20.1% of respondents who work in a general hospital and 24.7% in primary care are compensated at IFIC 14. These individuals are predominantly nurses (22.6%) or specialised nurses (18.1%). Approximately 23% of those working in general or university hospitals fall under IFIC 15, compared to 18.8% in primary care. For those in university hospitals, nearly half (49.4%) are remunerated according to IFIC 16, while 24.6% in general hospitals. These positions are primarily occupied by nurse consultants (49.4%) or APNs (29.9%). In a university hospital setting, some respondents (mainly APNs, 29.0%) are compensated through the IFIC 17 classification. Additionally, two respondents who work as APNs in a rehabilitation centre are paid according to IFIC 18.

Figure 13 – IFIC function classification, stratified by setting and job title



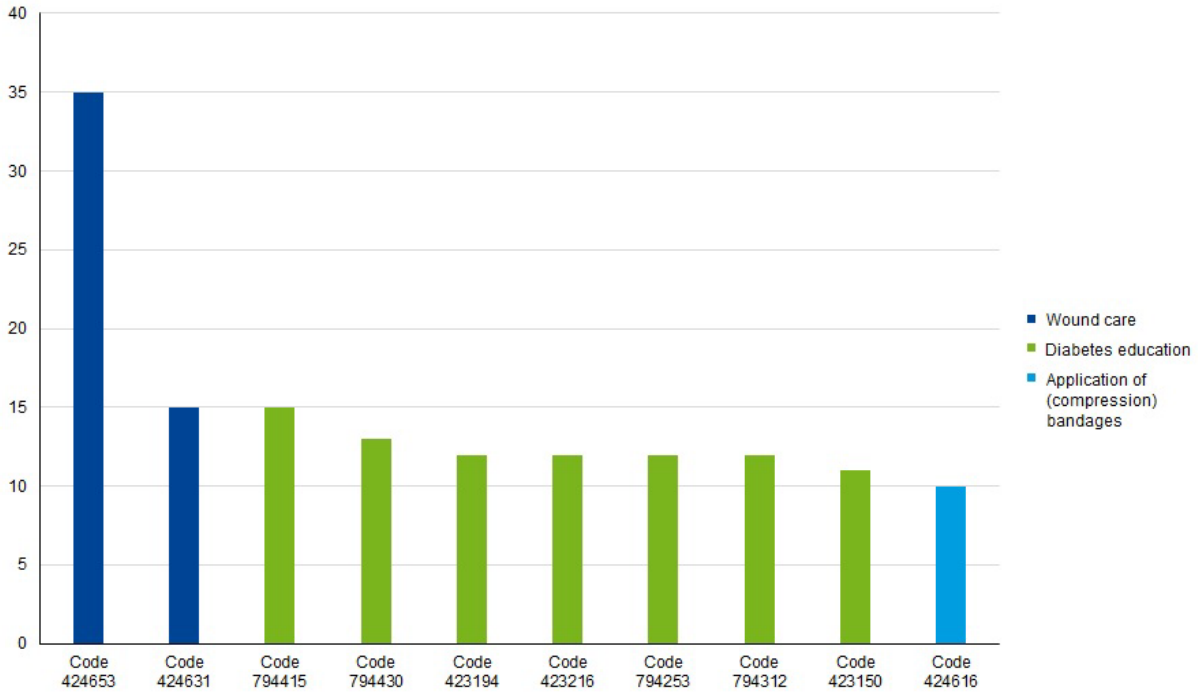
Note: χ2 setting: 277.0 (p < 0.001), χ2 job title: 227.5 (p < 0.001)

The salary of the respondents who perform nursing consultations is paid via a variety of sources. The majority of the respondents (56.4%) receive their salary from the hospital. A smaller proportion of the respondents derive their salary from community health centres (9.1%), conventions (7.8%), GP practices (7.4%), home care organisations (7.2%), chief medical officers or physician specialists (6.6%), research or project grants (3.6%), cancer foundation (1.3%) or residential care facilities (0.3%). A minority of respondents (4.1%) do not know the origin of their salary.

When asked if respondents use nomenclature codes to invoice nursing consultation activities, 18.2% indicate that they use these codes. The use of nomenclature codes is more common in Flanders (20.6%) and Brussels (17.7%) than in Wallonia (11.5%). The ten most common nomenclature codes are visualised in Figure 14.[n] It can be observed that the most common codes are related to wound care, diabetes education, or the application of (compression) bandages. This question was most often completed by nurses working in a community health centre or home care nurses.

[n] Code 424653 refers to 'complex wound care', code 424631 refers to 'basic wound care excluding the benefits in kind covered by code numbers 424550, 424572, 424594, 424616, 424970 and 429575', code 794415 refers to 'individual session of diabetes education by the diabetes educator, for at least 30 minutes, in the (GP) practice or a locoregional structure', code 794430 refers to 'individual session of diabetes education by the diabetes educator, for at least 30 minutes, at the home of the entitled person', code 423194 refers to 'flat fee for individual education to understanding, where a regular nurse or a diabetes reference nurse provides a diabetic patient with an understanding of the pathology', code 423216 refers to 'flat fee for following up a diabetes patient after self-care education', code 794253 refers to 'individual session of diabetes education by a diabetes educator: information on the disease and lifestyle for at least 30 minutes, in the (GP) practice or a locoregional structure', code 794312 refers to 'individual session of diabetes education by a diabetes educator: information on the disease and lifestyle for at least 30 minutes, at the home of the entitled person', code 423150 refers to 'flat fee for individual education to self-care of a diabetes patient by a diabetes reference nurse', and code 424616 refers to 'in the context of compression therapy: application of bandage(s), compression dressing(s)'.

Figure 14 – Ten most common nomenclature codes

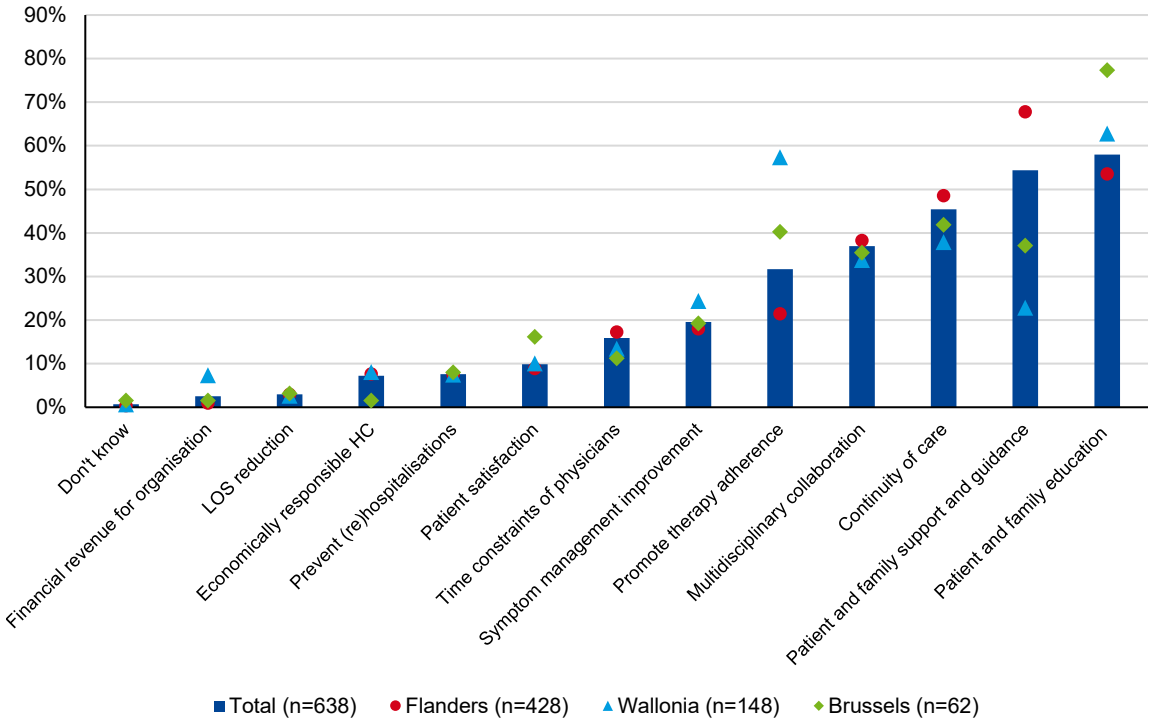


5.4.2.4 Reasons in the past for organising nursing consultations

Figure 15 shows the reasons why nursing consultations in the past were started. The top five reasons are: improve education (58.0%) and guidance (54.4%) for patients and families, promote continuity of care (45.4%), strengthen multidisciplinary teamwork (37.0%) and promote adherence to therapy (31.7%).

The improvement of patient and family education is the most common reason in all regions. However, there are regional differences for the second most common reason. For example, in Flanders it is to improve patient and family guidance (67.8%), in Wallonia it is to promote therapy adherence (57.4%), and in Brussels it is to improve continuity of care (41.9%).

Figure 15 – Main reasons for organising nursing consultations in the past



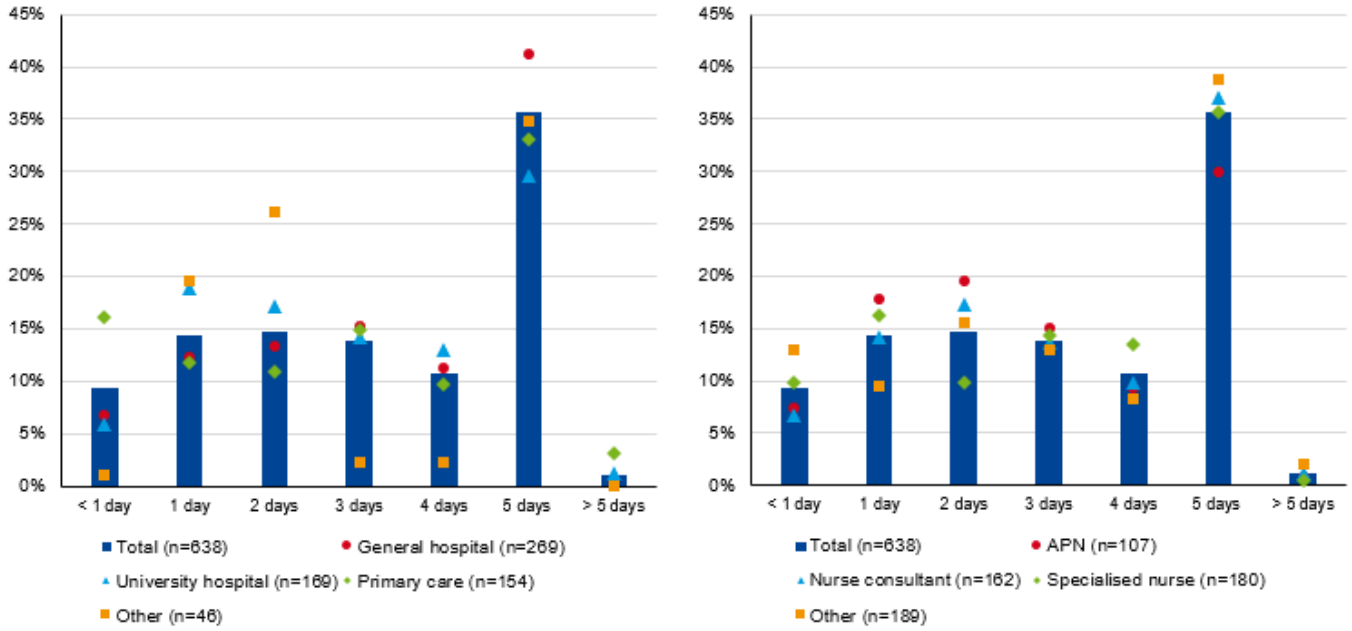
Note: multiple answers possible

5.4.3 Characteristics of nursing consultations

5.4.3.1 Frequency and duration

From Figure 16, it can be noted that respondents stated that nursing consultations in their institution are organised from less than 1 day per week to more than 5 days per week. More than 35% of the respondents reported a frequency of 5 days a week. These respondents work mostly in a general hospital (41.3%) and are working as a nurse consultant (37.0%), a specialised nurse (35.6%) or other function (38.8%).

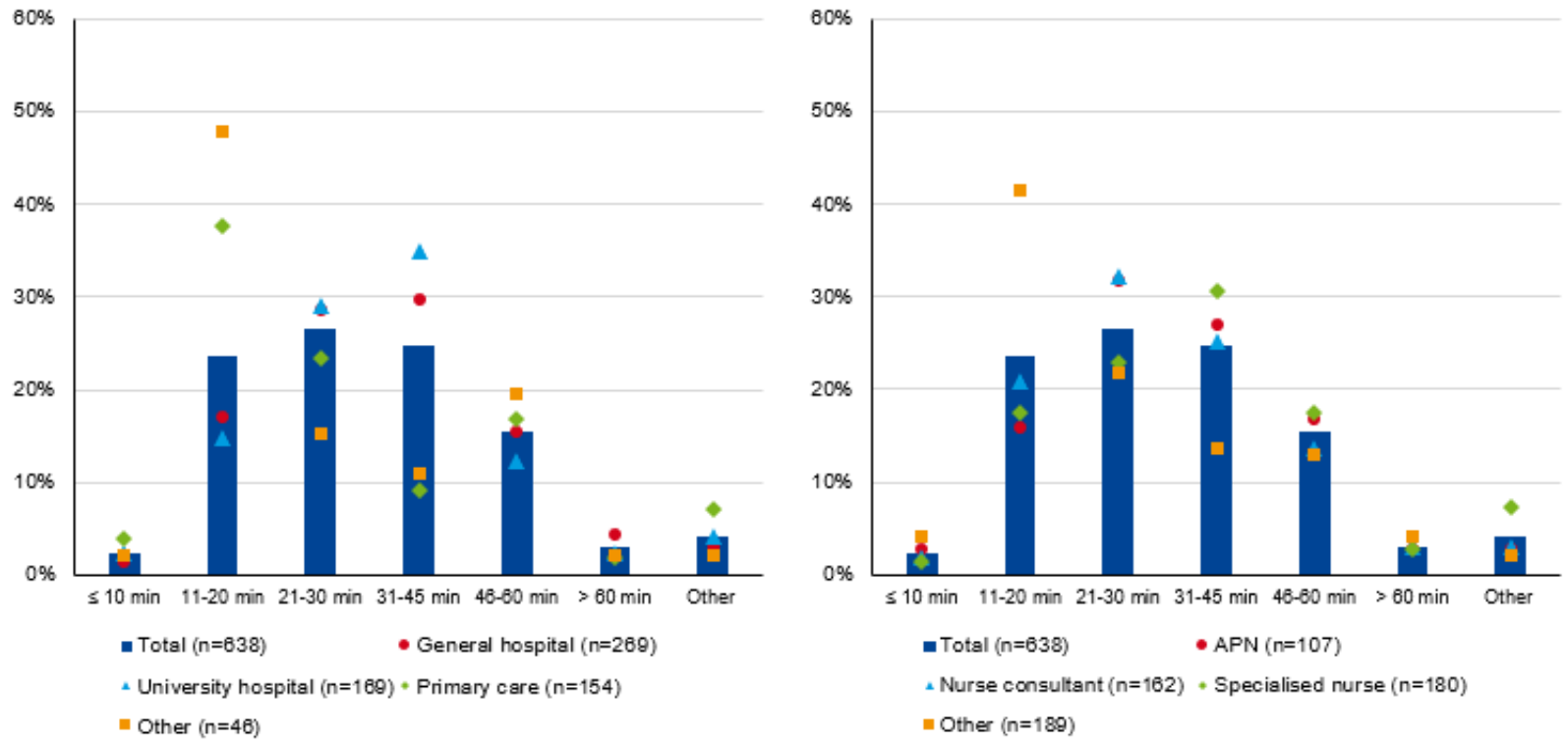
Figure 16 – Number of days of nursing consultation per week, stratified by setting and job title



Note: χ2 setting: 48.5 (p < 0.001), χ2 job title: 20.0 (p = 0.330)

Nursing consultations usually take between 11 and 60 minutes (approximately 75% of the respondents ticked this answer). There are no clear patterns between the duration of the nursing consultation and the setting or job titles. The remaining 4.2% of the respondents have ticked 'other' and clarified that the duration of their nursing consultations depends on the patient's care need or that the intake consultation usually takes longer compared to subsequent consultations.

Figure 17 – Time per nursing consultation, stratified by setting and job title

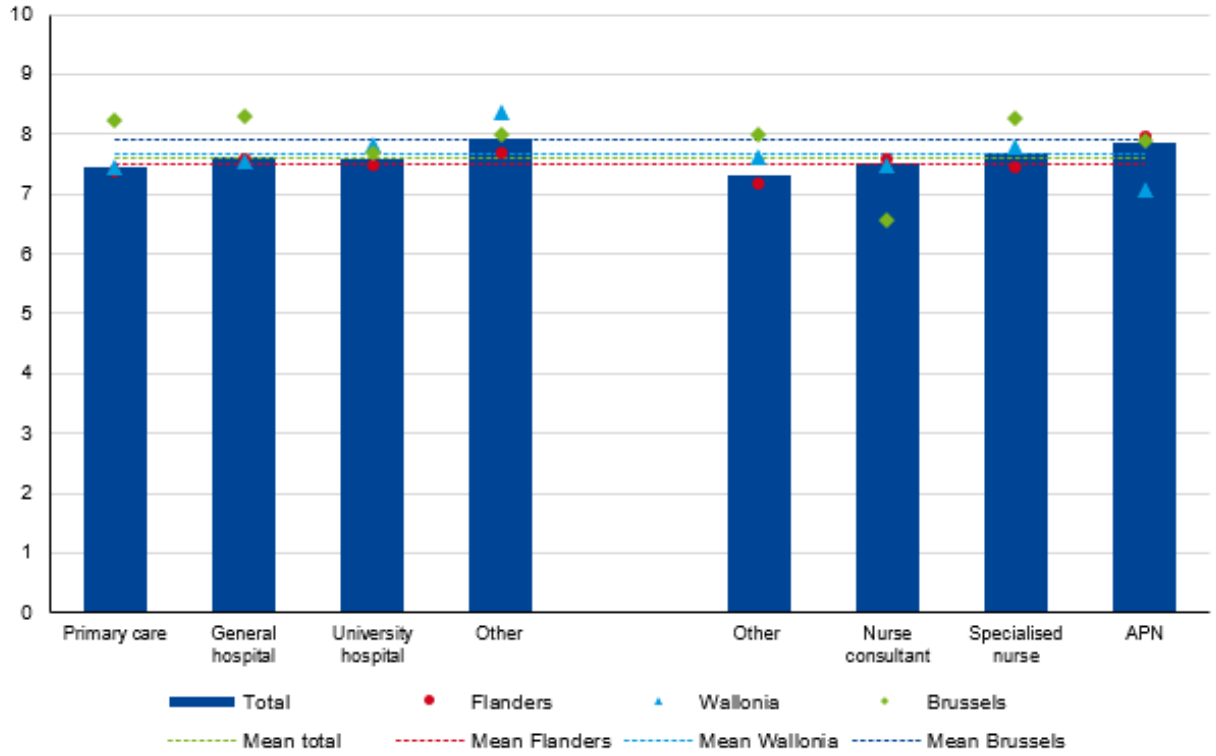


Note: time per consultation, excluding time for administration and reporting. $\chi 2$ setting: 64.8 ($p < 0.001$), $\chi 2$ job title: 20.8 ($p = 0.014$)

5.4.3.2 Self-rated level of autonomy

On a scale of one to ten, respondents evaluate their level of autonomy as moderate to high, with a mean score of 7.6 (SD 1.6). The evaluation of the level of self-rated autonomy varies between the different regions, with healthcare professionals working in Brussels (mean 7.9, SD 1.7) and Wallonia (mean 7.7, SD 1.6) rating their autonomy slightly higher than those working in Flanders (mean 7.5, SD 1.6). Additionally, the analysis reveals significant differences in the mean level of self-rated autonomy between various job titles. APNs exhibit the highest level of self-rated autonomy, with a mean score of 7.85 (SD 1.8), followed by specialised nurses (mean 7.7, SD 1.3), nurse consultants (mean 7.51, SD 1.6) and the other category (mean 7.33, SD 1.9).

Figure 18 – Mean level of self-rated autonomy, stratified by region, setting, and job title

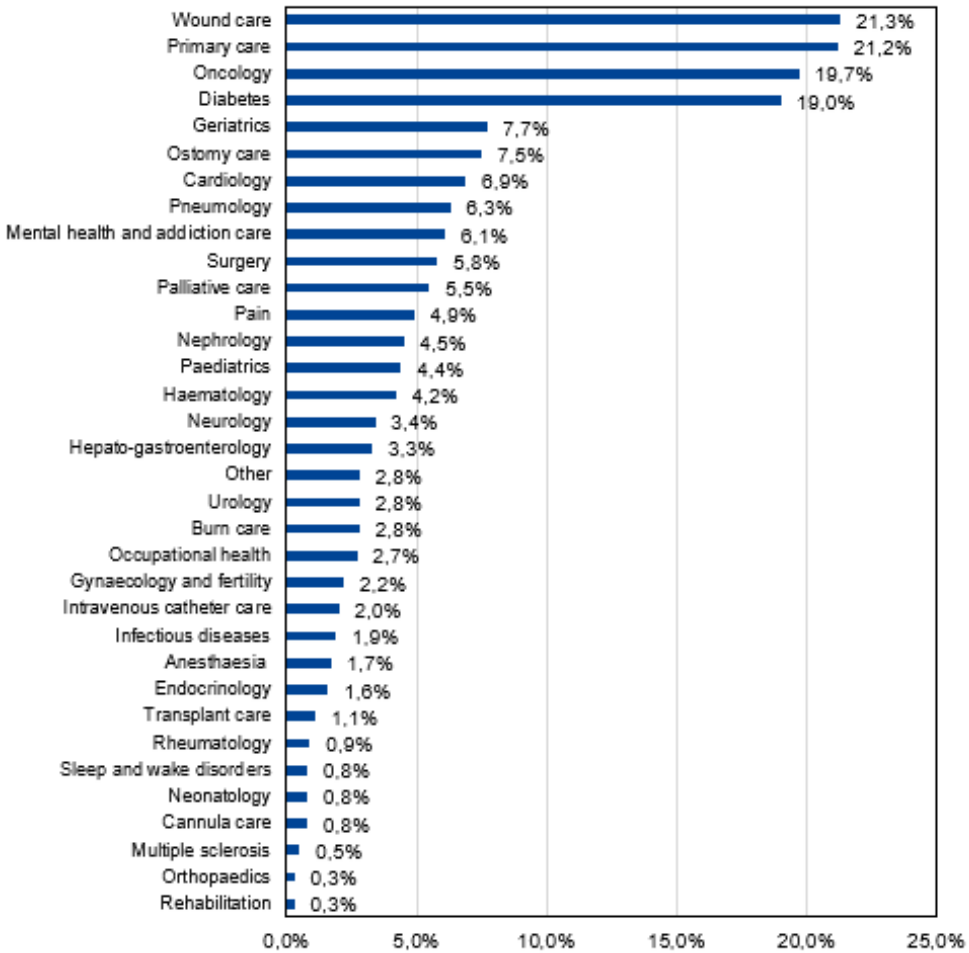


Note: χ2 setting: 25.9 (p = 0.526), χ2 job title: 42.7 (p = 0.028)

5.4.3.3 Specialisation domain

Figure 19 presents a summary of the areas of specialisation in which nursing consultations are most frequently implemented. The four main areas of specialisation that were reported by respondents were: wound care (21.3%), primary care (21.2%), oncology (19.7%) and diabetes (19.0%).

Figure 19 – Area of specialisation

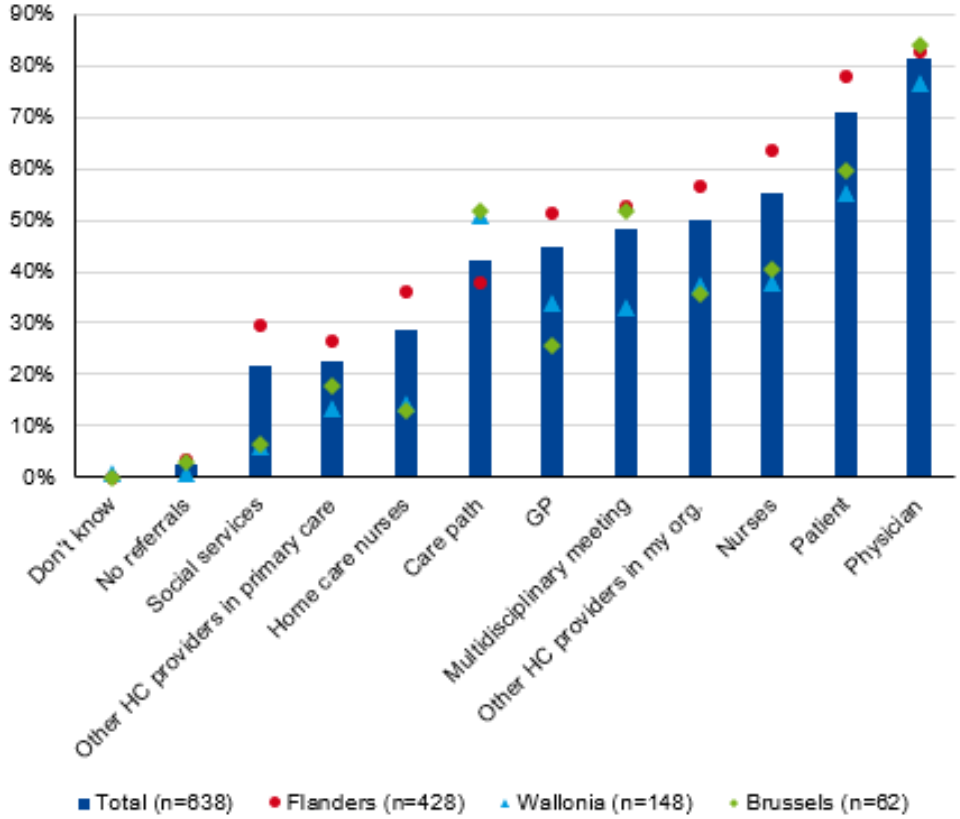


Note: although the questionnaire asked for the main area of specialisation, many respondents ticked multiple answers

5.4.3.4 Method of referral

The method of referral towards a nursing consultation varies (Figure 20). 71.0% of the respondents state that nurse consultation can be initiated by the patients themselves. The most frequently reported referral methods to the nursing consultation were: by a physician (81.3%), or by other nurses (55.3%) or healthcare providers in the organisation (50.0%). Other ways involve, although to a lesser extent (less than 50%), via a multidisciplinary meeting (48.1%), the GP (44.7%), a care pathway (42.2%), home care nurses (28.8%), other primary care healthcare providers (22.7%) and social services (21.9%). 2.7% of the respondents indicate that patients are not referred to their nursing consultation.

Figure 20 – Method of referral

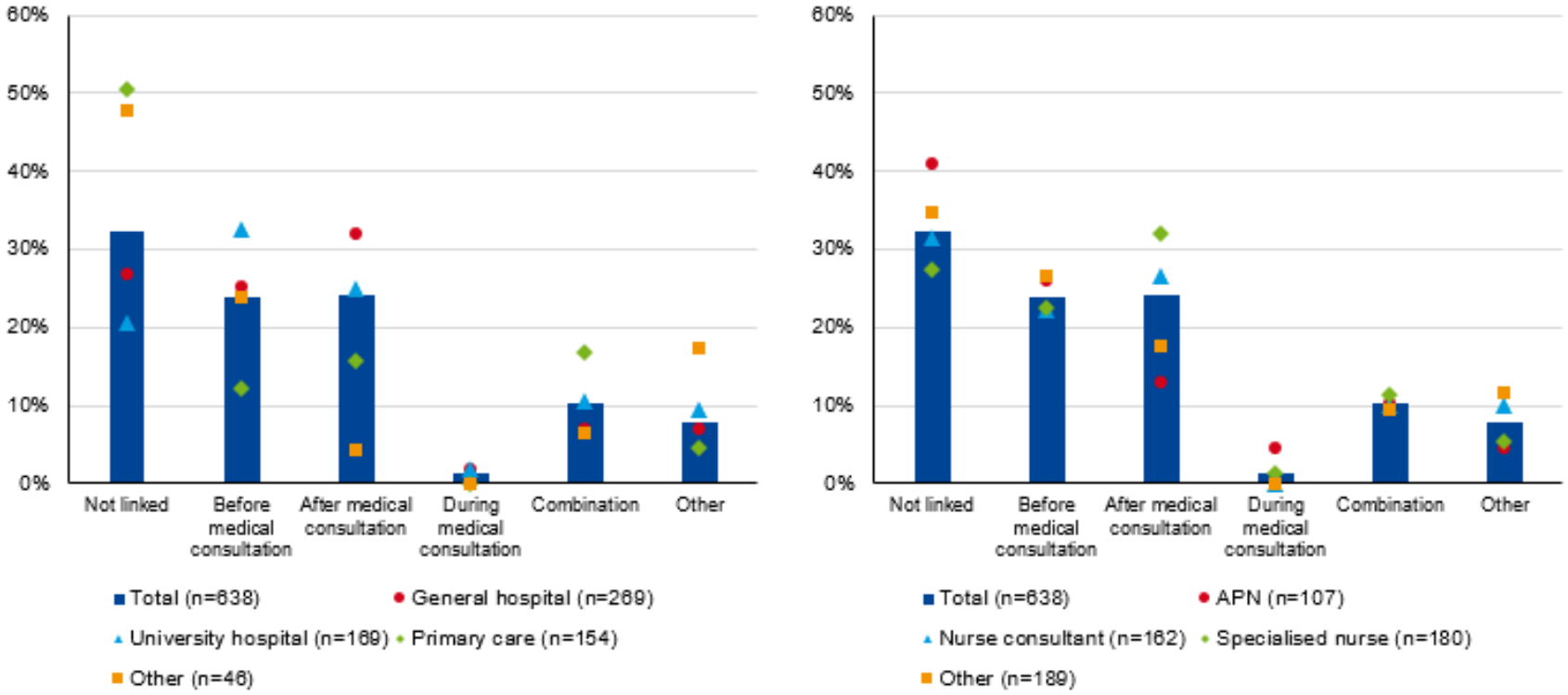


Note: multiple answers possible

5.4.3.5 *Link with medical consultation*

Approximately one third of the respondents (32.3%) reported that their nursing consultation is not linked with a medical consultation (Figure 21). This was more frequently reported by respondents employed in primary care (50.6%), those working in other healthcare settings (47.8%), and by APNs (32.4%). Furthermore, a quarter of the respondents (24.0%) scheduled their nursing consultation before the medical consultation, while 24.1% arranged it after. A negligible percentage of the respondents (1.3%) stated that their nursing consultation was scheduled together with the medical consultation. Additionally, 10.3% of the respondents reported that all configurations (before, during, or after medical consultation or not linked) were possible. This mix of configurations was more common among respondents working in primary care (16.9%).

Figure 21 – Link with medical consultation, stratified by setting and job title

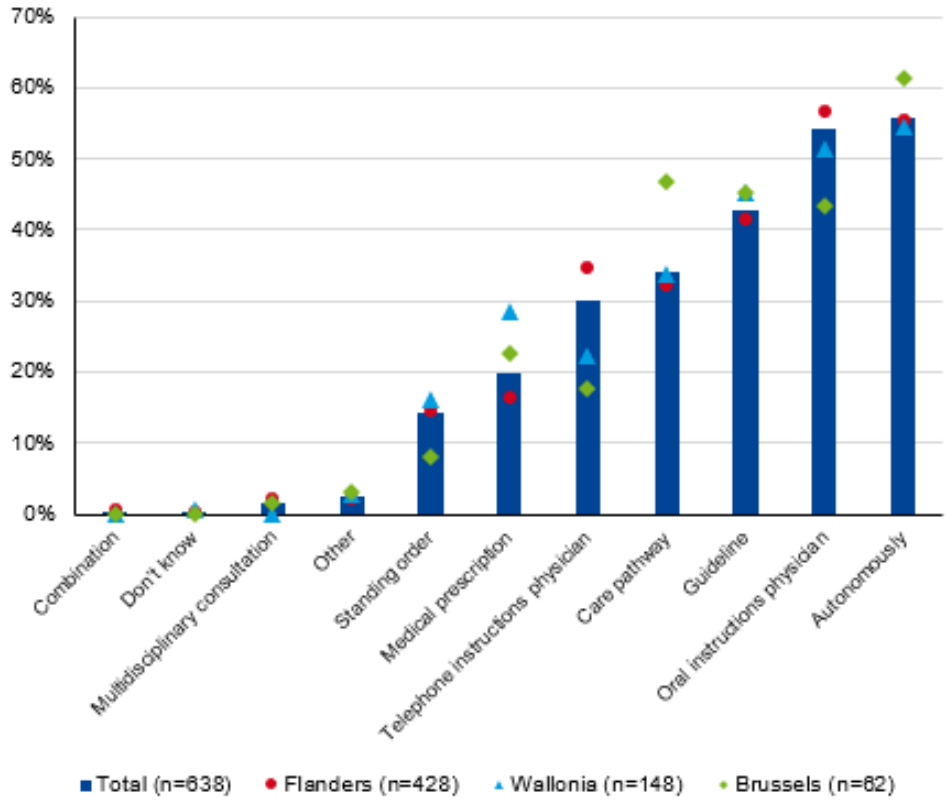


Note: χ2 setting: 83.8 (p < 0.001), χ2 job title: 40.1 (p < 0.001)

5.4.3.6 Who determines the content of a nursing consultation and how

The content of a nursing consultation is primarily driven by nurses themselves (55.8%), followed by oral instructions from physicians (54.2%), guidelines (42.8%), a care pathway (34.0%), and telephonic instructions from physicians (30.1%). A medical prescription (19.7%) or standing order (14.3%) were also reported as the driver of the content, however to a lesser extent. There seem to be regional differences between these methods. The Brussels-based respondents appear to operate with a higher degree of self-rated autonomy (61.3% in Brussels versus 55.4% in Flanders and 54.7% in Wallonia) or through the use of a care pathway (46.8% in Brussels versus 32.2% in Flanders and 33.8% in Wallonia). On the other hand, respondents predominantly rely on verbal instructions from physicians (56.8% in Flanders versus 51.4% in Wallonia and 43.5% in Brussels).

Figure 22 – Who determines the content of a nursing consultation and how?



Note: multiple answers possible

5.4.3.7 Accessibility and follow-up

Only 4.1% of the respondents reported to be inaccessible between two nursing consultations (Figure 23). The majority of the respondents indicated that they are accessible through multiple channels, with 91.8% indicating accessibility via telephone and 78.4% indicating accessibility via e-correspondence (such as email, WhatsApp or Siilo Messenger[o]).

In addition, in terms of follow-up after a nursing consultation, we observe a triangulation of types of follow-up. 52.7% of the respondents mention that nursing consultations are part of a structured care path or trajectory, 48.9% indicates that they can decide autonomously who will follow the patient and 46.6% indicates that the follow-up is guaranteed by a physician. Additionally, but to a lesser extent, follow-up is organised by other healthcare providers (23.7%), telemonitoring 13.8%), if necessary or at the request (3.9%), telephone or e-correspondence (2.2%) or other (0.8%). Only 7.7% of the respondents mention that there is no follow-up available.

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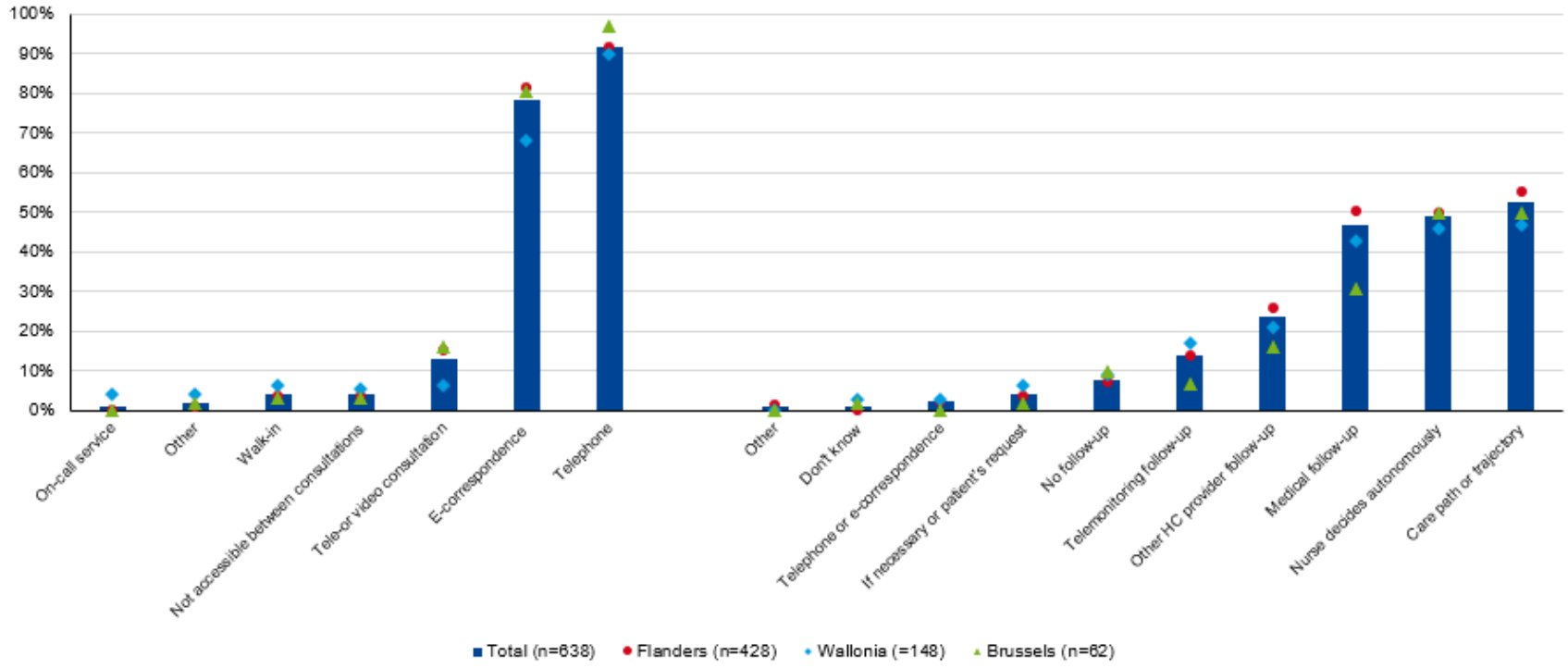
[o] Siilo messenger is a free and secure messaging app for healthcare professionals. It allows them to communicate with each other, coordinate patient care, and discuss challenging cases.

Figure 23 – Accessibility between and follow-up after nursing consultations

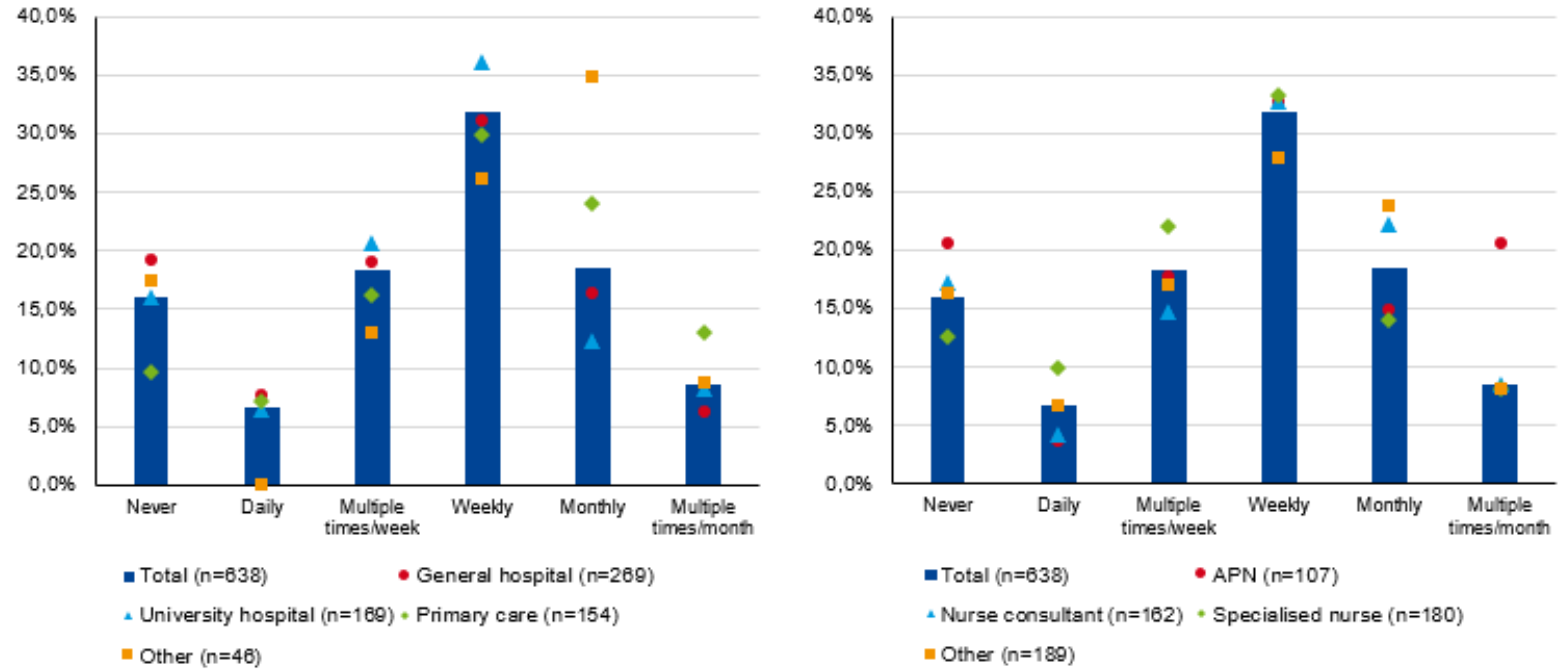


Note: multiple answers possible
Accessibility between nursing consultations left on the graph, follow-up after nursing consultations right on the graph.

5.4.3.8 Multidisciplinary patient meetings

A significant proportion of respondents (31.8%) reported attending a weekly structural multidisciplinary patient meeting (Figure 24). However, it is noteworthy that a considerable percentage of the respondents (16.0%) stated that they never participate in such meetings. Additionally, a statistically significant variation was observed in the frequency of these meetings according to the setting. Specifically, a higher percentage of respondents working in a university hospital (36.1%) reported weekly participation in multidisciplinary meetings, and another 20.7% attended such meetings weekly. On the contrary, those who worked in primary care settings reported a lower frequency of participation, with 24.0% attending these meetings monthly and 13.0% attending multiple times per month. In particular, respondents employed in general hospitals (19.3%) are more likely to report not participating in these meetings.

Figure 24 – Frequency of multidisciplinary patient meetings, stratified by setting and job title



Note: χ2 setting: 30.9 (p = 0.009), χ2 job title: 20.3 (p = 0.161)

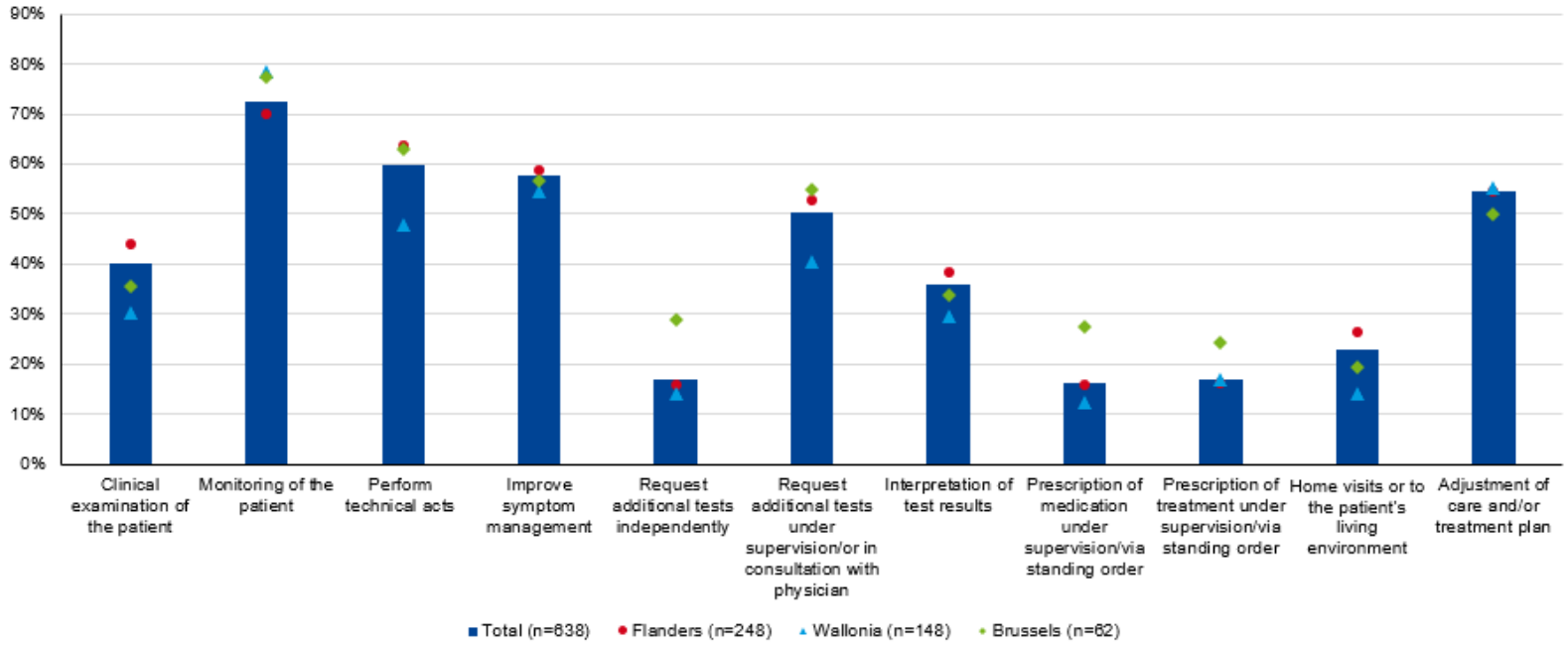
5.4.4 Activities and roles during nursing consultations

5.4.4.1 Clinical activities

Figure 25 illustrates the frequency of various clinical activities performed during nursing consultations in Belgium, Flanders, Wallonia, and Brussels. The most frequently reported clinical activities are: patient monitoring (72.6%), technical acts (59.9%), adjustment of the symptom management (57.7%), care and/or treatment plan (54.4%), additional test request under supervision or in consultation with the physician (50.2%), and interpretation of test results (35.9%).

Regarding regional differences, the results indicate that independent requests for additional tests and prescriptions of medication and/or treatment under supervision or through standing order are more prevalent among respondents working in Brussels than among those working in Flanders or Wallonia. Appendix 3.4 contains a heatmap with the distribution of respondents engaged in clinical activities, categorised by both work setting and job title.

Figure 25 – Clinical activities during nursing consultations



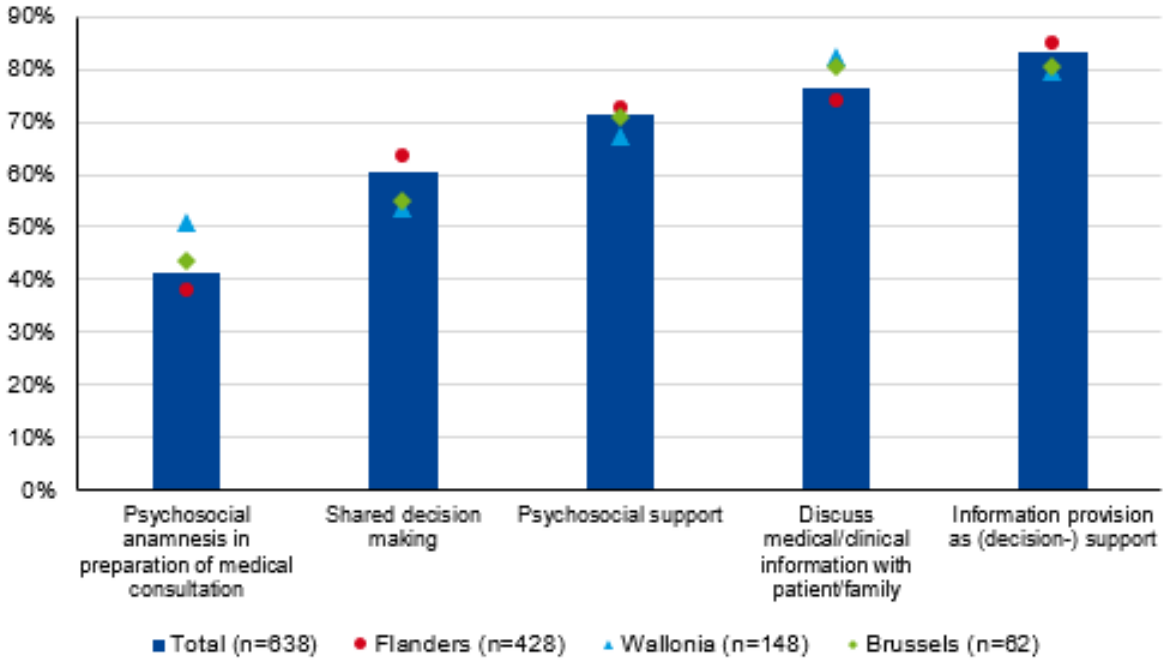
Note: multiple answers possible

5.4.4.2 Support activities

A substantial proportion of the respondents who conduct nursing consultation (83.4%) offer decision-making support to patients (Figure 26). Furthermore, a majority of them (76.6%) discusses medical and/or clinical information with both the patient and their family. 71.5% of psychosocial support was reported by 71.5% of respondents, and 60.3% reported participation in the shared decision making with the patient. However, a relatively low percentage (41.5%) of the respondents claimed to perform psychosocial anamnesis as part of the medical consultation process.

In particular, regional differences in the provision of support activities were negligible, with only slightly higher percentages of respondents working in Wallonia claiming to perform the pre-medical consultation psychosocial anamnesis and those working in Flanders reporting greater participation in shared decision making. Appendix 3.5 contains a heatmap with the distribution of respondents engaged in support activities, categorised by both work setting and job title.

Figure 26 – Support activities during nursing consultations



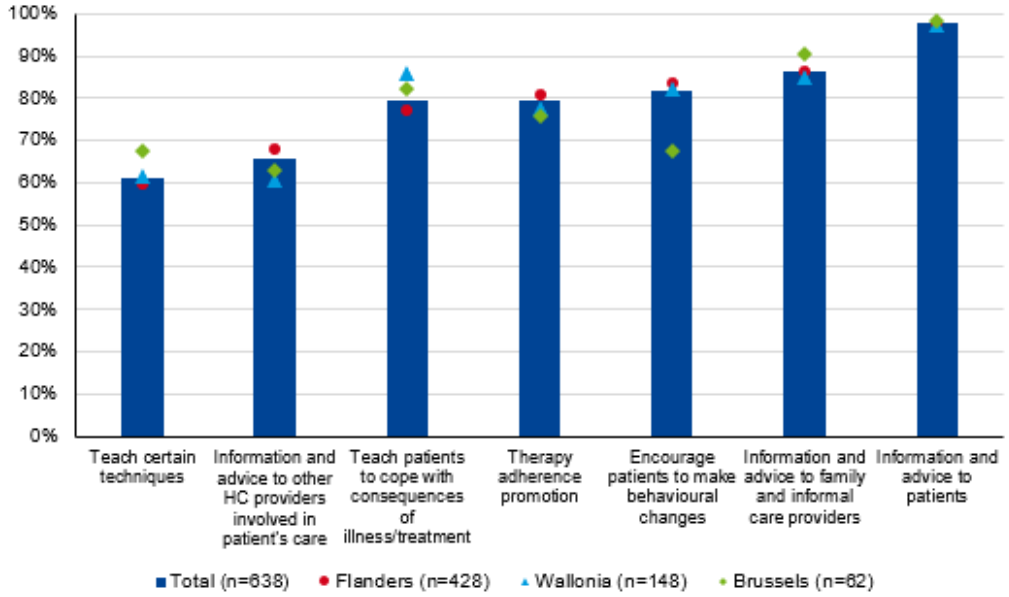
Note: multiple answers possible

5.4.4.3 *Educational activities or counselling*

Respondents conducting nursing consultations include many educational activities or counselling (Figure 27). The majority of the respondents, comprising 97.8%, reported providing information and advice to patients, whereas 86.5% indicated providing similar services to family members and/or informal care providers of patients. It was observed that a comparatively lower percentage of respondents (65.7%) provided information to other healthcare providers involved in patient care. In addition, a significant number of respondents (81.8%) reported encouraging patients to initiate behavioural changes, while 79.6% promoted therapy adherence and helped patients in coping with the consequences of their illness and/or treatment.

Furthermore, 61.0% of the respondents reported teaching patients certain techniques, which was found to be the least prevalent educational activity. Regional differences in educational activities or counselling are less pronounced. For a heatmap that provides an overview of the distribution of respondents engaged in educational activities or counselling, stratified by both work setting and job title, please consult Appendix 3.6.

Figure 27 – Educational activities or counselling during nursing consultations



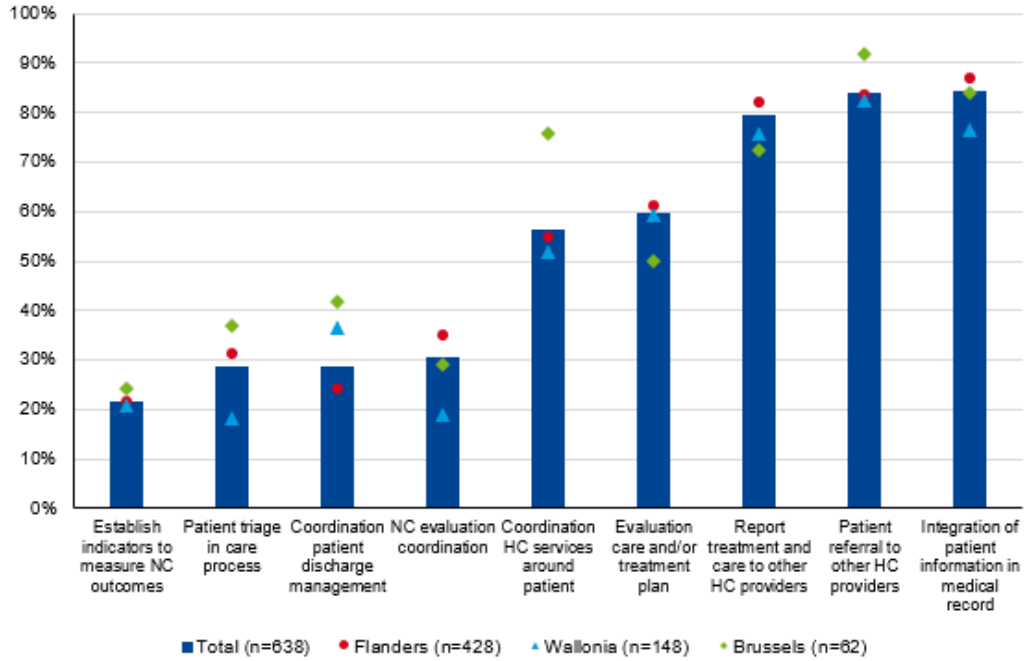
Note: multiple answers possible

5.4.4.4 Coordination activities

A significant aspect of coordination activities involves the integration of patient information into the medical record (84.3%), referring patients to other healthcare providers (84.2%), and reporting treatment and care to other healthcare providers (79.6%). A portion of the respondents, comprising 59.9% and 56.3%, are also responsible for evaluating the care and/or treatment plan and coordinating healthcare services for the patient. However, the latter responsibility is more prevalent among respondents operating in Brussels, accounting for 75.8% in contrast to 54.9% in Flanders and 52.0% in Wallonia.

The involvement of respondents in the evaluation of nursing consultations (30.7%), coordination of patient discharge management (28.8%), patient triage in the care process (28.8%), and establishment of indicators to measure nursing consultation outcomes (21.6%) is relatively less frequent. For a heatmap that provides a comprehensive overview of the distribution of respondents engaged in coordination activities, categorised by both work setting and job title, we refer the reader to Appendix 3.7.

Figure 28 – Coordination activities during nursing consultations



Note: multiple answers possible

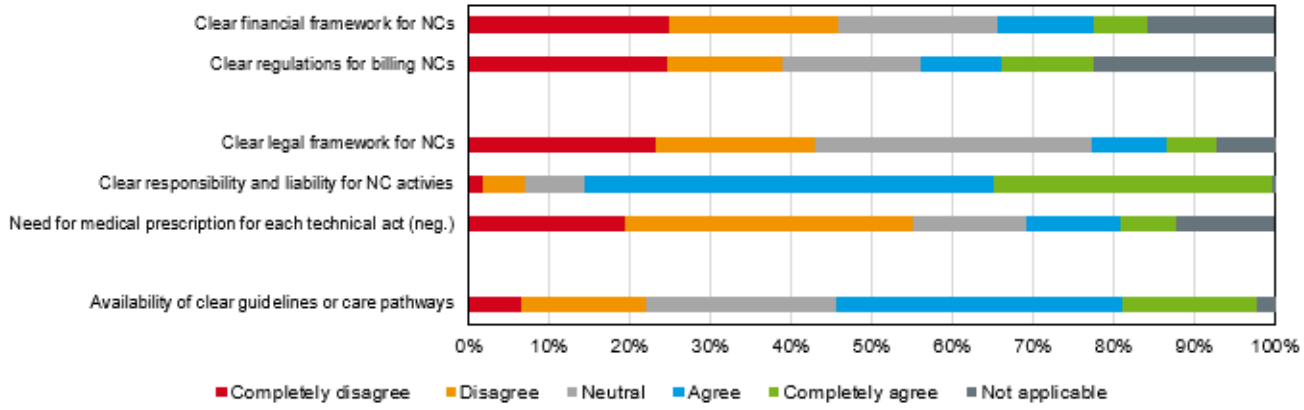
5.4.5 Experiences related to carrying out of nursing consultations

5.4.5.1 Structure

Legal and financial aspects

When asked about the existence of a well-defined financial framework and billing regulations for nursing consultations in Belgium, a significant proportion of the respondents, namely 45.7% and 38.9%, respectively, expressed their disagreement (Figure 29). Similarly, 42.9% of the respondents reported the absence of a clear legal framework for nursing consultations. Despite this lack of legal framework, the majority of the respondents (85.3% [totally] agree) perceived clear responsibility and liability for nursing consultations. Additionally, a majority of 55.1% of the respondents indicated that they require a medical prescription for each technical act they perform. Furthermore, in terms of the availability of clear guidelines and care pathways, slightly more than half (52.0%) of the respondents (fully) agreed with the statement, while a significant proportion (21.9%) expressed (strong) disagreement.

Figure 29 – Legal and financial aspects

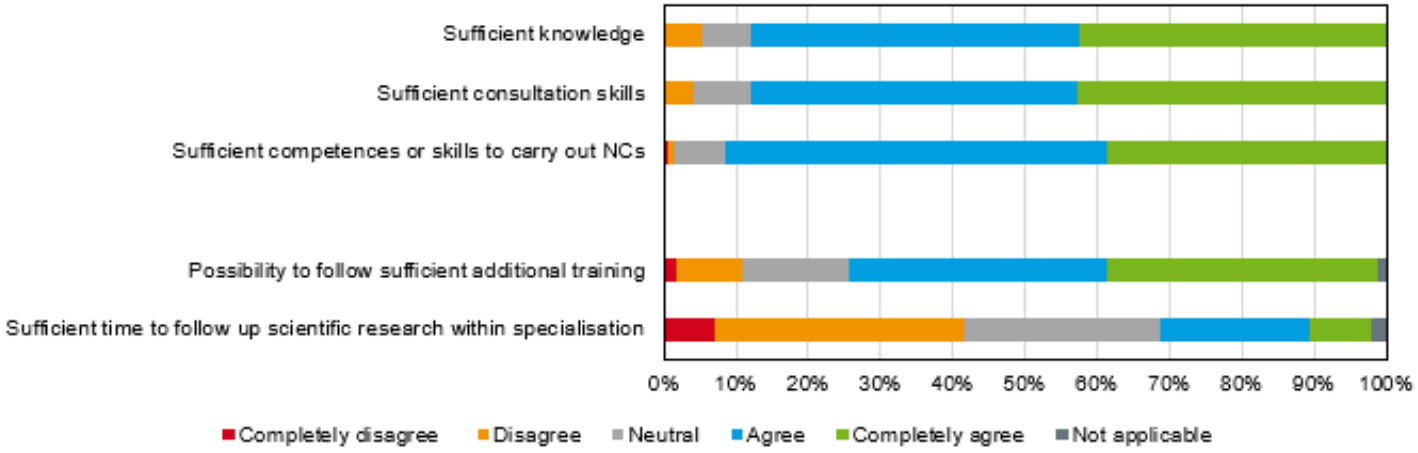


(neg.): negative statement

Profile workforce

The respondents auto-evaluate their knowledge, consultation skills, and competencies as very positive (Figure 30). A vast majority, amounting to approximately 90%, unequivocally endorse these claims. In line with this, 73.1% of the respondents report having sufficient access to supplementary training. Nevertheless, when inquired about their capacity to follow up the scientific state of the art within their specialisation domain, a considerable proportion of 41.5% (totally) disagrees.

Figure 30 – Profile workforce



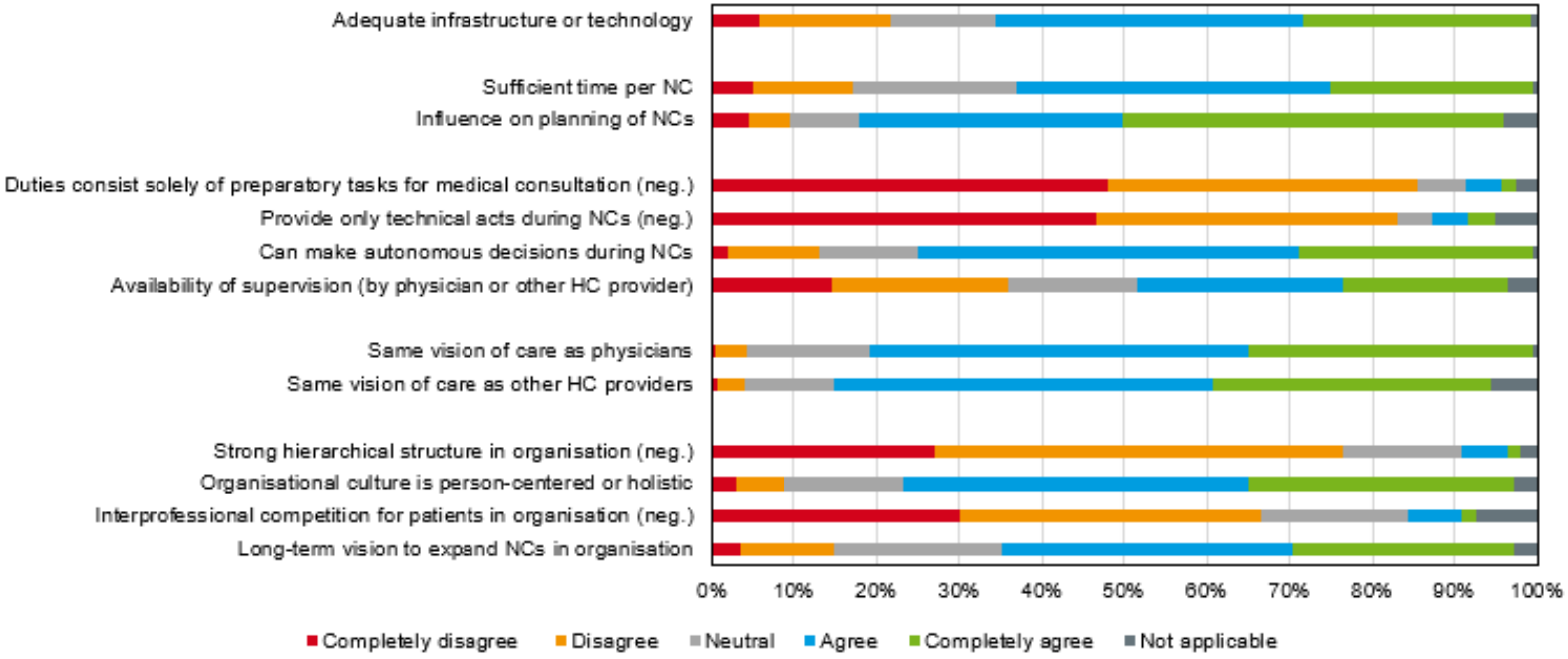
Physical and organisational aspects

The respondents' perception of the adequacy of infrastructure and/or technology is favourable, with 64.7% (fully) agreeing with this statement (Figure 31). Similarly, a majority of the respondents, 62.5% and 77.9%, respectively, find the time allocated to nursing consultation and its influence on planning are adequate. Nursing consultations are not limited to preparatory tasks for medical consultations or technical procedures, as a large proportion of the respondents (85.6% and 82.5%, respectively) (strongly) disagree with these statements.

Furthermore, most respondents (74.5%) claim to have autonomy in decision making during nursing consultations. However, the availability of supervision by physicians or other healthcare providers is less straightforward, with 35.9% strongly disagreeing and 44.7% strongly agreeing.

Furthermore, the respondents' visions on care are consistent with those of physicians and other healthcare providers, with 80.3% and 79.6%, respectively, (fully) agreeing with these statements. Regarding organisational culture and vision, respondents express generally positive attitudes, with 76.5% (strongly) disagreeing that the organisation has a strong hierarchical structure, and 66.6% disagreeing that there is interprofessional competition for patients in the organisation. Finally, a large proportion of respondents (74.1% and 62.3%, respectively) strongly agree that the organisational culture is person-centred or holistic and that there is a long-term vision to expand nursing consultations within the organisation.

Figure 31 – Physical and organisational aspects

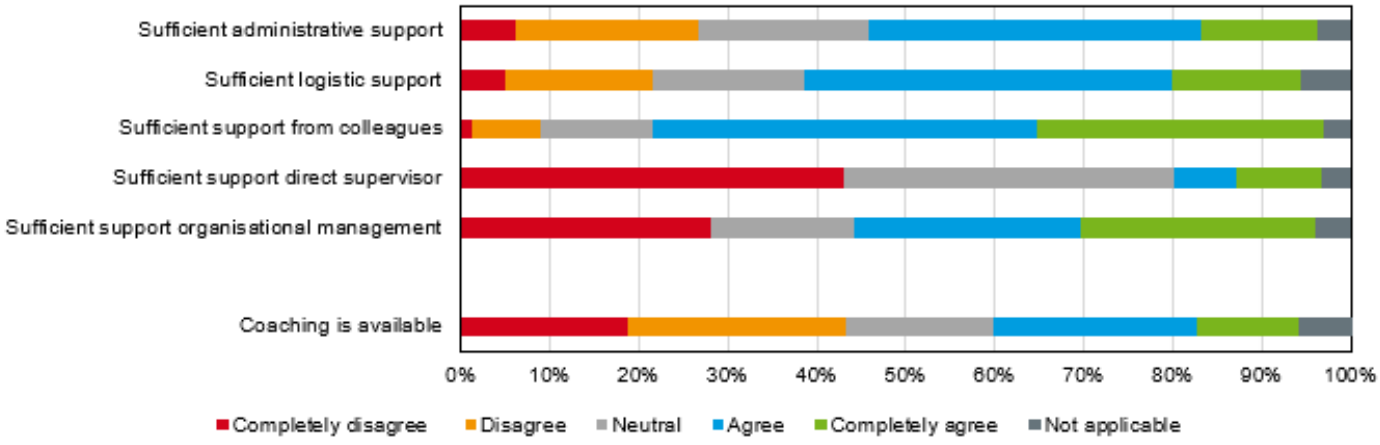


(neg.): negative statement

Support

More than half of the survey respondents are satisfied with the administrative (50.3%) and logistic (55.7%) support offered during their nursing consultations. Nevertheless, a noteworthy percentage of 26.8% and 21.6%, respectively, assert the insufficiency of these resources. Colleague support receives a relatively favourable evaluation, as about 75% of respondents completely agree with this statement. However, the adequacy of support from direct supervisors, organisational management, and the availability of coaching is perceived to be lacking. A considerable proportion of 43.1% of respondents entirely disagrees with the level of support provided by their direct supervisors, while 28.1% disagree with the organisational management's support. Concerning coaching, 43.3% of respondents indicate that no coaching opportunities are available.

Figure 32 – Level of support to perform the job

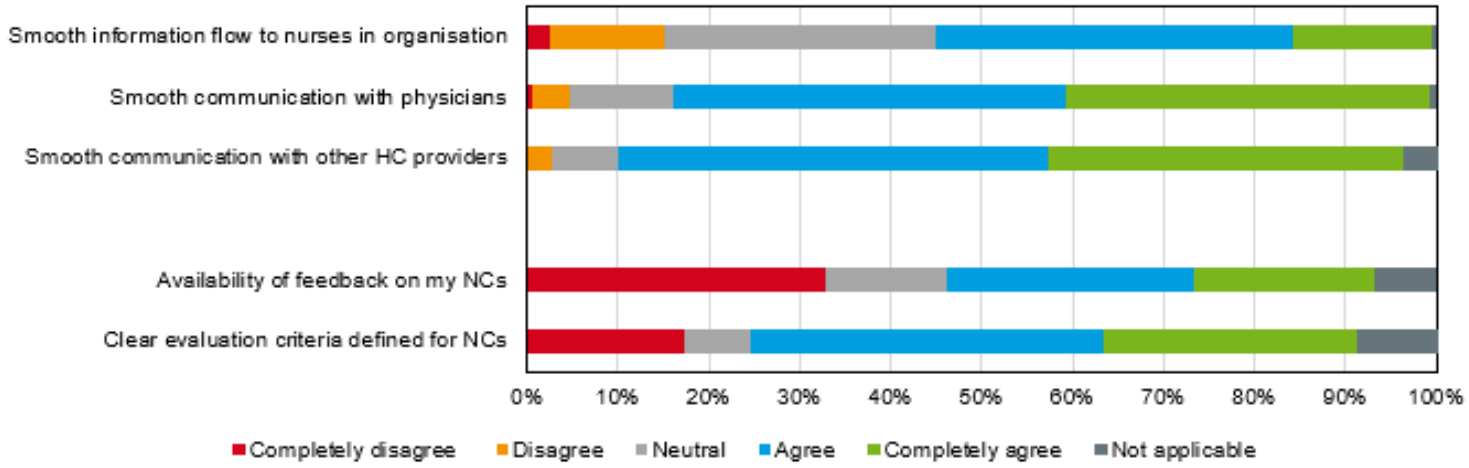


5.4.5.2 Process

Communication and feedback

The transmission of information within the organisation to nurses is reported to be smooth, as indicated by 54.5% of the respondents expressing (complete) agreement (Figure 33). Additionally, communication with physicians and other healthcare providers is perceived to be highly favourable, with more than 80.0% of the respondents (totally) agreeing with the smoothness of communication with these partners. Regarding feedback, almost half of the respondents (47.0%) receive feedback, while a third (32.9%) did not. Finally, a significant proportion of the respondents (66.8%) expressed (complete) agreement that there are well-defined evaluation criteria for their nursing consultations.

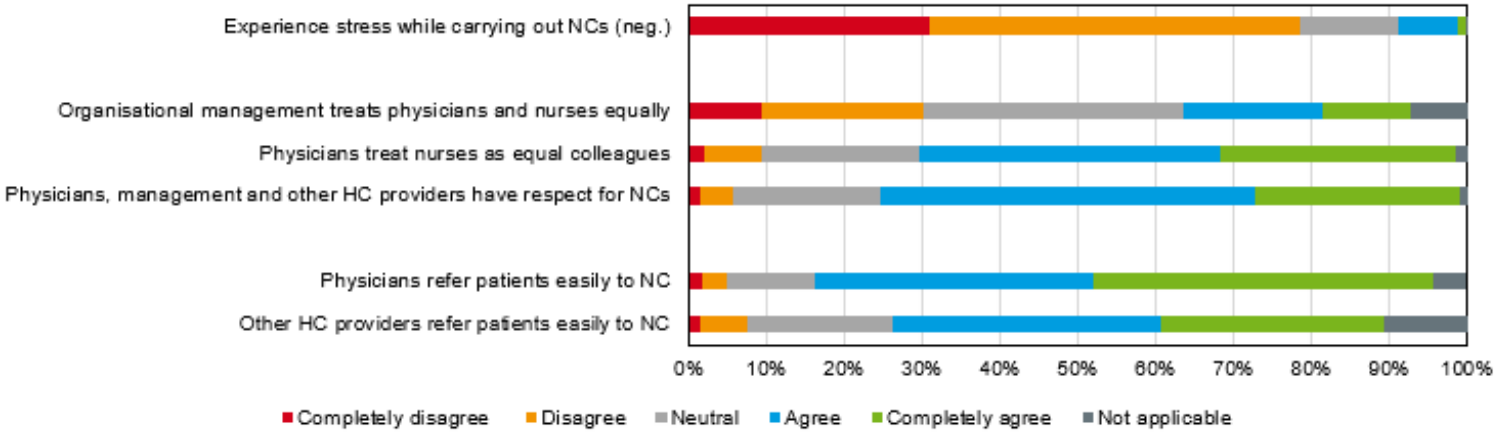
Figure 33 – Communication and feedback



Relational and psychosocial aspects

The relational and psychosocial aspects of nursing consultations are generally perceived positively by respondents (Figure 34). Specifically, a significant proportion (78.5%) of the respondents reported that they did not experience stress during nursing consultations. The respondents also expressed positive views about the professional relationship between physicians and nurses, with 69.0% of them indicating that physicians treat nurses as equal colleagues and 79.6% reporting that physicians readily refer patients to nursing consultations. Similarly, 63.0% of the respondents stated that other healthcare providers refer patients easily to nursing consultations. In addition, approximately one third (74.6%) believed that physicians, organisational management, and other healthcare providers show respect for nursing consultations. However, the results regarding the equal treatment of physicians and nurses by organisational management were less straightforward. Although 29.2% of the respondents strongly agreed with this statement, 30.2% strongly disagreed and 33.2% expressed a neutral stance.

Figure 34 – Relational and psychosocial aspects



(neg.): negative statement

Perception of partners in care process

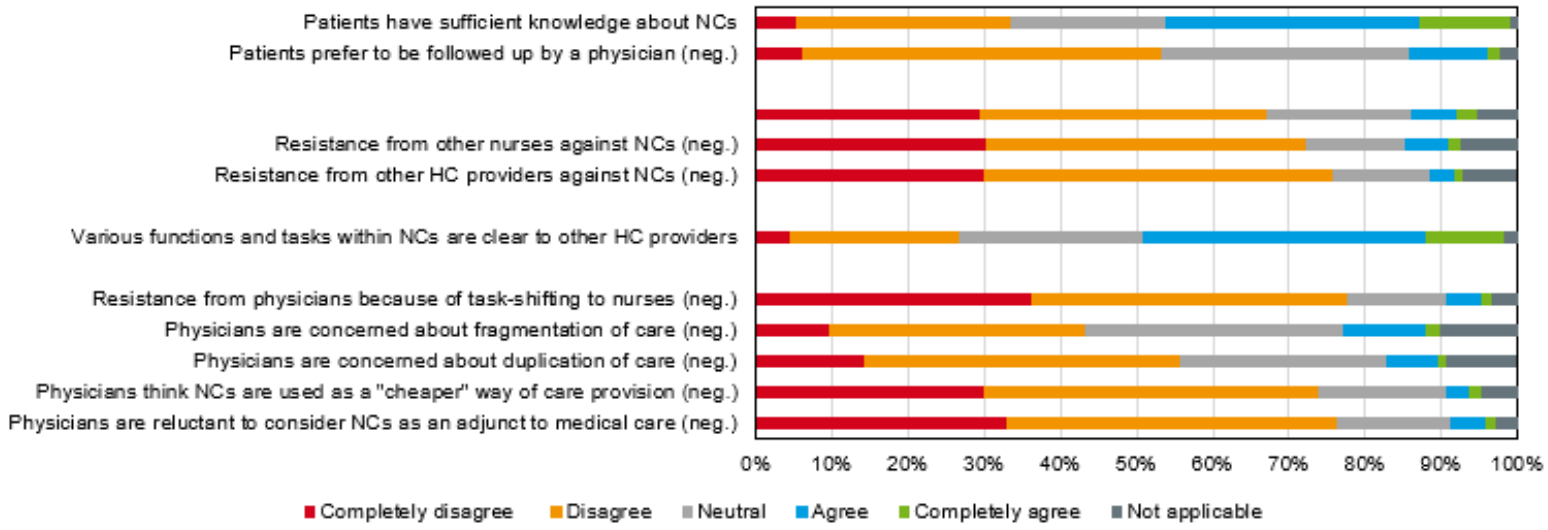
Less than half of the respondents (45.3%) believe that patients have sufficient knowledge regarding nursing consultations, while a third (33.4%) disagree with this statement (Figure 35). Furthermore, just over half of the respondents (53.3%) consider patients to prefer physicians for their follow-up care.

The perceptions suggest that there is little resistance from organisational management, other nurses or healthcare providers towards nursing consultations, with 67.1%, 72.3% and 75.8% (strongly) disagreeing with this statement.

Additionally, almost half (47.6%) of the respondents indicated that their roles and responsibilities within nursing consultations were clear to other healthcare providers.

Regarding physicians, 77.6% of the respondents perceived no resistance from them in relation to shift of tasks to nurses. Furthermore, a substantial number of respondents (43.1% and 55.6%) (strongly) disagreed with the statement that physicians are concerned about care fragmentation or duplication of care. Similarly, a significant proportion of respondents (73.9%) expressed that physicians do not consider nursing consultations as a 'cheaper' mode of care provision. The majority of the respondents (76.2%) also do not perceive physicians to be reluctant to consider nursing consultations as a complementary approach to medical care.

Figure 35 – Perception of partners in care process



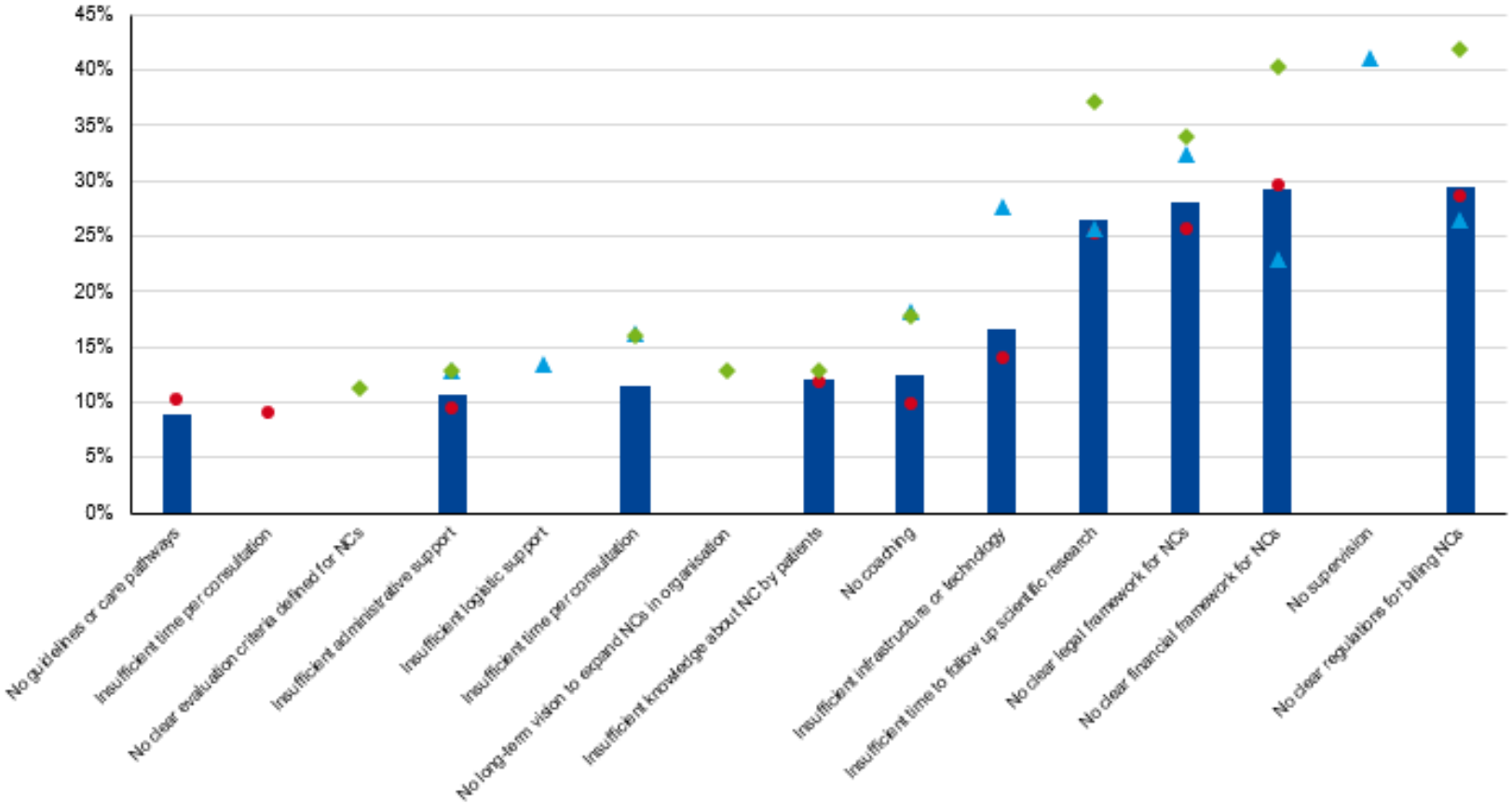
(neg.): negative statement

5.4.5.3 Priority areas for the future implementation of nursing consultations

The most frequently reported priority areas for the future implementation of nursing consultations in Belgium are: the lack of clear regulations for billing nursing consultations (29.5%), the absence of a clear financial (29.2%) or legal framework (28.1%) to support nursing consultations, the limited time available to follow up scientific research (26.5%) and the inadequacy of infrastructure or technology (16.6%).

There are clear regional differences in these priority areas. Respondents from Flanders emphasised the need for a financial and legal framework to structure nursing consultations, while respondents from Wallonia prioritised supervision (while this was not mentioned by respondents in other regions) and the legal framework for nursing consultations. Respondents from Brussels highlighted the financial framework and the time to follow up scientific research as key areas for improvement.

Figure 36 – Ten areas of highest priority for further implementation of nursing consultations



Note: Some priorities do not have "total" bars because they did not rank within the top ten highest-scoring priorities at the Belgian level. However, they did make it into the top ten in one of the regions.

5.5 Discussion

This cross-sectional online survey aimed to provide insights into the implementation of nursing consultations in Belgium, with the goal of identifying current challenges and highlighting areas for improvement. Respondents in our survey were healthcare professionals engaged in nursing consultations, and a total of 638 individuals completed the survey. These respondents held various job titles, including APNs, nurse consultants, specialised nurses, and other types of nurses. Notably, there was considerable diversity in these job titles, revealing variations within and between different healthcare organisations. The majority of respondents worked in the hospital sector.

The operationalisation of nursing consultations exhibited significant variability across multiple dimensions, including organisational structure, financing, remuneration, accessibility, and availability. However, it is important to consider that some of the survey questions were quite detailed, and respondents may not have been aware of or had precise answers to all of them. For example, reasons for the initiation of nursing consultations in the past might not be common knowledge among nurses currently performing these consultations.

However, it is important to acknowledge certain limitations that may affect the interpretation and generalisation of the findings.

Firstly, the survey was widely distributed, and respondents self-identified as practitioners conducting nursing consultations, which might introduce a bias in our sample. Additionally, the survey's voluntary nature might have attracted respondents who are more interested in or have stronger opinions about nursing consultations. This self-selection could affect the representativeness of the sample and introduce a bias towards certain attitudes or experiences. Social desirability could also impact responses, as respondents might present themselves or their practices in a more favourable light. The online distribution could exclude individuals without internet access, possibly leading to a skewed demographic representation.

Furthermore, the survey's closed-ended questions and limited response options might oversimplify the complexity of nurses' experiences and attitudes towards nursing consultations, although open-ended questions were included. However, the brevity of these responses could restrict our understanding of respondents' viewpoints. Moreover, the survey did not deeply explore the various contexts in which nursing consultations take place, such as differences in healthcare settings, specialisation domain, patient populations, and geographical regions. These contextual factors could significantly influence nurses' perspectives and practices but were not thoroughly explored in this study.

The findings of this study should be interpreted in light of these limitations inherent to the research design and methodology. To gain a more comprehensive understanding of the complex landscape of nursing consultations, future research should encompass diverse methodologies, like qualitative approaches or focus on specific settings/specialisation domains.

6 BARRIERS AND FACILITATORS TO IMPLEMENT NURSING CONSULTATIONS IN BELGIUM: A STAKEHOLDER CONSULTATION

6.1 Key points

- Semi-structured interviews were conducted with context setters (defined as stakeholders with high power, who can have a lot of influence over a project or initiative but do not want to be involved in the details).
- There is no consensus among stakeholders regarding the definition, content, degree of autonomy of nurses, and level of specialisation in nursing consultations.
- According to the stakeholders outside the nursing profession, nursing consultations should be connected to medical activities.
- Nursing consultations have the potential to contribute to a more integrated and holistic approach to healthcare and a better alignment with the changing needs of patients.
- Stakeholders emphasise the importance of a flexible and clear legal framework for implementing nursing consultations, including task delegation, proper funding mechanisms, education, training, and regular practice.
- The implementation of nursing consultations is impeded by the lack of recognition of nursing expertise, potential fragmentation of health care, shortage of (qualified) nurses, and the lack of clarity about the medicolegal responsibilities between nurses and medical physicians.

6.2 Objective

This chapter presents the results of a stakeholder consultation that aimed to explore the facilitators and barriers to implementing nursing consultations in the Belgian context. This consultation also aimed to identify needs and possible solutions.

6.3 Methods

6.3.1 Profile of participants and recruitment process

In a first step, a stakeholder map was created to identify all stakeholders according to the perceived degree of influence and interest in the topic (Table 12). Using this overview, the team consensually decided to focus on context setters. These context setters refer to individuals, groups, or organisations that have a significant influence on shaping the broader context or environment in which a project, organisation, or initiative operates. These stakeholders may not be directly involved in the day-to-day activities or decision-making processes of the project, but their actions, policies, or positions can have a substantial impact on the project's success or outcomes.

In a second step, participants were selected from the group of context setters to ensure regional diversity and professional heterogeneity. A total of 12 organisations were identified for interviews. Key players and subjects (stakeholders with a high level of interest), were involved in other activities of this project (such as surveyed in Chapter 5 and invited for the stakeholder meeting at the end of the project).

Table 12 – Overview of Belgian stakeholders related to nursing consultations

	Lower level of interest	Higher level of interest
High power (i.e. ability to achieve goals)	**Context setter (keep satisfied)** • Five hospital federations • Four professional associations of GPs and medical specialists • Five national sickness funds • Three regional health administrations	**Key players (engage closely)** • *Federale Raad voor Verpleegkunde* (FRV) – *Conseil Fédéral de l'Art Infirmier* (CFAI) • *Technische Commissie voor Verpleegkunde* (TCV) - *Commission Technique de l'Art Infirmier* (CTAI) • National association of nurses • Cabinet of the minister of Public Health
Low power	**Crow (minimal effort)** • Belgian Observatory of Chronic Diseases • Authorities in charge of training and education of nurses	**Subjects (keep informed)** • Advanced practice nurses (APNs) • Professional associations of nurses • Academic experts in nursing sciences • Patient organisations

Note: three hospital federations were interviewed, two professional associations of GP and medical specialists, one sickness fund and all three regional health administrations. Stakeholders in grey were not interviewed for this chapter.

6.3.2 Recruitment process

The context setting organisations received a personal invitation, explicating that interview participants should possess sufficient knowledge and expertise regarding nursing consultations. Multiple participants from the same organisation were allowed to take part if they were involved in the issue. Three complementary strategies were used for recruiting participants:

- Direct invitation: individuals who were knowledgeable about the issue (e.g. based on previous KCE projects) were directly invited to participate,
- Internal reorientation request: a contact person within the organisation was asked to redirect the invitiation to someone relevant for the interviews,
- Generic mail: email with inclusion criteria for participating in the interviews was sent out, mainly targeting individuals who could provide insights on on nursing consultations from their organisation's perspective.

A total of 9 interviews were conducted, with three interviews in Dutch and six interviews in French (interviews with stakeholders from Brussels were held in French). Among all interviews, there were 19 participants, with three interviews conducted with a single respondent. A dyad of KCE researchers attended each interview: with one serving as the moderator (JED or MAD) and the other as note-taker (KOV, IMV or NBE). Two organisations did not respond to the invitation email and three reminders. Considering data saturation, they were excluded from the study.

6.3.3 Tool for data collection

Data were collected through online semi-structured interviews. To guide the discussion, an interview guide was used, which was developed based on the dimensions of the Strengths – Weaknesses – Opportunities – Threats (SWOT) framework.[153] The SWOT framework helps to assess an organisation's or project's position concerning a specific issue. It distinguishes between internal factors, such as strengths and weaknesses, which exist within the organisation or partnership under analysis, and

external factors, namely opportunities and threats, which exist outside the organisation. Additional questions were drafted according to the Political – Economic – Social – Technical – Environmental – Legal (PESTEL) framework. PESTEL is a complementary tool to SWOT that provides a more detailed analysis of the external context by examining specific types of issues that frequently impact the implementation of projects or initiatives.[154, 155] PESTEL involves identifying the factors within each of the six domains that are relevant for the project being considered. A special focus of PESTEL is identifying trends, making it valuable for proactive anticipating changes rather than being caught off guard. The topic guide used in the interviews is available upon request.

The topic guide was initially drafted in French and then translated into Dutch. The guide was reviewed by the research team and by other KCE researchers, familiar with qualitative research and/or nursing sciences. During the interviews, accompanying slides were used to provide the definition of a nursing consultation as used in this project (Box 1). After the first interview conducted in French, the interview guide was modified to ensure the focus of the interview remains on consultations for patients with complex conditions rather than encompassing all patients.

6.3.4 Analysis

All interviews were audio recorded and transcribed *verbatim*. The analyses were based on the SWOT categories, with attention given to emerging themes. As the distinction between the different dimensions of the SWOT was not always clear, the results were categorised based on barriers and facilitators, with sub-categories derived from the PESTEL framework.

- **The political dimension** relates to the government policies at all levels, the allocations of resources by the government, the needs and/or demands of stakeholders, the actions of the lobbying groups, the changes in power/influence/connected of key actors and the expected directions of the political changes.
- **The economic dimension** relates to the economic situation at all levels and of specific groups/sectors, the infrastructure, the financial situation of key actors, the availability of private sectors resources and the expected directions of economic changes.
- **The social dimension** includes the demographic and population trends, the health among populations, education levels, access to essential services, public perception, customs/beliefs/attitudes, media views, role models, knowledge/attitudes/practices, potential for knowledge exchanges, expected direction of social changes.
- **The technological dimension** refers to the access of the actors to technologies, the pattern of use of existing technologies, the new technologies that could impact the issue, the alternatives, the expected technological developments, etc.
- **The environmental dimension** includes the contextually relevant issues, the regulations or requirements at environmental levels, the impact of the activities, geographical location, etc.
- **The legal dimension** refers to human rights, existing legislation having an impact on the other drivers/on the population/on the issue, pending or future legislation, standards/regulations, ethical issues, etc.

Quotes from the interviews are included in the text in their original language, but they have been edited for length and clarity.

6.3.5 Validity and reflexivity

Interviews were conducted by KCE researchers with a nursing background. Although participants were not explicitly informed, the educational background of the researchers is publicly available. The researchers intentionally did not present themselves as nurses to avoid any social desirability bias in the participants' perceptions. However, it is important to note that among the participants, eleven of them had a nursing background, with previous or current experience as nurses. This may have influenced the interviews as they might have been a ‘sympathy’ bias towards nursing consultations, potentially creating a false impression of consensus regarding these consultations.

There were instances where participants without a nursing background also expressed their interest in nursing consultations, indicating the absence of a potential positive bias towards them.

After 9 interviews, the data seemed to converge, reaching a point of saturation where further interviews did not provide significant additional value. Furthermore, the results of the interviews were consistent with emerging results from the literature and the online survey.

6.3.6 Ethical considerations

Participants gave their consent for the interviews to be recorded. Data were pseudo-anonymised after transcription. To ensure traceability of the quotes, the stakeholder quoted is numbered after each quote.

6.4 Results

6.4.1 What is a nursing consultation?

- **There is no consensus among interviewees what nursing consultations entail**

Although nursing consultations lack an official (legal) description, some participants indicated that more and more local existing initiatives emerge bottom up without specific funding or legal framework. Yet, not all participants had prior experience with nursing consultations, which might have contributed to the absence of a **consensual description** for nursing consultations. While some participants narrow down the concept of a **nursing consultation to patient education**, and providing **follow-up care,** others use a broader scope including various activities such as **coordination and case management** that are not part of the regular care or technical activities that nurses perform.

> *« C'est une forme d'éducation thérapeutique en fait. Donc, le patient, et généralement c'est comme ça que ça se passe, est référé par le spécialiste vers l'infirmière pour quel que soit la consultation, mais pour une consultation spécialisée dans le domaine, ça peut être la pneumo, la néphrologie, l'endocrino et donc, c'est plus, je vais dire, une éducation thérapeutique que l'infirmière donne aux patients. » (Stakeholder 3)*

> *« Une consultation infirmière, c'est tout ce qui se fait un peu en dehors de l'acte technique, d'administrer un soin particulier. C'est vrai que, dans le cadre du soin palliatif ou de l'hospitalisation à domicile, nous, nous sommes quand même fort amenés à faire à côté de cet acte, d'autres choses qui sont comme notamment de la coordination mais aussi du lien avec le médecin traitant et du lien avec l'équipe hospitalière, du lien avec l'équipe de seconde ligne palliative le cas échéant et que donc, dans ce cadre-là, il y a toute une série de choses qui doivent être observées ou des paramètres qui doivent être relevés aussi pour pouvoir permettre de faire ce lien puisque le médecin traitant ou l'équipe hospitalière n'est pas nécessairement au chevet du patient. […] De mon expérience, c'est ce que je verrai qui peut relever de la consultation infirmière, c'est tout ce qui peut être fait par une infirmière dans le cadre de la facilitation de la prise en charge du patient mais en dehors de l'acte proprement dit d'administrer un soin […] » (Stakeholder 7)*

The lack of consensual definition is supported by the heterogeneous descriptions of nursing consultations given by the interviewees:

- A **shared moment between a physician** and a nurse to allow physicians to delegeate additional technical acts that are currently under the responsibility of the physicians to the nurses, depending on the patient's profile.

> *« La consultation infirmière, ce serait plutôt du temps partagé où on pourrait, pour certains patients, déléguer un peu plus, peut-être pour d'autres un peu moins. » (Stakeholder 2)*

- A dedicated moment to reflect about the development of the health care plan.

« La consultation de l'infirmière, c'est donc une consultation pour voir comment on donne les soins, c'est-à-dire définir le plan de soins, définir les soins, définir les besoins du patient, l'autonomie du patient et l'environnement dans lequel il se trouve pour le faire […] » (Stakeholder 4)

- **A triage, taking place before a medical assessment**, allowing nurses to conduct an initial evaluation before redirecting patients to the most suitable healthcare professionals.

« Une consultation infirmière, cela va être un problème posé par le patient, donc une anamnèse, des hypothèses de diagnostic en tout cas à renvoyer vers la personne compétente donc c'est une consultation, c'est aussi une consultation à caractère probablement un peu plus préventif que curatif en ce qu'il s'agit essentiellement d'évaluer, de dépister des problèmes de façon à orienter correctement le patient, le suivre le cas échéant […] » (Stakeholder 4)

- **A broader scope than merely task execution** and thus not limited to a dispensary-like function (wound care, bandages, injections…).

« Je pense qu'il faut faire la différence entre consultation et peut-être dispensaire […] ça va être la piqûre, ça va être le pansement, ça va être différentes choses et on va peut-être s'éloigner, je vais dire, de l'essence première de ce qu'on veut faire au niveau d'une consultation typiquement infirmière […] » (Stakeholder 5)

An interviewee stresses **the importance to define 'nursing consultations' rather generic and broad** as the content and tasks performed might (and have to) be very different based on the specific clinical pathway, targeted patient population, interprofessional context and individual patient needs in which a nursing consultation talks place.

"En dan ja, voor dan heel specifiek te gaan uitlichten van, een verpleegkundig consult is dat en moet in de toekomst aan dit voldoen, dat gaat ge nooit kunnen doen volgens mij, omdat elke situatie anders is. Elke persoon, elk zorgtraject gaat er anders uitzien en het is juist door interprofessioneel samen te werken en samen die zorgdoelen te gaan bepalen, dat ge eh ja juist, de juiste zorg aan de juiste persoon op de juiste moment kunt geven. Dus ik heb een beetje schrik van dat heel sterk te gaan afbakenen of te gaan benoemen op wat het wel of niet zou moeten zijn." (Stakeholder 6)

- **Nursing consultation versus the medical consultation**

Divergences were found regarding whether the consultation serves as a complement or a substitute to the medical consultation. When perceived as **complementary** to the medical consultation, participants expressed that the consultation allows to deliver care for which physicians have insufficient time or expertise. Examples given are patient education, psychosocial support and other counselling activities.

"En misschien de kracht daaruit is die complimentariteit. Ik vind dat een heel mooi gegeven. En […] je leert ook van elkaar en je gaat verder op het één en het ander. Het is niet een kokergedachte: Jij doet dit, jij doet dat en, en daar splitsen de wegen. Ik denk dat dat alleen maar versterkt. […]" (Stakeholder 1)

When the consultation is perceived as subsidiary to the medical consultation, participants indicated nurses performing tasks usually falling under the responsibility of the physicians, such as checking vital observations or doing some technical exams (ECG). This could therefore be interpreted as not being a substitute model as the autonomy of the nurses appear limited. Some participants mentioned a medical delegation of the standardised administrative/clinical anamnesis to nurses, which was considered beyond the scope of this project because the delegation is not accompanied by a form of (decisional) autonomy of the nurses. Some individuals have expressed concerns about nurse substitution in healthcare. They worry that nurses may become the primary point of entry for accessing healthcare services, potentially overshadowing the role of medical experts and other healthcare professionals.

« On peut donner des guidelines à une infirmière qui fait la consultation d'anesthésie, c'est-à-dire qu'elle répond à la place du patient à toutes les questions, enfin pas à la place (rires) et puis remet le document au médecin qui gagne du temps et fait la consultation. C'est un domaine spécifique où elle peut elle-même répondre dans le cadre de ce domaine spécifique […] » (Stakeholder 4)

« Les problèmes, c'est peut-être plus lié au fait qu'à un moment donné, les patients vont utiliser leur infirmière pour tout, c'est-à-dire, « je tousse, j'ai mal à la tête, il me faudrait un rendez-vous chez le podologue », enfin bref, vous voyez ? Ça, il faut, il faut un cadre et un juste milieu. Il faut qu'ils sachent que s'ils voient l'infirmière, ben c'est justement parce qu'ils sont diabétiques, parce qu'ils ont un problème avec leur lecteur, parce qu'ils ne sont pas bien équilibrés ou parce qu'ils ont des plaies au pied, mais pour [les autres demandes]… il faut qu'ils restent dans le cadre. […] » (Stakeholder 5)

However, the participants' discourse reveals that the boundaries are not always clear and that nursing consultations emerge with a more **blended form including complementary and substitutionary** components where nursing consultations sometimes replace and sometimes complement medical consultations.

« Je pense que c'est complémentaire dans le sens où je veux dire, on ne va jamais séparer, si c'est un patient nouveau, une situation complexe et chronique etc., on ne va jamais séparer le patient du fait que à une fréquence X, il va rencontrer un médecin, que ce soit un médecin traitant ou un médecin spécialiste, ce serait plutôt des consultations comme un intermédiaire […] » (Stakeholder 7)

- **Description of autonomy**

The definition of nursing consultations raises questions regarding the **notion of autonomy and responsibility**. Again, no consensual definition could be derived from the interviews. Some participants stressed that **autonomy of nurses is inherent to the profession**, although not well acknowledged at societal level and perceived unequally endorsed by the nurses themselves.

For some participants, **autonomy of the nurses is determined by the physicians**, implying that the physicians remain accountable for the tasks and activities of the nurses, while, for others, **nurses should have increased autonomy compared to their current level**, which could involve the **right to prescribe** medications within a framework to be defined. This can be particularly relevant for stable patients who do not require adjustments to their existing treatment.

« Je pense que la notion d'autonomie, elle est vraiment ancrée en fait dans la profession des soins infirmiers parce qu'on travaille à l'hôpital ou qu'on travaille aux soins à domicile, certaines prises en charge nécessitent une vision médicale, mais c'est l'infirmière qui va justement juger de l'état clinique du patient et se dire « bon ben là, j'appelle l'ambulance parce que le patient se dégrade » ou alors tel ou tel paramètre doit être repris parce qu'on sent bien qu'il y a une problématique qui est soulevée, donc on va essayer de comprendre un petit peu les symptômes. Et donc, je pense que l'autonomie, c'est quelque chose qui est propre à chaque infirmière et qui existe déjà. Il faut juste, j'ai l'impression que le public comprenne aussi que l'infirmière, en fait, est une profession, d'une certaine manière, très autonome en fait. […] » (Stakeholder 5)

"Stel nu dat ik een chronisch nierlijder ben en ik neem een hele reeks aan medicatie daarvoor, ja af en toe moet dat herzien worden, maar dat gaat vaak over een beperkt formularium. Eigenlijk zou dat iets kunnen zijn wat dat ze perfect tijdens een verpleegkundig consult zou kunnen terechtkunnen. Omdat dat ook iemand is die ze vertrouwen, dus iemand die eigenlijk de casus ook wel heel goed kent. Want dat heb je vaak bij chronische patiënten, die zien heel veel diensten doorheen het verhaal en die moeten vaak hun verhaal en opnieuw en opnieuw en opnieuw vertellen en voor hen is dat wel gemakkelijk dat iemand heel hun verhaal ook wel kent […]" (Stakeholder 1)

What seems consensual is that, regardless of the form it takes, a nursing consultation should always be linked, in one way or another, to the medical activity. This connection can be in the form of a preceding medical consultation where a diagnosis has been made, a prescription, a referral from/to the physician, etc. Whether it is complementary or subsidiary to the medical consultation, **the nursing consultation cannot exist without the medical presence**.

> *« Dans ce cas ici où on parle des patients complexes, pour moi, le début est chez le médecin et après, elle peut être autonome pour suivre le patient, pour donner des conseils mais toujours avec le feedback vers le médecin. » (Stakeholder 8)*

- **Generalist versus specialised consultations**

Alongside the complementary/subsidiary distinction, some participants also raised questions about the nature of the consultation, specifically regarding **the 'generalist' versus 'specialist' aspects**. Consultations described as generalist involve nurses providing care independent of a particular diagnosis. This generalist approach is more often associated with primary care and home care, allowing for a more effective consideration of vulnerability factors beyond medical complexity (such as co-morbidity).

> *« Il faut que ces infirmières soient aussi omnipraticiennes et pas spécialisées parce que sinon on va finir par avoir comme en orthopédie, l'infirmière de la main gauche et de la main droite, ce n'est pas cela le but. Je pense qu'il faut qu'elles soignent tout terrain […] » (Stakeholder 2)*

In contrast, specialist consultations are associated with a specific medical specialty and seem to be the dominant model in the hospital context. This could also be explained by the greater availability of human and material resources in hospitals for managing specific health conditions. Additionally, it is easier to establish a framework for nursing activities within a medical specialty, which includes the ability to refer patients to medical specialists when necessary.

> *« Je crois qu'on ne parle pas tellement quand même de la médecine générale, je pense qu'on parle quand même de quelque chose qui est quand même plus proche de façon étonnante et finalement plus proche de la médecine spécialisée. Parce que cela permet de réduire un peu le champ et, par contre, de l'affiner en termes de prise en charge pour tout ce qui est prévention, prévention par les conseils qui sont donnés si on prend le… le… le diabète ou des pathologies chroniques de ce type-là, ou prévention, ben prévention des problèmes, si on prend le fait de « est-ce que mon patient est dans un état de subir, par exemple, une chimiothérapie ou autre chose quoi ou une anesthésie » comme l'avait cité.[…] Donc à partir de ce moment-là, moi il me semble que dans la définition et dans l'organisation de cette activité, je pense qu'il doit y avoir quelque part une référence … je pense quand même au médecin ou au praticien autre qui qui peut mettre le cadre de ce qui doit être suivi. Et je pense que c'est quand même très, on peut trouver des exemples pour toutes les spécialités […] » (Stakeholder 4)*

6.4.2 Drivers for implementation

6.4.2.1 Political drivers

- **The nursing profession is willing to endorse additional responsibilities**

When considering the implementation of nursing consultations, the first group supporting these initiatives should be the nurses themselves. According to some participants, it seems evident that **nurses are prepared and enthusiastic to take up these tasks**.

> *"Ik denk dat er heel veel klaar zijn en zeker ook bereid zijn om dat te gaan doen. Het gaat denk ik ook wel afhangen van tijd, want als dat er nog eens bij komt boven hun gewoon werk, dat is niet evident, en hoe dat het dan vergoed gaat worden. Want de kennis hebben is één ding. Ik kan niet spreken voor alle verpleegkundigen, maar de wil tot samenwerken en delen is er*

toch wel, dat is eigen aan dat beroep, aan die mensen." (Stakeholder 6)

- **Nursing consultations contribute to the valorisation and the retention of nurses within the profession**

The opportunity to conduct autonomous consultations is perceived as **contributing to the professional and personal development of the nurses**, allowing the development of a professional trajectory focused on clinical experience rather than management roles. In other words, these consultations could be seen as contributing to the **retention of nurses** in clinical practice by offering a pathway for career progression based on skills and competencies rather than solely on managerial authority, such as becoming a head nurse. It can contribute to the **revalorisation of the nursing profession** and indirectly reinforcing its attractivity. As some participants mentioned, the society appears to limit the roles of nurses to "*was en plas*", that is providing basic care focusing on needs without acknowledgment of a clinical judgement: the intellectual dimension of the nursing profession is not valorised and this appears to be reinforced by the nurses themselves, although their capacities to assess a situation are perceived of added-value for the holistic approach of the patients.

In this context, some participants suggested that nursing consultations could support nurses who had previously left direct nursing care to re-enter the field.

« Il y a l'épanouissement personnel aussi des infirmières qui est quelque chose d'important parce que si on développe de plus en plus les consultations, moi j'ai l'impression que ça va favoriser encore plus, d'une part la reconnaissance du métier et aussi la volonté de s'impliquer dans certains secteurs […] » (Stakeholder 8)

- **Physicians are ready to delegate more tasks to nurses**

Since nursing consultations rely on the presence of medical professionals, it is crucial for **physicians to embrace and support these initiatives**. According to participants, there is a need for available health care professionals capable of addressing the shortage of GPs and other medical specialists, thereby reducing the workload of physicians while taking care of complex chronic situations. In this context, some participants mentioned that the **delegation of tasks from physicians to nurses is not perceived as a threat** to medical practice, as long as it is included within a clearly defined framework of collaboration. For professional associations of physicians there is a **willingness to delegate activities to nurses**, starting by identifying the most adequate profile to execute the tasks in a secure context. Therapeutic education was cited as an example by several participants, as it appears that there is a growing **awareness of physicians regarding the importance of therapeutic education**. The **formalisation of the delegation of tasks could legalise existing practices** and thus offering a clear framework for professionals.

« Cela je pense que cela fait l'unanimité, en aucun cas, la délégation de tâches n'est vécue comme une menace pour le médecin généraliste ou la première ligne, que du contraire. A part peut-être quelques dinosaures qui ne sont pas ceux qui sont ici, qui veulent à tout prix faire tout pour leurs patients et qui refusent la collaboration. Mais moi je pense que tout ce qui nous permettrait de déléguer des tâches, on est preneur. Moi j'y ajoute, dans un cadre de communication optimalisé, mais moi tout ce qui peut être fait par autrui je prends […] » (Stakeholder 2)

The **delegation of medical acts** (and thus power) **to nurses** is likely to be better supported when inserted in a collaborative framework. **Working in close collaboration – in a complementary manner –** needs to be understood as an opportunity to increase the quality and the efficiency of health care for both nurses and physicians. The establishment of working conditions that facilitate such collaborations is essential. This can be achieved by the **integration of nurses into multidisciplinary teams**, which contribute to the definition of a framework of practice, and, for some participants, bypass the need for a right to prescribe (see also 6.4.2.5). In

this context, the prescription could be understood as a form of standing order, with the medicolegal responsibility remaining with the physicians who issue the prescription.

> *« On soulève la question de la délégation des tâches et je pense que oui, il faut que ça fasse partie d'une concertation et que ça puisse être établi de manière très formelle, mais je suis assez d'accord. Pour moi, une infirmière, dans une certaine mesure, dans un certain contexte, elle peut tout à fait prescrire et je pense que c'est même aux bénéfices du patient et du contexte qu'on rencontre actuellement de pénurie, de surcharge des soins. Pour moi, c'est tout bénéfice […] » (Stakeholder 5)*

> *"Hoewel dat ze alle twee op het einde van het spectrum zitten, zie je wel dat die meer en meer wat dichter naar elkaar beginnen te komen. Artsen beginnen meer en meer zich ook bezig te houden met de impact op uw dagelijks leven en verpleegkundigen beginnen af en toe een keer die grens van de geneeskunde ook over te steken. Dus het is een heel moeilijk evenwicht. Als de arts en de verpleegkundige elkaar daarin vinden, lukt dat zeer goed. Het probleem is, als die elkaar helemaal niet vinden, dan krijg je beschermingsgedrag en grens-trek-gedrag." (Stakeholder 1)*

- **Health care professionals should work together on a basis of equality**

The previous bullet is also related to another political driver: the need for more equality in the working relationships between health care professionals. Indeed, for some participants, there is a lack of legitimacy of the nurses as autonomous professionals, especially for the patients who may refer to the physician as a reference, undermining the clinical expertise of the nurses. Specifically, **the ability to issue a diagnosis** – despite the existence of nursing diagnoses – and **the right to prescribe** are perceived by the participants as the sole responsibility of the physicians in the Belgian culture of care.

This entails eliminating the hierarchy between physicians and other health professionals: there is a need for a mutual acknowledgement of the unique expertise brought by each profession. Successful implementation would therefore require a **proper communication with physicians** to ensure they orient patients to nursing consultations adequately. Also, giving **correct information to patients** is needed to make them aware of and confident in the existing services. The clear **information** of other health care professionals, especially physicians, and of patients has also a specific objective of reinforcing the legitimacy of the nursing consultations and the unique expertise offered by nurses. In this context, policies supporting an **integrated response to the patient needs** could be seen as facilitating this equality between health care professionals. Nursing consultations should be embedded in a multidisciplinary framework, starting from a holistic perspective on the patients.

> *"Een zorgteam zijn mensen die gelijkwaardig zijn, die werken rond de doelen van een persoon, waarin ieder z'n expertise heeft en ook naar gevaloriseerd wordt door de andere teamleden, ook uw persoon, ook uw mantelzorger […]" (Stakeholder 6)*

> *"Voor heel veel patiënten is het woord van een arts vaak nog meer waard dan het woord van een verpleegkundige. Dus men wil vaak een arts zien, puur omdat dat iemand is met de titel van arts. Eh dat vraagt wat sensibilisering bij de populatie en zich er ook durven aan vrijstellen." (Stakeholder 1)*

But, beyond policies, again, participants insist that nurses and physicians should have equal power and influence when it comes to discussing integrated care. This could be supported by **education and lifelong learning**, including **shared training opportunities,** likely to reinforce the mutual knowledge and respect between health care professionals, building the ground for more equality among health professions. It was also mentioned that large differences in income could be a barrier in collaboration based on equality.

> *"Zolang dat ge niet aan tafel zit op basis van gelijkwaardigheid is al die discussies zinloos. Hè, dus alles rond geïntegreerde zorg, ik heb… mijn standpunt is: los eerst het financiële probleem op en dan kunde over de rest praten. Maar dat doen mensen niet. Als gij in een consult zit en er zit een clinicus bij en die krijgt honderd en al de rest die daar rond zit die krijgt ook honderd, maar dan samen. Dat gaat niet hè." (Stakeholder 9)*

6.4.2.2 Economic drivers

- **Nursing consultations have the potential to reduce costs**

Some participants estimate that nursing consultation are cost-effective, contributing to an **overall reduction of the costs for the health care system**. Reasons are the lower consultations fees but also the potential reduction of health care costs by preventing inappropriate resource utilisation. Consequently, efficient consultations, when integrated within a coordinated structure, could lead to an overall cost reduction. By facilitating a reduction in hospital stays (admission and/or length-of-stay), **discharge planning, and preventing undesired placement in nursing homes**. Yet, participants also stress that it is crucial to provide evidence to support the potential benefits of nursing consultations, as this could serve as a compelling argument for their further expansion.

> *« Tout ce qui est fait par le barème inférieur coûte moins cher à la société. » (Stakeholder 4)*

> *« […] pour réduire les hospitalisations […] pour éviter le placement, par exemple, en institution, précoce ou évitable ou non souhaité […] » (Stakeholder 5)*

- **Nursing consultations need a clear funding mechanism**

There is a need for a **clear funding mechanism of nursing consultations.** Several ideas were suggested by participants. Some emphasised the preference for a **fixed-payment mechanism,** as it effectively covers the integrated and holistic approach to care provision. Others proposed the **use of the nomenclature** that differentiates between initial consultations and follow-up consultations. Some participants also suggested linking the reimbursement of nursing consultations to accreditation criteria for nurses, similar to that of GPs. For some participants, the implementation of **nursing consultations does not require an extra budget** but rather a shift of the resources from one profession (e.g. GP) to the other.

> *« Donc la consultation infirmière pourrait faire l'objet d'un remboursement évidemment comme une consultation chez le médecin généraliste, mais pour moi le financement le plus important c'est au niveau de la formation, donc cette forme d'agrément qu'on attribuerait aux infirmières euh… donc de la même façon qu'elles puissent toucher à ce moment-là une prime, comme un peu sur le modèle du médecin généraliste. » (Stakeholder 2)*

> *"Maar we kunnen ook gewoon wat verschuiven van middelen. Dan niet binnen verpleegkunde, maar misschien vanuit andere potjes die er nog ergens zijn. Ge kunt een hele andere financiering van ons gezondheidszorgsysteem maken ook, waarbinnen dit kan passen , maar ja, dat is ja...[lacht] Ik denk niet dat er op zich geld moet bij komen, maar ik zou dat anders verdelen. Ik zou de middelen anders verdelen. Over de gezondheidszorgberoepen heen." (Stakeholder 1)*

6.4.2.3 Social drivers

- **Nursing consultations improve the accessibility and quality of care by adopting a holistic approach**

The interviews revealed several (potential) benefits, such as the **greater number of nurses** compared to physicians, the **ability to focus on non-medical aspects**, the strong **coordination skills of nurses** and longer consultation time slots**.** Furthermore, interviewees stated that an asset is the higher perceived accessibility among patients to ask questions about their condition, treatment etc. Nursing consultations, for example, offer a platform to address subjects that are perceived by patients as challenging to discuss with physicians, such as sexual and emotional wellbeing or the use of non-conventional therapies, as well as practical advice. By contributing to a better patient information, the nurses could also reinforce the **patient health literacy and the informed decision making**. When patients are attended to by a nurse prior to seeing a medical physician, they may experience **reduced stress levels**.

> *« Il y a une certaine connexion qui s'établit avec certains infirmiers et donc plus facilement certaines discussions vont avoir lieu. Il y a un côté un peu plus familial, de proximité etc. qui… qui s'établit et je pense qu'aussi nous, c'est que parfois quand ces patients-là abordent des sujets qui sont plus personnels ou qui font part de leurs peurs par rapport à leurs pathologies […] L'homéopathie, il y*

a l'acuponcture, ceci, cela, ça c'est vrai que, […] on est sorti un peu de la prise en charge globale par la prise en charge holistique. » (Stakeholder 7)

The nurse can endorse a role of reference, by creating **a privileged relationship** with the patient. Several participants pointed out that nurses spend more time with the patients, cover more aspects (e.g. social, behavioural, sexual) than the purely medical aspects and, in this way, acquire an in-depth knowledge of the patients' needs and preferences, supporting a more adequate (therapeutic) response. This **integrated approach to health** is also mentioned as one of the added values of nursing consultations for the patients contributing to a more holistic approach, including non-medical determinants of health and supporting the **development of personalised and goal oriented health care plans.** This is reinforced by the capacity of nurses to have a more **transdisciplinary vision** compared to medical specialists where the focus lies on a specific organ/system at the detriment of a global vision. In this context, nursing consultations appear to be particularly of added-value for patients with **chronic and complex conditions often characterised by multi-pathology**. But, to date, the current training of nurses (in general) poorly implements this global and holistic vision of health care.

"Want ge spreekt hier over complex zijnde multimorbiditeit, chronische patiënten. Als iets heel acuut is dan is dat medische, dat is echt heel belangrijk. Dat is logisch, als ge op de spoed terechtkomt en uw arm is eraf, ja, dan wilt gij zo snel mogelijk dat dat gedekt is en dat ze eventueel die arm er weer miraculeus kunnen aanzetten. Dat zijt ge niet bezig met de impact op uw leven. We zien wel bij die chronischere groep dat die impact op hun leven belangrijker wordt. Wat doet het, het bio-psycho-sociaal aspect, dan vooral op die twee laatste, daar begint men vooral over na te denken. En dat staat wel centraal in dat verpleegkundig consult wat mij betreft." (Stakeholder 1)

Nurses are also recognised for their ability to visit patients in their homes, enabling them to observe patients (and their surroundings) in their **own environment** (taking into account that not all home visits are necessarily equal to nursing consultations). This approach reinforces an intersectoral perspective on the patients' health and the needs of both the patients and their support network. This leads to the possibility of including nurses into multidisciplinary teams and the possibility for **transmural care** (from hospital to primary care). Nursing consultations contribute to the **continuity of care**, e.g. by facilitating discharge after surgery or maintaining a follow-up during a complex patient trajectory

"Eén van de projecten die we lopen hebben is ontslag na dagkliniek. Anders kwam de anesthesist of de chirurg dat doen. Een chirurg en de anesthesisten zijn nog bezig in het OK, patiënt is de eerste op de lijst, ontwaakt, die gaat eigenlijk naar, naar de ruimte om te wachten tot hij op ontslag kan. En die vragen dan "wanneer komt de arts en de anesthesist langs?" "Ja, op het einde van hun operaties." Wij zijn nu aan het verkennen met een standaard protocol in welke mate kan dat ontslag bijvoorbeeld door een verpleegkundig specialist gedaan worden? […] het checken van de patiënt, het uitleggen van goed, nu ga je naar huis, dit is uw medicatie. En ge merkt dat patiënten in het begin soms dachten "oei, maar dat is de chirurg". Wat dat je wel merkt, is dat die verpleegkundig specialisten zodanig getraind zijn dat dat voor de patiënt uiteindelijk niets meer uitmaakt." (Stakeholder 1)

- **Nursing consultations are congruent with the current demographic and population trends**

The **aging of the population combined with the increasing prevalence of chronic diseases** and the complexity of health and social needs, serves as a significant driving force for the implementation of nursing consultations. This is especially true when patients are already receiving support from healthcare professionals. Nursing consultations were valued as **relevant for complex health and social situations,** particularly in urban contexts.

« De nouveau, on parle ici de patients qui sont dans des situations complexes […] c'est que quand on dit situation complexe, elle est complexe au niveau médical mais souvent et en même temps, complexe au niveau psycho-social. […] Et ça, ça, la tendance est vraiment à la hausse. La personne qui vient régulièrement au domicile pour prodiguer un soin, elle devient une personne de confiance aussi. » (Stakeholder 7)

- **Different forms of nursing consultations can occur in different health care settings**

Nursing consultations can be adapted to various healthcare settings, recognising that a "one size fits all" approach may not be suitable due to local circumstances. Therefore, participants expect nursing consultations to align with the specific needs and **context of each territory**.

> *« Je crois que la notion territoriale, elle est quand même intéressante parce que, nous, on a quand même un territoire qui est très disparate, il y a beaucoup de réalités différentes en fonction des régions ou pas. […] Il n'y a pas une réponse qui pourrait convenir à l'ensemble de la Région wallonne, ce serait une réponse peut-être par zone ou par territoire. » (Stakeholder 5)*

Participants also identified **the size and/or academic nature of the institutions as a facilitator to implement nursing consultations in the current Belgian context. Large hospitals** have a larger staff capacity and an economy of scale. They **are currently better positioned to organise and provide these services,** even without relying on structural funding. Due to the presence of various healthcare professionals (such as physicians, physicians in training, etc), patients in these hospitals require a reliable and consistent point of contact to ensure continuity of care. Moreover, the remuneration system of physicians in academic hospitals (i.e. salaried employees instead of self-employed physicians that rely on predominantly fee-for-service payment) was pointed out by respondent as an important reason why developing nursing consultations is not perceived as a financial threat for physicians.

> *« Je viens d'un grand hôpital public et donc c'est quelque chose qui a été très vite mis en place. On a vraiment tout un panel de consultations infirmières. Je pense que pour des plus petits hôpitaux, c'est plus difficile parce qu'il faut détacher du personnel pour le faire mine de rien et il n'y a quand même pas de financement à la clé, donc ce n'est pas comme si le patient payait sa consultation infirmière […] » (Stakeholder 3)*

> *"Ik denk dat men een groot verschil ziet binnen universitaire centra … de artsen niet betaald worden per prestatie, dus een verpleegkundig consult vormt geen bedreiging voor wat zij doen. Zij zien dat eerder als een aanvulling." (Stakeholder 1)*

In settings outside the hospital context, such as nursing homes, there seems to be a **growing potential for the integration of nursing consultations**. These consultations can be implemented as part of **transmural care**, inspired by models like the geriatric liaison or other outreach programs. Similarly, some stressed that the **existing structure of home care does not accommodate nursing consultations.** However, there is a potential to enable nursing consultations to take place in patients' homes, especially through collaboration with GPs.

> *"Dat is iets waar dat wij nu vanuit het [ziekenhuis], ook omdat wij een overbevraging hebben van onze geriatrie […] die complexe mensen […] want we onderschatten dat, maar een woonzorgcentrum is eigenlijk een complexe zorgsituatie. Wij krijgen hier vaak, dat is tertiaire preventie, dan is er al heel veel fout gelopen, dan komen die hier. Eigenlijk zou het veel beter zijn dat we de boel omdraaien en dat wij vanuit de ziekenhuizen bijvoorbeeld met onze verpleegkundig specialisten in de woonzorgcentra beginnen langsgaan, zodat we eigenlijk preventief zorg kunnen evalueren en kwalitatieve zorg voorschrijven. Ja, het verpleegkundig voorschrift dan. Een zorgplan opstellen, daar samen over nadenken met de mensen van daar, want dat gebeurt nu niet. Er is daar eigenlijk geen overlap, als je in de woonzorgcentra gaat, men is bezig met laten we zeggen operationeel de boel rond te krijgen, van shift tot shift. Het is zelfs niet meer van dag tot dag, maar het is echt van shift tot shift. Dat men daar eigenlijk noch de ruimte, noch de middelen voor heeft om dat te doen. Hoewel denk ik dat, moest dat er zijn in de woonzorgcentra, dat dat een enorme aantrekkingsfactor zou zijn voor misschien wat hoger opgeleide profielen in de verpleegkunde om richting die woonzorgcentra ook te gaan werken […]" (Stakeholder 1)*

« Une infirmière de soins à domicile, elle va de patient en patient, elle fait des soins ponctuels. Elle peut répondre à une prise en charge ponctuelle et à un besoin ponctuel, mais je ne pense pas qu'elle peut… enfin, elle ne fait pas des consultations, en tout cas moi, de l'expérience que j'ai des soins à domicile, elle ne va pas faire une consultation typiquement comme on l'entend ici, mais c'est à développer et je pense que c'est à développer dans le contexte soins à domicile et première ligne en collaboration avec les médecins et il faut voir comment justement de quelle manière on peut articuler ça pour que le patient… ce ne soit pas perçu comme étant une contrainte, mais plus comme étant un outil en plus à sa disponibilité. » (Stakeholder 5)

To address the concern of potential fragmentation, some stressed that these consultations should be seamlessly **integrated into the existing structures**, particularly in primary care. The acceptability of such integration in primary care is likely to be influenced by the **sociocultural and/or urban context**, where there are already integrated health care services known by the patients. Integrated models in which all actors belong to the same level of care appear more efficient compared to a model where professionals need to navigate across different levels of care.

« Je suis vraiment convaincu que ce rôle-là a vraiment un sens et qui s'inscrit dans l'évolution des soins de santé, maintenant je ne serai vraiment pas favorable à créer encore une espèce d'autre couche supplémentaire mais plutôt d'intégrer éventuellement à des rôles qui existent déjà et des interfaces qui ont déjà lieu avec les patients. » (Stakeholder 7)

Some participants envision the possibility of having different forms of consultations (i.e. generalist consultations versus specialised consultations), that could correspond to different patients' needs in different health care settings (i.e. hospital, primary care, nursing home…). In that sense, having a **flexible model of nursing consultations adapted to the patient's needs** could serves as a driver for implementing nursing consultations in various settings: this may therefore require correct information of both patients and professionals to ensure the adequate orientation and support an informed decision-making.

« Ce ne serait pas un souci de proposer différentes formes de consultation dans différents lieux, dans différentes structures pour différentes thématiques par exemple tant qu'on sait fournir les informations, orienter le patient face à un préalable indispensable, j'imagine. Si on va vers un modèle flexible, il faut pouvoir vraiment orienter le mieux possible pour permettre un choix […] » (Stakeholder 5)

- **Education and expertise are important to conduct nursing consultations**

All participants discussed the importance of specific **education to support the implementation of nursing consultations,** either through its integration in the basic curriculum (e.g. the focus on holistic care) or as part of an additional training program. In addition to education, it was also mentioned that it is important **to recognise the education and expertise of nurses while also establishing a level of consistency in their training**. Some stakeholders pointed out that, although the skills frameworks are common, the competence level of nurses can vary depending on the school they graduate from. This would help other healthcare professionals to understand the scope of practice of different types of nurses, clarifying what they can and cannot do according to the titles of practices and the level of competences attained by their education. Not all participants were knowledgeable about the current training program available to nurses. Profiles of advanced practice nurses, specialist nurses or specialised nurses were described as not clear and leading to confusion.

« Là où très honnêtement j'ai un problème, c'est au niveau des infirmiers avec les titres de spécialité parce qu'il y a les titres spécialisés et il y a les compétences particulières. Alors par exemple, on a des infirmières qui sont spécialisées en oncologie, on a des infirmières avec des compétences en oncologie, on a des infirmières spécialisées en gériatrie, des infirmières avec compétences gériatriques. Moi je ne sais pas très bien à quoi cela correspond tout ça. […] Manque total de visibilité, de structure, d'organisation, etc. Et alors, on met cette infirmière de pratique avancée, ce n'est pas une infirmière spécialisée, super spécialisée, c'est un master qui se rajoute en réalité au titre

d'infirmière spécialisée qui est un bachelier après bachelier. » (Stakeholder 4)

There were various opinions about the required training level. Some believed that a master's degree is essential while others deemed specialised training in specific area's (e.g. wound care) to be more valuable. The development of the master in nursing sciences is seen as an opportunity for expanding the nursing consultations and a potential role in prescription. Yet a diploma in itself is insufficient. A focus on diplomas could potentially jeopardise the advancement of nursing excellence and the recognition of the profession. Some participants expressed their concerns about the **current basic training of nurses**, stating they perceive a **decrease in the quality,** which negatively impact the competences of all nurses. It seems that there is an **increase of profiles with a level 4 diploma** (health care assistant – "*aide soignante*") while there is a need for **nurses with a bachelor degree (level 6).**

The importance of having **clinical expertise (and experience**) was highlighted several times. Some participants recommended that prior experience as a nurse should be a prerequisite before starting nursing consultations, while others advocated for nurses conducting consultations to have a minimum threshold of activities to establish their expertise. This need of recognising current expertise led to the suggestion of developing an **agreement model for nursing consultations**, similar to the current model used for physicians, which would be built upon training requirements for nurses eligible to conduct nursing consultations. This form of agreement could reinforce the **valorisation of the current expertise** but also help nurses to acquire, through education, additional competences in order to respond to the needs of their patients. This can also contribute to enhance the **lifelong learning** of nurses by providing incentives to do so: **lifelong learning and education was indeed cited as neglected for nurses.** Some participants perceived this as a consequence of the investment of advanced practice. This lack of investment in lifelong learning could prevent the development of the expertise for those with an active practice in the field and thus contribute to poor quality of care. Participants also raised concern about **the lack of uniformity regarding the quality and the acknowledgment of the training/education** of the nurses as well as about the expected level of qualification for a defined consultations.

Alongside knowledge and experience, some participants stressed the need for nurses to have **soft skills** as being able to work in collaboration or being able to show leadership. Moreover, there is a need to work on the **sense of legitimacy of nurses themselves**, contributing to the development of their professional positioning and of their professional identity as nurses. Because specific training and clinical expertise are essential, some participants emphasised that **not all nurses should conduct nursing consultations**, particularly those lacking the necessary training or clinical expertise.

"Ik denk enerzijds het aspect van een consult doen is iets anders dan een shift rollen. Ik denk dat dat een andere aanpak is, iets dat heel veel verpleegkundigen ook niet beheersen. Dat merken we hier ook bij ons verpleegkundig specialisten die starten. Dat is een ander concept. Dat is één. En denk ik ook uw inhoud. Want natuurlijk, stel nu dat je iemand hebt die verpleegkundig consultaties doet bij de huisarts, die gaat een heel andere kennis moeten hebben dan iemand die dat bijvoorbeeld doet op nefrologie. […] Ik denk dat we naar een traject gaan moeten die heel gelijkloopt met de arts-specialisten op dat vlak. Dat je een basisopleiding hebt van verpleegkunde en dat je dan ergens een soort specialisatiestage moet gaan doen om die beide competenties, inhoudelijk en vormelijk, te gaan trainen. […] maar als je natuurlijk naar dergelijke zaken moet gaan, moet je ook wel zien dat de opleidingen, of dat mensen die daarin kunnen bekwamen, competenties kunnen aanleren, en dat dat goed zit, dat dat ook wel erkend wordt […] Dat je niet, ik zal maar zeggen, een systeem hebt waar je twintig verschillende opleidingen hebt die allemaal een andere invulling hebben, dat je daar ook wat meer uniformiteit hebt, dat je weet wat voor personen dat er afstuderen en wat voor competenties dat die hebben, wat die kunnen, wat die niet kunnen, wat die goed weten. Ik denk dat dat ook wel een belangrijke is. Ik denk dat dat nu al in de universiteiten zit, zeker binnen de specialisten en in de masteropleiding zit dat ook al deels in. Maar toch moeten we zien dat dat wel een vast karakter krijgt, dat we dat niet uit het oog verliezen." (Stakeholder 1)

- **Regular practice is essential for nursing consultations**

Some participants emphasised the importance of nurses having a **dual profile**, integrating consultations into their existing practice within hospital wards or alongside nursing home care. As suggested by some participants, the expertise of nursing consultations could be integrated within existing profiles and roles (e.g. nurse coordinator): this form of mixed profile could prevent the aggravation of the nursing shortage. They also insist on the need for **regular practice**, including a minimal threshold of activities in order to consolidate their expertise. Moreover, this aligns with the driver mentioned by some participants, ensuring that **APNs remain actively engaged in hands-on care to maintain their practical knowledge**. This could also be important for an effective collaboration with other nurses. This integrated profile also facilitates **outreach** and enables meeting patients in their own environment, contributing to an increased accessibility of health care for vulnerable profiles.

> *"Maar daar heb ik weer een vraag, hoe nauw zijn die verpleegkundig specialisten nog betrokken in de dagdagelijkse zorg. […] een docent verpleegkunde in de school mocht enkel nog werken als hij ook op het werkveld actief was. […] Dus die mensen moesten allemaal minstens een masterdiploma hebben, maar wat was het voordeel, die stonden nog wel elke dag in de praktijk. Met hun voeten, ik noem dat in de modder. Ik heb een hekel aan een verpleegkundige die vanaf dat ze een niveau hebben plots verdwijnen uit de zorg. En dan ergens op een bureau ver weg van alles beginnen te bedenken en op te volgen." (Stakeholder 9)*

> *« Et là c'est peut-être une petite, une petite séparation que je ferai, c'est de dire ok, si ce rôle pouvait être reconnu en parallèle d'un rôle qu'on tient par rapport à des soins qu'on fait déjà […] Maintenant de nouveau par rapport à la pénurie, c'est le fait de dédier des personnes qui ne feraient que ça et pas autre chose et qui donc, qui agrandiraient cette pénurie.* » (*Stakeholder 7*)

6.4.2.4 Technological drivers

An efficient communication and information system between actors, across the levels of care, is mentioned as one of the expected technological drivers. Recent development in **secure data sharing via smartphones**, particularly in the context of teleconsultations, are considered as drivers for implementation. These developments are especially beneficial as they facilitate connectivity with medical specialists. To support **effective utilisation of these technologies and ensure the upgrading of information and communication technology skills,** specific training is needed.

> *« L'appel à des technologies modernes, mais évidemment, donc il faut voir maintenant les infirmières. Les infirmières chez nous, elles ont dû changer leurs smartphones pour pouvoir envoyer les photos, encoder, télécharger un logiciel de facturation pour passer les cartes d'identité. Donc tout cela nécessite aussi, voilà une adaptation. Donc il ne faut laisser personne au bord du chemin, mais il faut en même temps aussi accepter que les choses évoluent par rapport à cela et pour moi, la communication maintenant via les messages sécurisés avec la plateforme e-santé et tous les moyens dont on dispose me semblent répondre à cette attente. » (Stakeholder 2)*

6.4.2.5 Legal drivers

- **Nursing consultations require a clear and flexible legal framework**

The current absence of a legal framework for nurse consultations results in pilot projects or field experiments where nurses perform acts without legal guidance. This occurs not only within project contexts, but also as part of routine practices, as mentioned in section 6.4.1 above. As such, there is a clear need for **a comprehensive legal framework including the definition of the tasks** ("*listes*") and missions, **and profiles of nurses** involved in consultations, including their level of education and expertise. Additionally, the framework should clarify the **degree of autonomy and responsibility granted to nurses**. Some stakeholders also emphasise the necessity of **clear procedures and guidelines** to regulate consultations, similar to standing orders. Without such a framework, there is a risk of compromising

nurses' autonomous judgment. This legal framework is essential for both physicians and nurses to ensure they work within their defined responsibilities. The definition of tasks should remain **flexible and dynamic** to reflect the evolving nature of **nursing and medical practice in the field**. Establishing this legal framework requires collaboration with medical associations to ensure physician's acceptance and adherence to this model. The legal framework can contribute to the legitimacy and credibility of nurses, both aspects considered as barriers to implementation. Additionally, it implies that granting nurses more responsibilities and autonomy necessitates the establishment of **oversight institutions**, such as a National Nurses Council, and a code of ethics specific to these nurses.

> *« Et donc c'est le problème de la responsabilité quelque part derrière tout ça parce qu'il ne faut pas non plus mettre l'infirmière dans une situation où elle peut être en difficulté par rapport à cette responsabilité. Donc je pense qu'il faut résoudre cette question pas pour le médecin, mais, je pense pour l'infirmière. » (Stakeholder 4)*

> *« Une déontologie aussi à construire autour de cette consultation […] Le fait aussi d'avoir plus d'autonomie, une responsabilité, des règles déontologiques à suivre pour un prestataire indépendant ou pas indépendant dans le cadre d'une pratique avec une personne, il y a quand même des règles déontologiques qui devraient être établies […] [Il faut] la possibilité de sanction, de contrôle, de remise d'avis […] (Stakeholder 5)*

- **Delegation of tasks needs a legal framework**

According to participants, delegation of tasks could only occur when there is a **professional relationship based on trust**, including the acknowledgement of competences, in a defined framework. It is influenced by the **setting** in which the consultation takes place (primary care versus hospital care) or the different practices, that is self-employed nurses, group practice or multidisciplinary teams, but could also be framed by the medical specialty or the health situation. The delegation of tasks is supported by a **formalisation of the communication** between the nurses and the physicians, via team meetings or regular exchanges of patient data.

It also needs to take into account that, according to some participants, not all nurses are willing to take additional tasks, and that additional tasks may require additional training.

> *« Je pense que le médecin va déléguer cela à l'infirmière s'il sait que, dans son statut, elle peut le faire et l'infirmière si elle sait qu'elle peut aller jusqu'à ceci, ceci, ceci qu'elle a vérifié, c'est-à-dire vérifier la prise de sang, qu'il n'y a pas de valeur qui est anormale, l'état général du patient, la fièvre, le truc, etc. donc un certain nombre de critères. […] dans un focus bien déterminé où le médecin spécialiste peut ensuite récupérer ceci pour mettre cela dans une échelle de soins et une pratique bien définie […] » (Stakeholder 4)*

6.4.3 Barriers for implementation

6.4.3.1 Political barriers

- **Nursing consultations are not acknowledged**

Despite their potential to the follow-up of patients, there is a **lack of acknowledgement of existing consultations** Moreover, it seems that some consultations correspond to the definition presented during the interviews but there is **no formal acknowledgement or framework** for such consultations. When the consultations have an official existence, for example in the diabetes convention, it appears that the **exact nature of the consultation is not well-known** by other professionals. This could be explained by the lack of a clear definition (6.4.1), but could also be explained by the absence of **quality criteria defined for "good" nursing consultations**.

> *« C'est quelque chose qui n'existe pas qui n'est pas reconnu en fait et qui limite fort l'organisation des consultations et qui, quelque part, se fait quand même avec en parallèle avec le médecin. […] Donc c'est vrai qu'actuellement il y a un vide, alors qu'il y a une activité ou probablement déjà des activités. Rien que sur un petit domaine bien particulier. » (Stakeholder 2)*

"Eh maar er zijn er denk ik weinig kwaliteitscriteria om te zeggen van kijk, dat is nu een goed consult, hè, als je ja, die basis, dat basispakket hebt, is dat een goed consult." (Stakeholder 3)

- **Not all health professionals do perceive the added-value of nursing consultations**

It appears that other healthcare professionals and the general public are not necessary aware or do not spontaneously attribute 'consultations' as a role of the nursing profession. While for some healthcare professionals **the added value of nursing consultations** is self-evident, this is not case for others. **Medical protectionism** is seen as one of the blocking factors for the implementation of nursing consultations at political level. It concerns power issues, nourished by the fear of losing influence (and/or money). A **form of protectionism could also be found within the nursing profession**, as there exist functions, outside the framework of APN, for which a consultation could be/should be envisioned. This finding refers to active nurses, holding a specialisation or other specific training (e.g. wound care, pain management) that are already provide autonomous nursing consultations but have no intention of pursuing APN roles. They may harbour concerns about potentially losing their current positions or having to working under the authority of APNs.

"Dat wil dus zeggen dat die artsen die dat zeggen, dat die dat niet zien. Dat die dus niet zien wat – wat die mensen dan kunnen […]" (Stakeholder 9)

« Il faut juste, j'ai l'impression que, que le public comprenne aussi que l'infirmière en fait est une profession, d'une certaine manière, très autonome en fait. Et ça demande d'être reconnue aussi par nos collègues et les autres professions. Et je pense notamment aux médecins. Pour certains, c'est une évidence, mais pour d'autres, ça ne l'est pas et ça parfois c'est un, c'est un peu bloquant cette relation hiérarchique qui ne devrait pas l'être finalement parce que c'est une relation pour moi, qui est très complémentaire en fait. » (Stakeholder 5)

- **Nursing consultations increase the fragmentation of care**

For those working in primary care, participants expressed their **fear of having an additional professional coming from the hospital in the first line of care,** jeopardising the roles of the GPs and home nurses and creating an overlap of activities. Some participants also mentioned that this could further fragment the healthcare system by adding more individuals requiring coordination, potentially straining existing collaborations that may still require strengthening. This is seen by some participants as a continuation of the hospital's stranglehold on primary care. It was also pointed that adding a professional may add to the burden of the patient and their entourage. Instead of smoothing the delivery of care, it was perceived as **contributing to the complexity of the current health care organisation and hereby increasing its fragmentation**. This fragmentation could also be reinforced by the current implementation of APN which is often **disciplined-based/(hyper)specialised**. None of the participants mentioned current initiatives of nursing consultations in primary care, supporting the hypothesis that the hyperspecialisation is influenced by the hospital context. In that sense, nursing consultations are preferred to be integrated in the existing roles, i.e. as part of the integrated approach of health and social care.

« C'est la pire des choses. Lorsque l'hôpital descend, la première ligne meurt. Donc il faut surtout que l'hôpital reste bien là où il est, nous on reste où on est et c'est comme cela que les vaches seront bien gardées […] on ne doit pas être la cinquième roue de la charrette de l'hôpital, ça c'est une catastrophe […] » (Stakeholder 2)

Other factors that, according to interviewees, contribute to fragmentation are the increased division of competencies between federal and federated level (since the Sixth State Reform) and the current funding mechanism of health care which do not consider health care as a continuum but as fragmented depending on the setting. This seems to call for another organisation of health care in order to support the integration of nursing consultations and, to a larger extent, an integrated and holistic view of health. Moreover, according to some participants, the current discussion about the **delegation of administrative tasks to an undetermined profile** can also add to this fragmentation, as this could match with a nursing profile. This profile, added

to the existing profiles for nurses, could also reinforce the confusion about the tasks and competences, instead of facilitating the provision of quality health care.

> *"Maar we moeten ook onze wijze van organiseren van de zorg binnen en buiten de muren van bijvoorbeeld een ziekenhuis echt wel gaan herdenken. Daarjuist de casus van het woonzorgcentrum in samenwerking met, eh hetzelfde geldt voor tussen ziekenhuizen, misschien ook binnen, zoals daarjuist [persoon] heeft gezegd, het anders organiseren binnen afdelingen, tussen afdelingen, ja, dat vraagt wel wat." (Stakeholder 1)*

> *« Alors si je veux distinguer les assistantes pratiques, on parle aussi que cela pourrait être des infirmiers mais j'y vois un peu plus une délégation de tâches également administratives puisqu'on n'a pas abordé ici la surcharge administrative. Mais donc, je pense qu'il y aurait un certain danger de faire croître les deux projets simultanément parce qu'on risque de semer un peu le doute entre consultation infirmière, assistante pratique. […] Là, on risque à un moment donné de s'emmêler les pinceaux. Sans compter la coordinatrice dans les maisons médicales, sans compter l'infirmière de la maison de repos, enfin. Donc je pense qu'on doit être prudent, je ne sais pas à quel niveau sont les différents projets, je trouve que l'assistante pratique c'est un peu le monstre du Loch Ness, on en parle depuis longtemps, on ne l'a pas encore vu naître. Mais si les projets se développent parallèlement, à mon avis, à un moment donné, cela risque de coincer un peu.[…] C'est la raison pour laquelle on veut absolument que l'assistante pratique soit administrative. Donc bien séparer les choses pour ne pas avoir quelqu'un qui fait un peu de l'administratif, un peu de soins infirmiers. Donc il faut vraiment bien décider, nous avons un assistant administratif et nous avons des infirmiers. » (Stakeholder 2)*

6.4.3.2 Economic barriers

- **Nursing consultations are inadequately funded**

There are currently **no specific funding mechanisms for nursing consultations** (at the exception of the nursing consultation in the context of home care – code 429015): various models appear to coexist, depending on the local possibilities for funding such initiatives. For some participants, the consultation does not exist as **there are no nomenclature codes** dedicated to nursing consultations, hereby linking the legal recognition to a financial recognition. This argument holds for the sectors at the federal level (e.g. hospitals) as well as at the federated entities (e.g. nursing homes) and could also lead to a **different tariffication** according to the place of health care delivery.

> *« Actuellement, cela n'existe pas la consultation infirmière, cela n'existe notamment pas dans la nomenclature à part le code une fois, mais autrement de fait, une infirmière qui fait une consultation, je vais parler dans mon domaine, autour des problématiques de sommeil, par exemple, de l'enfant, elle n'a pas de code dynamique, elle n'a pas de code. […] Une infirmière pédiatrique qui fait une consultation « allaitement » n'a pas de code, elle ne peut pas faire une consultation. » (Stakeholder 4)*

The **New Deal for general practice** was mentioned as one of the policy initiatives, which needs to be taken account when envisioning the future funding of nursing consultations. The fixed-payment model for medical consultations included in the New Deal could support nursing consultations. The fee-for-service payment system and the lack of clarity about the future of the nomenclature is likely to jeopardise the implementation of nursing consultations at the financial level.

> *« Quand vous allez construire une nouvelle maison et qu'on ne sait pas demain quelle est la nomenclature que l'on aura, n'oubliez pas le texte du « New Deal » du 22 juin de notre ministre pour la médecine générale qui dit il faut forfaitariser. On parle pour l'instant de 60 à 70 %. Il y a des gens qui regardent vers la Hollande avec le modèle qui serait que 80 % des médecins généralistes sont*

payés par un forfait et 15 % par une nomenclature. » (Stakeholder 4)

6.4.3.3 Social barriers

- **There is a shortage of (qualified) nurses**

If the aging of the population and the increase of multimorbidity are two drivers for expanding the role of nurses, the **current shortage of (qualified) nurses** could lead to a "*care infarct*" as the resources are not sufficient to cope with the demands. Despite highlighting the essential role played by the nurses, the COVID-19 pandemic negatively impacted the retention of nursing staff. Moreover, nurses consider leaving the patient bedside in a more and more early stage of the nursing education: current nursing students directly aim at specialising or not providing direct patient care when starting their career (see also section 6.4.2.3 on the need for expertise). This is also why, participants appear to believe that the development of nursing consultations may make the nursing profession more attractive by allow nurses to assume **additional roles in direct patient care beyond bedside care**. Consequently, this could, according to the interviewed participants, **potentially exacerbate the current shortage of nurses**. Some **forms of work organisation**, such as the internal mobile nursing teams or the agency staff, appears to impede the development of the expertise, according to some participants. It also negatively impacts the quality of care as the building of effective collaborative practices is delayed because of this turnover.

« Je pense qu'on a un risque de pénurie d'infirmiers généraux dans le sens que si les infirmiers commencent à trop se spécialiser, on aura plus suffisamment d'infirmiers généraux qui travaillent sur le tout-venant et sur toutes les pathologies. » (Stakeholder 2)

- **Nurses' lack of a confident professional posture**

According to some participants, the development of nurses' expertise needs to be accompanied by a **greater appropriation of their responsibilities**: nurses should endorse the (medicolegal) responsibility for their acts and need to complete their education in order to be able to exert it. It should no longer be possible – in the future – for nurses to hide themselves behind the physicians when it comes to being accountable for their acts. **This requires a change in the professional posture of nurses** : they need to feel competent enough to get involved in a dialogue with physicians, sharing their unique professional expertise in order to improve the quality of care for the patients.

« Moi je voudrais qu'on soit sur le même pied de discussion, que les infirmières cessent de penser que les médecins sont ceux qui ont toujours la science et qu'elles pas […] » (Stakeholder 2)

6.4.3.4 Technological barriers

There is a **lack of interconnected communication systems** in order to facilitate data sharing and communication between healthcare professionals around a patient.

« […] pour moi ce qui manque dans notre système c'est un dossier médical unique partagé avec chacun ses entrées orientées dans le dossier et qui serait l'élément ciment et lien peu importe, et quelle l'équipe soit telle. Donc on reste avec des difficultés de communication et de lien et de rattacher tout en un seul lieu, cela restera difficile. » (Stakeholder 2)

6.4.3.5 Legal barriers

- **The share of medicolegal responsibility is not clear between nurses and physicians**

From the interviews, it appears that there is a lack of clarity about the **shared medicolegal responsibility** between a physician and a nurse, which could impede the implementation of nursing consultations. It raises questions about the boundaries of nurses' autonomy and their ability to work within the scope of their competencies. Current practice regarding wound care, for instance, delegates the responsibility to the nurses but it appears that physicians still feel concerned about a potential negative consequence of such delegation.

« Plusieurs fois ont été soulevés le problème avec les soins de plaies par exemple de la responsabilité médico-légale, mais c'est de savoir s'il y a un différend d'opinions entre l'infirmier et le médecin. Qui est-ce qui a la primeur de la décision ? Actuellement, c'est la responsabilité de l'infirmier, donc c'est l'infirmier qui décide, donc quelle est la responsabilité du médecin s'il y a quelque chose qui se passe et qui pose problème. Donc cela je pense qu'il faut éclaircir les choses. » (Stakeholder 2)

It also appears that the **delegation needs to be flexible**, according to the patient preferences and/or needs, which may complicate the establishment of a framework for delegation. In the absence of a clear delegation of tasks, especially for nurses with established clinical expertise, there is a risk of **illegal practice of medicine**: because of their acquired skills and experience, some nurses could become able to establish a medical diagnosis and execute medical acts, as reported by some participants. The question of the medicolegal responsibility seems to be even more difficult to manage when **there is no formal connection between the physicians and the nurses.** According to participants, working together on a regular basis allows to reinforce mutual knowledge and a relationship based on trust, especially when the physicians contribute to the education of nurses. In that vein, some participants strongly insist that **nursing autonomy is not equivalent to nursing independence,** expressing their fears of nurses acting outside a collaborative framework which is perceived as a concurrence to the medical practice. Legally defining the nursing consultations outside this collaborative framework could led to a strong resistance from the physicians, definitively impeding its generalisation. The established partnership does not imply working in the same structure or for the same service but lays on a **formalised communication channel,** with regular and timely exchanges between the physicians and the nurses. In that sense, the responsibility of an incident appears then related to the way the professionals manage their professional communication and the data sharing rather than on the decisions made or a hierarchy of responsibilities.

« Mais je n'ai pas envie que des infirmières qui font partie d'une coopérative infirmière séparée fassent des consultations. De nouveau on va être dans le modèle concurrentiel. Moi je suis pour le modèle coopératif et la seule façon de ne pas se faire concurrence c'est de ne pas se marcher sur les pieds. » (Stakeholder 2)

« Donc je trouve que plus que la hiérarchie des responsabilités, pour moi, la priorité c'est la communication. En toile de fond, il y a toujours aussi ce dossier médical partagé même si quelqu'un qui dépose des éléments dans le dossier médical, on n'est pas nécessairement informé. Donc il faudrait, par exemple, pour valider une consultation infirmière, et bien qu'elle soit enregistrée et qu'il y ait un accusé de réception en quelque sorte de la part du médecin pour pouvoir valider sa consultation infirmière. Ce n'est pas là pour vouloir nécessairement tout contrôler et tout gérer, mais c'est pour optimaliser la communication. » (Stakeholder 2)

The medicolegal responsibility pertains to the **right to prescribe and the conditions to exert this right**, which appear to be currently discussed but not defined, leading to confusion for physicians. The **right to prescribe** appears as a sensitive political driver, as it relates to a symbolic form of influence and power of the medical profession on the other health professionals (6.4.2.5).

« Le droit de prescription autonome qu'on demande pour l'infirmière de pratique avancée – verpleegkundig specialist parce que je ne sais pas très bien quel est ce champ de compétence qu'elle reçoit. Ça, c'est une chose qu'il faudra définir dans le cadre de l'exercice d'un médecin. » (Stakeholder 4)

6.5 Discussion

After conducting the interviews, a consensus emerged regarding the integration of nursing consultations, dependent on the operating framework and collaboration mechanisms. In that sense, each barrier can also be considered as a driver depending on the perspective of those discussing it. Although not extensively discussed, financial aspects were therefore perceived as the primary barrier, with some participants stressing that this should be the priority. However, economic considerations are intertwined with legal and organisational aspects. Consequently, implementing nursing consultations may require a **comprehensive reorganisation of health care provision**, across all settings. Other participants identified **as absolute priority** an **adequate education of nurses:** they also insist that leading consultations should be conditioned by a previous professional experience. Some expressed the need to **reinforce the current expertise of those active in the field** rather than developing new profiles, seen as a more cost-effective approach than a transmural profile of APN. These barriers/drivers align with the contextual factors necessary for successful implementation of advanced practice nursing, identified by Hamric et al.[2] Furthermore, certain factors, like the willingness of the medical profession to embrace nursing expertise, have been previously recognised in Belgium within the context of interprofessional collaboration between nurses and general practitioners in primary care.[156, 157]

While there is no consensus on a uniform description of nursing consultations, some key characteristics emerged from the interviews. These consultations are **autonomously led by trained and experienced nurses in close collaboration with physicians, taking a holistic and integrated approach to the needs of medically stabilised chronic and/or complex patients**. The absence of a unform description for nursing consultations also posed a limitation for this chapter. It is challenging for stakeholders to reflect about a concept that is not entirely clear or exhibits significant heterogeneity in its current implementation. While stakeholders were chosen based on their expertise and affiliations with institutions, the invitations clearly stated that participants should possess knowledge and expertise in nursing consultations. However, during the interviews, it seemed that not all participants were familiar with the concept of nursing consultations. This lack of familiarity extended to the clinical function ladder and the scope of nursing practices. This lack of familiarity can be linked to the broader issue of the unclarity about the nursing profession and its different functions across healthcare professionals, potentially resulting in misconceptions or unnecessary concerns. Consequently, there is a pressing need for proper information for healthcare professionals and patients.

Responding to the various needs that should be fulfilled by these nursing consultations, the interviews reveal that the stakeholders have different perspectives of what nursing consultations are, reflecting different settings and tasks to be performed by nurses, thus requiring different competences to be developed.

- The first perspective suggests that nursing consultations involve a **hyper-specialised approach**: primarily based in a hospital context and aligned with medical specialty, focusing on all the problems related to established medical diagnoses. Nurses may serve as substitutes for medical physicians by prescribing chronic medical treatment, or complement medical consultations by providing, for instance, self-care management education for patients with chronic patients.
- The second perspective involves a form of **transmural consultation**: nurses from specialised hospital departments offer advice to professionals and/or patients in primary care or patients' place of residence. Nurses hold an 'expert' position in this model.
- The third perspective corresponds to a form of **independent consultation**: focussing on coordination and case-management at the intersection of hospitals and primary care, nurses maintain a neutral position. In this model, the added-value of having a nurse with specific clinical expertise appears less relevant.
- The fourth perspective involves a **generalist nursing consultation**: mostly based in primary care and in formalised collaboration with GPs, nurses take a broad, comprehensive approach to all health problems encountered by patients. Nurses can either act as substitutes or complement GPs, though patient access to such consultations remains unclear.

- The fifth perspective envisions **non-autonomous nursing consultations** assimilated to dispensary care (e.g. wound care, injections or other technical acts) where there is no room for autonomy and specific nursing expertise or assimilated to a regular nursing anamnesis aiming at established the health care plan. In this model, nurses appear to apply standardised guidelines, acting on the basis of standing orders or medical prescriptions.

Additional research is required deepen these different perspectives to better understand the determinants and characteristics of these different forms of consultations. Furthermore, it is essential to triangulate these perspectives with the opinions of nurses themselves to validate these various consultation forms. This validation process aims to create a consultation classification system that could potentially influence its development and implementation.[158]

In addition to these different perspectives, we made an attempt to list emerging **transversal quality criteria** applicable to any consultation based on the interviews. These criteria could shape further discussions on the implementation of nursing consultations, covering both the legal framework and organisational aspects:

- **Sufficient activity volume:** nurses conducting consultations should have a minimum number of patients to ensure quality care through regular practice
- **Training and education:** competencies (knowledge) and soft skills (e.g., leadership) are essential, requiring initial and lifelong learning. Not all nurses are seen as capable of performing consultations.
- **Sufficient professional experience:** experienced nurses with clinical expertise are necessary, implying certain prerequisites before starting practice.
- **Clear collaborative framework:** task delegation and related medicolegal aspects should be well-defined.
- **Regular and formal communication:** collaboration framework necessitates consistent communication channels.
- **Accountability:** nurses should take responsibility for their actions, highlighting the need for a stronger professional posture and leadership position.
- **Awareness of practice limits:** nurses' clinical judgment and integrity should guide their ability to redirect patients when necessary.

7 IMPROVING THE IMPLEMENTATION OF NURSING CONSULTATIONS FOR PATIENTS WITH COMPLEX CONDITIONS IN BELGIUM

The primary aim of the current KCE study was to gain insight into the concept of 'nursing consultations'. This involved understanding what nursing consultations entail, their potential added value, appropriate usage scenarios, the individuals responsible for providing them, the necessary experience and educational qualifications for these nurses, the relationship between nursing consultations and medical consultations, and whether any legal adjustments are needed to enable their implementation.

To achieve this, we employed a multi-method approach, which included analysing the legal framework in Belgium, describing international best-practice examples, conducting an umbrella review of existing literature reviews, and interviewing stakeholders. Through these methods, we thoroughly examined the topic of nursing consultations and extracted lessons applicable to the context of Belgium. In the following chapter, we address the aims outlined above based on the findings reported in the previous chapters.

7.1 What are nursing consultations?

Nursing consultations cover a wide spectrum of activities

Nursing consultations involve the provision of expert nursing advice, guidance, and support to patients, families, and other healthcare professionals.[3] From the international best-practices and the umbrella review, it can be derived that a nursing consultation may involve a variety of tasks, including but not limited to: diagnosis/advanced health assessment, ordering further tests or examinations, establishing nursing diagnoses, deciding on certain treatments, prescribing specific drug and non-drug related therapies, making referrals to other healthcare professionals/settings, stimulating self-management, educational activities or counselling, being responsible for a panel of patients, acting as first point of contact and having the authority to admit/discharge patients.[3, 15]

To make the concept of nursing consultations more tangible we offer two examples in Box 5 and Box 6.

Box 5 – Diabetes management in primary care in the Netherlands[159]

A frequently mentioned RCT identified during the umbrella review describes how, in the Netherlands, type 2 diabetes is managed in a primary care setting by practice nurses. These nurses received specialised diabetes care training equivalent to that of GPs. During their consultations, they followed a structured protocol based on guidelines from both the Dutch College of General Practitioners and the Dutch Diabetes Federation. They have the authority to prescribe a range of medications and adjust dosages for certain drugs listed in advance. They can also request laboratory tests. However, the nurses are not authorised to initiate insulin prescriptions, though they can adjust dosage when necessary.

Box 6 – Transitional care program for COPD patients in US[160]

The John Hopkins Bayview Medical Center in the United States integrated a hospital-initiated program combining transition and long-term self-management support for patients hospitalized with COPD and their family caregivers. The program is delivered by specialised hospital nurses with additional training on COPD. The nurses meet with the patients (and caregivers whenever possible) during the initial hospital stay and three months after discharge. This program focuses on (i) transition support to ensure patients and caregivers are prepared for discharge and understand the discharge plan of care, (ii) individualised self-management support to help patients take medications correctly, recognise exacerbations signs, practice breathing exercises, maintain an active lifestyle, and stop smoking and (iii) facilitate access to community programs and treatment services.

Nursing consultations exist in Belgium but the concept is not well known

Since the early nineties, nursing consultations for hospitalised and ambulatory patients have been introduced in Belgium. Yet, due to the absence of a definition or clear description of nursing consultations, their organisation and nomenclature varies widely across different healthcare organisations. The results of the survey of Chapter 5 clearly demonstrate a considerable variability in terms of organisational structure, financing, remuneration, accessibility, and availability.

Nurses who participate in nursing consultations report to perform a diverse array of:

- clinical tasks: e.g. patient monitoring, technical procedures, adjusting symptom management, refining care and treatment plans, additional test request under supervision or in consultation with the physician, and interpreting test results,
- psychosocial anamnesis and support;
- educational activities or counselling: e.g. providing information and advice to patients and family members, encouraging patients to initiate behavioural changes, promote therapy adherence, help patients in coping with the consequences of their illness and/or treatment, and teaching patients specific techniques;
- coordination activities: e.g. integration of patient information into the medical record, referring patients to other healthcare providers, evaluating the care and/or treatment plan and coordinating healthcare services for the patient.

Nevertheless, the lack of a clear-cut understanding of the concept of nursing consultations emerged as a prominent topic throughout the stakeholder interviews (Chapter 6), revealing a diverse range of interpretations of what a nursing consultation constitutes. This heterogeneity of interpretation is likely due to the increasing number of existing initiatives emerging bottom-up without comprehensive guidance from regulatory or funding authorities.

Not facilitated by, but nevertheless possible (to a certain extent) within the current legal framework in Belgium

In Belgium, the wide spectrum of activities associated with nursing consultations is not fully achievable within the existing legal context. However, it is possible to conduct nursing consultations to some extent under the current legal conditions. Autonomous nursing consultations are currently taking place to some extent and with varying degrees of implementation in Belgium. As long as nurses operate within the legal boundaries, specifically the defined A-B-C nursing activities, nursing consultations are possible.

Nevertheless, our findings underscore that a more comprehensive implementation of nursing consultations for patients with stable chronic conditions necessitates, at the very least, adjustments to the legal responsibilities assigned to nurses. Additionally, there is a need to establish a clear understanding of the scope of nursing consultations. This entails defining formal federal requirements in terms of competency profiles or educational qualifications that determine who is eligible to conduct these nursing consultations. This also involves determining which medical or technical acts (beyond the A-B-C activities outlined in section 4.1.3.1) can be carried out by nurses at different levels.

The results of the survey (Chapter 5) indicate that some nurses who currently perform nursing consultations explore and/or exceed the existing legal boundaries. For instance, there are reports of nurses interpreting test results and prescribing medications, among other actions.

Nursing consultations: no uniform definition but some recurrent main characteristics

In the absence of a standardised definition for nursing consultations, we have extracted the following criteria from the literature and international best-practice examples as **essential components** of nursing consultations:

- A healthcare delivery mode with a formalised structure (including face-to-face, telephone, video, e-consultations or bedside consultations). These consultations involve a patient with healthcare needs and their environment suitable for nursing intervention.

- The consultation can be organised based on a clear referral from other healthcare providers, at the request of patients and their environment, or initiated by the nurse conducting the consultation. Nursing consultations can range from planned to ad hoc or even unplanned occurences.
- The nurse involved should possess relevant qualifications, advanced competence, and experience specific to a healthcare domain, allowing for a high level of autonomy and an independent caseload.
- The nurse can function either independently or in close collaboration with other members of a healthcare team.

The key interventions are nursing therapeutics, which encompass assessment and evaluation, health education and counselling, treatment and procedures, discharge and referral, and comprehensive case management. These consultations are evidence-based and conducted with a holistic perspective. It is important to clarify that this report excludes the following from the scope of nursing consultations: nurses conducting primarily specific technical examinations (e.g. ultrasound) on behalf of physicians; one-time nursing consultations that can be charged by home care nurses (nomenclature code: 429015); nurses predominantly involved in administrative and clinical support tasks (e.g. blood sampling) within GP practice, etc.

7.2 The potential of nursing consultations to address future healthcare challenges: meeting the rise in chronic conditions and (medical) workforce shortages

The implementation of nursing consultations differs in speed across the different regions studied in more detail in the international comparison (Chapter 3). However, a common driving force for their introduction is to respond to the changing needs of patients with chronic conditions, especially in a context of limited medical and nursing workforce. We discuss both elements in this section as well as the underlying evidence for nursing consultations and the main reasons identified in the cross-sectional survey why nursing consultations in Belgium were introduced.

Patients with chronic conditions: a shift from a disease- to needs-based approach requires complementary care

Like many industrialised countries, Belgium is facing an ageing population and an increase in the prevalence of people with chronic conditions and multimorbidity.[161, 162] This trend is challenging the conventional medical disease-based paradigm, which focuses mainly on acute care for single illnesses. A paradigm shift towards a needs-based approach is necessary, as people with chronic conditions and multimorbidity require not only more comprehensive care, but also care that adapts to varying levels of complexity over time. To achieve the most beneficial outcomes in these populations, healthcare professionals should move beyond the traditional medical paradigm to include non-medical determinants such as psychological and social needs.

The needs of patients with chronic conditions can be categorised into five dimensions: (i) biological needs, which address physical symptoms such as pain; (ii) psychosocial needs, including tailored information and psychological support; (iii) health care services needs, which include coordination of care; (iv) social needs, which address autonomy and social isolation; and (v) spiritual needs.[163] In response to these challenges, innovative models of care are emerging with new and advanced roles for nurses, including the provision of nursing consultations.[6] These advanced and complementary nursing roles are in line with the holistic nursing ethos embedded in nursing education, which is rooted in the biopsychosocial

model of care. Yet, these new roles typically require additional training and expertise on the part of the nurses involved (see below).

Addressing healthcare workforce shortages and waiting times through task shifting

European countries struggle with prolonged waiting times for diagnostics and medical treatments, primarily due to a shortage of available physicians. Belgium, like other European nations, is also confronted with substantial challenges concerning the healthcare workforce, affecting various professions.[164] Studies have highlighted shortages in the nursing profession, as well as in GPs within specific geographic areas, along with certain medical specialties.[165] Scarcity of specific healthcare roles (both in medicine and nursing), poses a significant challenge to maintaining high-quality, safe, and efficient care. This challenge has served as a catalyst for introducing innovative care models, often guided by value-based payment systems, aimed at enhancing efficiency, coordination, integration, and collaboration within the healthcare system.[3, 6] Consequently, the composition and roles of the healthcare workforce, including nurses, is undergoing transformation in many countries.[3, 6-8] Given the professionalisation of nursing care and the presence of essential competencies in the nursing profession, advanced roles and scopes of practice are increasingly being integrated and documented in models of care internationally. [9-12, 166] Additionally, the expansion of advanced practice nursing roles is often viewed as a strategy to enhance the attractiveness of the nursing profession and improve retention rates by providing enhanced career prospects in clinical practice.[167]

Nursing consultations are part of these evolving nursing roles and can be situated on a continuum from complementary to substitutional when compared to traditional physician-led consultations. Complementary activities involve extending traditional medical care, such as identifying unmet psychosocial needs, counselling, and ensuring adherence to treatment regimens. Substitutional activities, on the other hand, include (partially) taking over rather traditional activities of physicians. These can comprise, for example, risk assessment, treatment and medication management in populations with one stable complex chronic condition.

Evidence for non-inferiority of nursing consultations for (stable) chronic and complex patient care

Our umbrella review (Chapter 2) identified a substantial body of evidence on the effectiveness of nursing consultations in terms of individual and organisational outcomes for patients with complex chronic conditions. This comprehensive analysis synthesised data from 50 systematic reviews, which together comprises 473 unique RCTs. The umbrella review confirmed that nursing consultations are non-inferior to usual care or physician consultations for the majority of patient outcomes (as has also been pointed out by many experts during the stakeholder interviews). In addition, nursing consultations produced superior results for outcomes such as quality of life, health behaviours, treatment adherence, survival and patient satisfaction.

However, when it comes to costs, some caution is needed when interpreting the results. The available cost data were particularly scarce and heterogeneous, with only two meta-analyses and six narrative syntheses from seven reviews. Furthermore, the methodological quality of the available cost analyses remains questionable. It was often unclear whether costs were calculated from the perspective of patients, organisations, insurers or from a societal perspective.

Nursing consultations in Belgium emerge bottom-up to better address patient needs at the local level

Despite the lack of explicit policy initiatives to promote the integration of nursing consultation in the Belgian healthcare system, the results of the cross-sectional survey (Chapter 5) reveal the bottom-up development of these consultations. Indeed, our open survey gathered responses from 638 nurses who identified themselves as performing nursing consultations. The results of our cross-sectional survey illustrate that the main motivations to introduce nursing consultations are to improve patient and family education and guidance, to promote continuity of care, to strengthen multidisciplinary teamwork, and to promote therapy adherence. Yet, to facilitate a further and more widespread implementation a more top-down guidance is indicated (section 7.5).

7.3 Setting of nursing consultations

Nursing consultations are present in all settings in the studied best-practice regions

Throughout the best-practice regions (Chapter 3), nursing consultations have been implemented across different care settings, such as primary care, ambulatory care, hospital care, and nursing home care. The only exception is Finland, where nursing consultations are not conducted within nursing home settings. Moreover, affected by the rise in chronic and complex conditions, shortages of certain healthcare professions and uneven distribution have triggered multiple countries to make changes in their primary care delivery models by implementing nursing consultations performed by nurses in a more advanced role (which is currently less implemented in the Belgian healthcare system).[3]

Nursing consultations are widespread across various settings in Belgium, with a notable concentration in large and university hospitals

The cross-sectional survey (Chapter 5) revealed the presence of nursing consultations in different settings in Belgium, including hospitals, primary care facilities (such as community health centres, GP practices, and home care organisations), and occupational services. It is important to highlight that none of the surveyed nurses work in the nursing home setting. A significant majority of the respondents (70%) worked in (large) general or university hospitals. While the hospital sector is clearly dominant, nurses from primary care settings also participated in the survey. Specifically, 9.1% of respondents work in community health centres (*wijkgezondheidscentrum – maison médicale*), 8.0% in GP practices, and 7.1% in home care organisations. Additionally, 3.6% of respondents are engaged in occupational services, 1.3% in psychiatric hospitals, 1.1% in rehabilitation centres, and 1.3% in other care organisations.

If we examine the functions, we notice that in general hospitals specialised nurses and advanced practice nurses were the most common job titles. In university hospitals, nurse consultants and advanced practice nurses were more prevalent. The job title of ‘nurse’, dominates the respondents working in community health centres, GP practices, and occupational services.

Facilitating implementation in various settings requires customised policy measures

The predominant location of nursing consultations within large general and university hospitals might be influenced by the absence of explicit policy incentives. Although policy initiatives have been launched to introduce the clinical function ladder for nursing care, the endeavour remains incomplete. These initiatives rely mainly on proponents who recognise the necessity of nursing consultations to improve patient care, increase efficiency, and providing career prospects for nurses. It is remarkable that, even within hospital settings, functions like APNs and nurse consultants are created. As there is no dedicated funding for these roles, organisations have to resort to alternative sources (e.g. general hospital budgets or deductions from physician fees). The current trend, wherein university and large hospitals predominantly implement nursing consultations, can be attributed to their enhanced financial possibilities or flexibility (e.g. research or project funding, flexible hospital budget allocation, and deduction of physician fees), which facilitates the introduction of innovative care models despite the absence of formal governmental funding.

To facilitate broader integration of nursing consultations across various healthcare settings in the future, it is imperative that (financial) incentives are universally provided to support the employment of specialised nursing profiles capable of conducting nursing consultations in accordance with patients' needs. The ratio of APNs and specialised nurses should be tailored to factors such as patient population demographics, volume of patients, physician availability, etc.

7.4 Nursing profiles to conduct nursing consultations

APNs play a significant role in nursing consultations in the international best-practices, although they are not the sole nursing profiles involved in conducting these consultations

In the international best-practice examples (Chapter 3), we find that nursing consultations are conducted by different types of nursing profiles, i.e. bachelor-trained registered or specialised nurses (holding a bachelor of nursing with additional training or expertise) and master-trained advanced practice nurses – APNs – (referred to as nurse practitioners in some regions). All the five regions studied showcase the valuable roles that bachelor-trained nurses and master-trained APNs can play in primary care or outpatient care (such as nursing homes). These roles range from health educator, first point of contact, to being responsible for the entire organisation of a primary care service. In regions with a longer history of advanced practice nursing, APNs are trained as autonomous clinical leaders, significantly shaping the nursing consultations' organisation.

APNs generally exhibit greater autonomy and a wider scope of practice compared to bachelor-trained nurses. For example, in the Netherlands, Ontaria and Ireland, APNs or equivalent roles can, sometimes under specific conditions (e.g. within the boundaries of a collaborative practice agreement), take on the responsibility of managing and coordinating the entire care process for a specific group of patients. This includes tasks like assessment, diagnosis, making independent treatment decisions, providing interventions, and handling referrals and discharges. Ensuring high-quality nursing consultations requires a certain level of training and experience. To explore this further, we performed a sub-analysis of reviews focusing on nursing consultations performed by APNs exclusively (Chapter 2). Nevertheless, this analysis did not provide a clear conclusion, indicating the absence of data-driven arguments suggesting exclusive reliance on APNs to conduct nursing consultations.

Who performs nursing consultations in Belgium: nurses with additional education and expertise

In Belgium, the establishment of the clinical function ladder for nursing care is still in progress (section 4.1.3.3). However, in practice, a diverse range of nursing profiles are currently involved in providing nursing consultations. The primary groups conducting these consultations are APNs (*verpleegkundig specialisten – infirmières et infirmiers en pratique avancée*) with a master degree (16.8%), nurse consultants *(verpleegkundig consulenten – infimières et infirmiers consultants*), which are mainly nurses with several years of specialised experience within their field (25.8%), and by specialised nurses holding an additional postgraduate diplomas (34.8%).

The main fields or setting of specialisation among nurses conducting nursing consultations and who participated in the survey are wound care (21.3%), primary care (21.2%), oncology (19.7%), and/or diabetes (19.0%). The majority of those offering nursing consultations in Belgium possess a considerable level of formal education, including a bachelor's degree, complemented by additional qualifications beyond their initial nursing training. These additional qualifications often focus on specialisation areas such as diabetes, oncology, ostomy and wound care, healthcare management, as well as intensive and emergency care. However, 10.2% of those providing nursing consultations hold only a graduate degree.

Respondents generally self-evaluate their level of autonomy as moderate to high, with an average score of 7.6 on a ten-point scale. Among them, APNs exhibit the highest level of autonomy, with an average score of 7.85, followed by specialised nurses (mean 7.7), nurse consultants (mean 7.51) and the other category (mean 7.33).

7.5 Nursing and medical consultations: how do they relate to each other?

Nursing consultations are not inherently tied to medical consultations, although they frequently intersect. In this section, we explore the complementarity and subsidiarity of nursing consultations, their link with medical consultations, and collaboration agreements.

Task substitution or complementary

Nursing consultations can be complementary and/or substitution to medical consultations. However, the distinction between task substitution and task supplementation is not always clear-cut in practice and are often situated on a continuum.[3, 6]

- Substitution of tasks: a concept also referred to as 'task shifting', involves the transfer of certain activities previously conducted by physicians to nurses.[3] The primary objective of this collaborative model is to alleviate physicians' workload and potentially reduce costs.[6]
- Complementarity of tasks: alternatively referred to as 'supplementarity'. It refers to the situation where nurses (mostly APN's) extend the care provided by a physician by offering a new service. Generally, this collaboration aims to enchance services through improved continuity of care or quality of care (e.g. psychosocial support, counseling about behavioural changes and therapy adherence), rather than reduce cost or address workforce shortages.[3, 6, 17]

Due to the diversity within the interventions and the lack of clear reporting of intervention characteristics at the level of the systematic reviews, our umbrella review (Chapter 2) could not provide clear guidance on whether nursing consultations have to be complementary or substitutional. In order to be able to do this type of analysis, an additional analysis of the original RCTs is required. However, as mentioned above, complementarity and substitution is not a binary variable, but is situated on a continuum within care models, with intervention components often lent from both ends of the spectrum, one could argue if the discussion between complementary and substitutional care should be at the centre of any debate regarding resilient healthcare models.

In particular, it is important to note that a complete substitution of medical activities is not feasible. The discussion about whether nurses should adopt a more complementary or substitutional role depends on the specific healthcare system's needs and context, considering the population seeking care within that system.

How are nursing consultations linked to medical consultations in Belgium?

The majority of the nursing consultations in Belgium have a medical link. Specifically, 81% of the respondents of the cross-sectional survey (Chapter 5) indicate that nursing consultations are based on a physician referral. However, this is not always the sole scenario – for instance, some consultations arise from referrals by nurses, other healthcare professionals, or are even self-initiated referrals. Moreover, about one third of the respondents (32.3%) highlighted that their nursing consultations are not linked to a medical consultation. This trend was most pronounced among those engaged in primary care (50.6%). Similar observations were made for professionals in other healthcare settings like occupational health, where 47.8% reported consultations independent of medical referrals.

Furthermore, our findings show that nearly a quarter of the respondents (24.0%) scheduled their nursing consultations prior to the medical consultation, while an equivalent percentage (24.1%) arranged them afterward. A very small proportion (1.3%) indicated that their nursing consultations occurred simultaneously with the medical consultation. Additionally, 10.3% of participants noted that all possible configurations (before, during, after medical consultation, or unlinked) were feasible in their practice. This tendency was more prevalent among those working in primary care (16.9%).

Collaboration agreements between nurses and physicians

In all studied regions included in the international comparison (Chapter 3), improving collaboration with the medical profession emerged as a common necessity for the sustainable implementation of nursing consultations. Diverse strategies were employed to lower resistance and achieve mutual agreements. These approaches encompassed the establishment of collaboration protocols in some of the regions on both national and local levels, which organised nursing consultations and/or extended nurses' autonomy. According to the International Council of Nurses (ICN), collaborative arrangements are commonly used when supervision of nurses is required.[168] These arrangements involve a written description of the professional relationship between nurses and an independent healthcare professional, typically a (group of) physicians. The collaborative arrangement establishes the parameters for delegated tasks that nurses can perform. Essentially, this arrangement places the independent healthcare professional in a supervisory role over the nurse. Collaboration agreements on the national level are often generic, allowing flexibility to implement them according to the needs of the local context. In some regions, this national framework can also be customised at the regional level, allowing it to be tailored to specific sites or teams to achieve similar results. It was stressed that this can help to outline tasks that can be delegated to other professionals, including nurses, and also to describe how healthcare professionals can take up advanced roles within a team, supporting the autonomy of e.g. APNs. This process cultivates trust between physicians and nurses and strengthen their collaboration over time within well-defined boundaries provided by these agreements. The analysis of the international best-practice examples revealed that these collaboration agreements significantly facilitate the adoption of nursing consultations. Besides these collaboration agreements, other strategies (e.g. raising awareness of different nursing functions among other healthcare professionals) were used to provide the medical profession insight into the training and scope of practice of (specialised) nurses and clarify the responsibilities of the different healthcare professionals involved in patient care.

In the current federal advices and reports in Belgium, there is a frequently reference to collaboration frameworks to embed the expanded scope of practice of nurses.[117, 169-171]

Clear need for role clarification and formalised collaboration agreements to facilitate the development of nursing consultations in Belgium

As nursing consultations expand in Belgium, there is a clear need for role clarification and more formalised collaboration agreements. The existing coordinated law on the Practice of Healthcare Professions, which introduces the APN function, also mentions “autonomy in close collaboration with the physician and/or other healthcare professionals”. However, this term is not clearly defined in any Belgian legislation, leaving it undefined within the country's health laws. Considering the importance of this term in the context of nursing consultation, it is crucial that it is thoroughly detailed and defined.[133]

This necessity is underscored by our stakeholder interviews (Chapter 6), which revealed significant confusion and limited awareness among some contextual stakeholders about the different nursing profiles and the roles they can or should assume in the care for patients with stable, but complex needs. The difference between specialised nurses and APNs might be insufficiently known to other healthcare professionals in Belgium. This uncertainty could lead to protectionism regarding the nurses’ autonomy. Establishing cooperation and collaboration protocols offers a solid foundation to enhance patient care, but well-defined competency profiles for diverse nursing roles, as outlined in section 7.6.1 on the clinical function ladder, are of paramount importance. To foster effective interprofessional teamwork with complementary roles, healthcare professionals need to be informed about the capabilities and value brought by specialised nurses and APNs. It is worth noting that APN competences go beyond advanced clinical care, extending to tasks like initiating quality improvement initiatives, leadership roles both internally and externally, and sharing expertise through education or training of fellow nurses (section 1.1.2 and 1.1.3).

In the current Belgian legislation, there are already certain tools provided which could be integrated or expanded in the context of nursing consultations, among which the A-B-C acts, the group prescription, or the standing order.

Our survey findings (Chapter 5) indicate that the content of current nursing consultations is mainly determined by nurses themselves (55.8%). This is followed by oral instructions from physicians (54.2%), adherence to guidelines (42.8%), a care pathway (34.0%), and telephonic instructions from physicians (30.1%). A medical prescription (19.7%) or standing order (14.3%) were also reported but to a lesser extent.

7.6 Improving the implementation of nursing consultations for patients with stable but complex chronic conditions in Belgium

7.6.1 Further implementation of clinical function ladder required

During recent years, many preparatory work has been done in Belgium to implement a clinical function ladder for the nursing profession in Belgium. The 2018 advice of the Federal Council for Nursing laid the groundwork for formally integrating APNs (*verpleegkundig specialisten – infirmières et infirmiers en pratique avancée*) into the existing coordinated law of 10 May 2015 on the Practice of Healthcare Professions.[116] Similarly, the inclusion of functions for specialised nurses and clinical nurse research consultants is anticipated to be realised through forthcoming legislation. Moreover, a recent development has made the formal distinction between roles for graduate- and bachelor-level nurses. In June 2023, this differentiation took shape as the functions of 'basic nurse' and 'nurse responsible for general care', known respectively as graduate nurse and bachelor nurse, were introduced.

To effectively implement the clinical function ladder in practice, additional legal adjustments are necessary (e.g. reorientation or expanding the scope of practice of different nursing profiles; integrating or defining collaboration practice agreements, defining necessary competences, educational background and experience, etc.).

Nevertheless, there are currently some nursing profession reforms ongoing at the federal level in Belgium at the time of this scientific report's publication. In 2019, the coordinated law on the Practice of Healthcare Professions already incorporated the new APN nursing function (*verpleegkundig specialisten – infirmières et infirmiers en pratique avancée*). Furthermore, in June 2023, the functions of basic nurse and nurse responsible for general care (previously known as graduate nurse and bachelor nurse, respectively) were introduced. Moreover, the legislator can make use of several preparatory documents prepared by official and ad-hoc advisory committees to progress on the required adjustments in legislation: (i) the competence and/or function profiles of new nursing functions specialised nurse, nurse consultant and APN developed by the Federal Council for Nursing, (ii) the joint advices of the Federal Council and Technical Commission for Nursing on the new nursing functions specialised nurse and APN, (iii) the report of the federal working group on task differentiation, delegation, and shifting, and (iv) the advice of the High council of physician-specialists and general practitioners on the new APN function.[113, 117, 140, 169-172]

Considering the scope of this report on nursing consultations for patients with complex conditions, our attention will be directed towards APNs and specialised nurses. The development of both functions in practice can help to facilitate the implementation of nursing consultations for patients with stable chronic conditions and complex care needs. In this section we discuss, based on our study findings, several topics that are relevant to consider when this clinical function ladder is further implemented (with discussions about the 'scope of practice' addressed in section 7.6.2).

Need for a clinical function ladder for the nursing profession, but it should be clear and transparent

Based on the results of the international comparison of best-practices (Chapter 3), there are sufficient arguments (e.g. addressing care needs of chronic patients in a holistic way, improving inter-professional collaboration and task shifting among healthcare professionals, and providing career perspectives in clinical practice) to advocate for the continued implementation of the clinical function ladder for the nursing profession. However, maintaining clarity and transparency within this clinical function ladder is important, a current aspect that requires attention. Currently, this

clarity is problematic. In the absence of a top-down comprehensive framework, various nursing roles have emerged in response to evolving patient demands and offer potential career pathways for nurses. The survey respondents report many different job titles (Chapter 5). The most common job title is nurse consultant (25.4%), followed by APN (16.8%), specialised nurse with or without professional title (16.8% and 11.4% respectively). Other job titles include nurse (8.0%), oncology nurse (6.6%), GP nurse (4.4%), occupational nurse (2.4%), head nurse or midwife (1.3%) and others (5.8%). Therefore, it is not a surprise that the interviewed stakeholders (Chapter 6) expressed a lack of clarity regarding the differences among these various nursing profiles, their expected contributions, and their roles within the context of nursing consultations.

Specialised nurses and APN's

The results of the analysis of best-practices (Chapter 3) and the umbrella review (Chapter 2) reveal that internationally nursing consultations are generally conducted by master-trained APN's and bachelor-trained specialised nurses (always with additional training and experience). In certain instances, such as primary care, bachelor-trained nurses also perform nursing consultations. The primary differentiation between these nursing profiles lies in their scope of practice, particularly their level of autonomy. APNs, due to their longer and more in-depth (clinical) training, and required working experience before entering the APN master-education in most regions, often assume more autonomous roles compared to specialised nurses (except for Finland, where APNs mainly work in management roles).

In Belgium, the role of '*verpleegkundig specialist – infirmière ou infirmier en pratique avancée'*, which is comparable to an APN, is formally embedded within the coordinated law on the Practice of Healthcare Professions in Belgium since 2019.[113] Subsequently, some Belgian master programs adjusted their curricula to prepare nurses for these APN roles, typically through specialised training after graduation, after additional supervised training in the specialisation area of their choice. The latter should happen after graduation at their workplace and is not under supervision of university programmes.

The approval of the APN competency framework, along with the Belgian context-specific requirements for the training level and the clinical experience is being developed.

The distinction between APNs and specialised nurses is not only restricted to the level of autonomy and scope of practice, but also to the adoption of the different roles described in the Harmic and Hanson's integrative model or CanMED model (sections 1.1.2 and 1.1.3). APNs are more involved in clinical leadership, quality improvement, teaching, evidence-based practice implementation, etc. Regarding nursing consultations, APNs could potentially have a broader role, not only with more autonomy and larger scope of practice than specialised nurses, but also as change agents shaping consultation content, integrating current evidence into interventions, and assessing the consultations' impact.

It should be noted that an equivalent role to nurse consultants was not identified in our analysis of best-practices or the umbrella review. This function seems unique to Belgium, arising bottom-up within hospitals as a career path for nurses with specialised experience. These nurses are typically found in hospitals and are generally trained at bachelor-level and followed often post-graduate courses in line with their specialisation. Although this initiative provides opportunities, it could lead to confusion and hinder the implementation of nursing consultations. Our findings do not sufficiently support integrating this function into the clinical function ladder for nursing profiles. Despite being integrated in the initial advice of the Federal Council For Nursing (2018), this function was omitted from subsequent policy documents, aligning with the findings of this report.[132] Therefore, the function of nurse consultant should be integrated either within the nurse or specialised nurse function.

Competence profiles that clarify different nursing roles

International experts consulted for the international comparison of best-practices (Chapter 3) stressed the importance of role delineation when introducing new healthcare profiles and roles. At the policy level, it is vital to offer explicit descriptions of each nursing role, outlining legal rights and responsibilities. Regions with a longer history of advanced nursing roles have integrated such descriptions into formal competence profiles.

However, the interviewed experts expressed mixed perspectives on these profiles: while acknowledging their necessity for defining practice scope and legal responsibilities, they also view them as rather generic (imposing the need to further specify these competence profiles for specific settings and patient groups). The generic nature of these competence profiles, however, allows also flexibility. This perception aligns with the broader trend where competence frameworks across healthcare professions face similar issues. This concern is applicable to Belgium, as diverse settings and organisations exhibit varying role requirements. Developing very detailed competence profiles would presumably be very time-consuming and more likely be unrealistic and inflexible. Complementary to these generic competence profiles, additional role-specific agreements at the organisational level will be essential. Such agreements among different healthcare professionals foster a shared vision on nursing consultations at the organisational level, facilitating their implementation.

In addition to these generic competence profiles, additional site- and role specific agreements at the organisational level will be necessary. Such agreements with different healthcare professionals supported the creation of a shared vision on nursing consultations at the organisational level, which in turn facilitated their implementation. Factors that are mentioned to facilitate site- and role specific agreements are a network of colleagues with experience and/or expertise in nursing consultations, and a team that gives specific support for elaborating new nursing roles. Some regions, such as Ireland and France, made role- and site-specific agreements mandatory. In Belgium, preparatory work is available with competence profiles developed by the Federal Council for Nursing for the functions of APNs and specialised nurses.[113, 140, 172] These competence profiles envisage autonomous responsibility for specialised nurses, APNs over the care process for a specific patient population.

Education of specialised nurses and APNs tailored to competence profiles

As mentioned above, the interviewed experts during the international comparison (Chapter 3), underscore the necessity of formal competence profiles for ‘new’ healthcare profiles or nursing roles. It is crucial to align the curricula for educating nurses engaged in consultations with the responsibilities and competences outlined in these profiles. Additionally, when developing or adjusting these curricula, active engagement of all relevant stakeholders is advised. This includes nurses practicing in the field, the medical profession, government entities, and educational institutions. Collaborating with diverse stakeholders fosters a unified vision, thereby smoothing the introduction of novel nursing profiles. In Belgium, the education of both specialised nurses and APNs demands careful consideration.

The recent bachelor-program reform (from 3 to 4 years) in Belgium has implications for specialised nurse education. In Flanders, bachelor-after-bachelor programs were replaced by postgraduate programs, whereas they persist in the French-speaking community. Harmonising the standards of these specialised programs with practical requirements poses a challenge. In Belgium, unlike best-practice examples where only bachelor-level specialised nurses are involved in nursing consultations, some non-bachelor prepared nurses participate, although they are in the minority. Given recent nursing profile reforms for graduate and bachelor-level nurses, it is imperative to reflect on the specialised courses accessible to graduate nurses. How will these courses affect their competency profiles and scope of practice?

Similarly, master-level education will require reflection. Some Flemish universities introduced a new ‘advanced practice nursing’ specialisation within the master's program in nursing and midwifery (EQF level 7) from the 2019-2020 academic year. This program focuses on providing advanced training in clinical assessment, clinical reasoning, and pharmacology/prescribing. To further enhance their expertise, students are required to complete internships in their chosen specialisation field. In the French-speaking education system, a similar reform has been implemented since 2022, offering a master's degree in nursing sciences (EQF level 7) that prepares students for the APN profile. Yet, both programmes deliver relative

generic master-trained nursing profiles that are not instant ready to take up an APN role if they have no working experience. At least a reflection on the entry requirements and/or required experience (before or after the education) to be eligible for an APN role is needed (see below).

Experience level and entry requirement to specialised education

In the best-practice regions we explored in this report (Chapter 3), admission into an APN master education program is typically contingent on specific work experience. These requirements usually entail two to three years of specialisation-related experience prior to enrolment. This observation reveals a stricter criterion than Belgium's approach, where students entering the master program are advised to first acquire significant working experience or combine their studies with a part-time employment as a nurse (not necessarily in nursing consultations). However, this remains a recommendation; Belgium currently lacks specific entry criteria tied to working experience or competencies, apart from possessing a bachelor's degree in nursing when starting the master education.

Moreover, in certain regions like the Netherlands, Ireland, and France, students are also required to have a dedicated internship prior to enrolment. This is because these programs aim to provide trainees with the opportunity to apply professional performance of the position of APN role in a real-world internship setting. In countries where nursing consultations are emerging, including Belgium, it might be an option to work with fixed internship places as it may have the advantage to rapidly role out these consultations in a diversity of settings, ensuring that nurses are properly trained and guaranteeing that clinical care directly benefits from the investments made. However, this dedicated internship also seem to have some disadvantages, as this individualised training path and role creation makes it challenging for APNs to transition to similar positions in different settings or disciplines. This is because they specialised in a specific setting or discipline and receive less generic training. Currently, there are no specific entry requirements for APN master programs in Belgium, but a mandatory period of internship (320 hours or 12 ECTS) is foreseen as part of the education program.

Reflection on the (dis)advantages of entry requirements for the master education of nurses is needed.

Documentation of professional competence and experience in a professional portfolio

Continuing education and competence training are essential for nurses to provide nursing consultations effectively. In Ontario for example, nurses are required to demonstrate recent nursing experience and establish a learning plan to renew their registration (Chapter 3). In the past, Ireland also required nurses to submit a portfolio to the Nursing and Midwifery Board of Ireland for evaluation. However, due to funding constraints, the portfolio requirement has been discontinued. This learning plan and portfolio is in line with the mandatory portfolio maintenance stipulated in the Belgian Quality Practice Act (Article 8), which mandates healthcare practitioners to maintain a record of their competences and experience in a portfolio.[135] The report of the federal working group on task differentiation, delegation, and shifting refers in multiple places to the importance of this portfolio to document professional competence and experience, for example to carry out certain acts under delegation. However, the legislation offers limited guidance on the specific content and format necessary for a valid portfolio, except for a preference for electronic storage. The explanatory memorandum clarifies that the portfolio should contain "additional information on top of the information that is kept by the government", such as evidence of continuous education to stay updated on techniques and provide quality healthcare. There is also currently no monitoring of the maintenance of the portfolio. As the legislator did not provide a clear definition of portfolio content, it is up to the respective professionals' field to contribute relevant input. For example, in the case of APNs, their portfolio can encompass activities that have contributed to the development of the CanMEDS areas of competence in a specific domain. This may include academic degrees, relevant work experience, participation in continuing education, teaching activities, involvement in quality initiatives, membership in advisory and governing boards, conference attendance, and publications.

Registries to monitor number of specialised nurses and APNs in practice, while tracking their experience and competency levels

In Ontario, Ireland, and the Netherlands, a mandatory recurring registration system encompasses all nurses, promoting transparency in the healthcare system's nurse distribution (Chapter 3). Experts from Ontario, the Netherlands and France highlighted that this registration tool also plays a crucial role in maintaining competencies, as it is linked to their portfolios.

In Belgium, the license-to-practice is granted by the Recognition Commission of the Federal Council of Nursing Practitioners. Officially, the license-to-practice is given for five years, but in reality it is granted for an indefinite period.[115] Furthermore, according to Article 42 of the Quality Practice Act, healthcare practitioners are required to provide the following information in a register of practices: (i) the type of healthcare they provide, (ii) whether such care is provided in collaboration with other professionals, and (iii) the location where such care is provided.[135] This register of practices is not further specified and, therefore, currently not in force. When also in Belgium further steps are taken, it is important to note that these registers require resources. International experts highlighted the need for resources to effectively monitor such registries, and opinions varied regarding the frequency of re-registration (e.g., yearly). There was a consensus that re-registration criteria can ensure patient care remains safe, efficient, and evidence-based by requiring a specific number of clinical practice hours and continuous education. Furthermore, utilising a register can offer valuable insights as a planning tool for forecasting future healthcare needs and objectives. When considering the establishment of a register in Belgium, careful consideration is vital. This involves identifying the responsible entity, evaluating the criteria for re-registration criteria or portfolios (at federal, regional, sectoral, or organisational levels), adequate and sustainable resources, and establishing consequences for unmet criteria.

A clear but flexible legal framework to facilitate nursing consultations is indicated

Several other countries have a longer history of nursing consultations within their healthcare system or have advanced faster in establishing the necessary educational and legal frameworks for both nursing consultations and/or the nursing roles encompassing them. Therefore, it comes as no surprise, that 42.9% of the respondents of our survey (Chapter 5) highlighted the lack of a legal framework for nursing consultations as a main barrier in Belgium. Many interviewed stakeholders and surveyed nurses see the creation of a clear legal framework as a vital policy priority to further facilitate the effective implementation of nursing consultations in the Belgian healthcare system. The conception of such a legal framework should result in a clear but flexible framework allowing task delegation and shifting without becoming too rigid, considering future changes in healthcare. Interestingly, despite the absence of a formal legal framework, a significant majority of the respondents (85.3%) feel a clear sense of responsibility for their nursing consultations.

7.6.2 Scope of practice

A further implementation of nursing consultations requires a review and expansion of the current scope of practice

Although some degree of autonomous nursing consultations is currently feasible within the existing legal framework (as discussed in section 7.1), the results of the cross-sectional survey highlight the need for adjustments to the legal scope of practice as a priority area to improve the implementation of nursing consultations in Belgian healthcare (Chapter 5). This observation might not be unexpected, given that nurses often engage in activities (such as interpreting clinical test results or modifying medication prescriptions) that are at the edge or beyond the boundaries of their legal authority.

Furthermore, in the international best-practice regions we studied (Chapter 3), the autonomy of nurses has been increased, significantly facilitating the development of nursing consultations. A recurrent element is the extension of prescription authority, along with other aspects such as interpreting test results, referral capabilities, and discharge authority. Some regions have

concentrated on extending the autonomy of all nurses. For instance, experts from Finland and Ireland noted that the introduction of the Nurse Prescriber role (further details below), in which trained nurses could prescribe medication autonomously, facilitated the implementation of nursing consultations. In other regions, there has been a focus on introducing or reinforcing master-level education programs for APNs. Experts from regions with well-established APN roles (such as the Netherlands, Ontario, and Ireland) emphasised that APNs are well-positioned to autonomously deliver comprehensive consultations.

Level of autonomy linked to the nursing profile and context

Across four best-practice regions (Chapter 3), the level of autonomy for APNs is notably higher compared to nurses with bachelor-level training. For instance, in the Netherlands, APNs possess specialised expertise in complex nursing care and limited complex medical care. They are authorised to prescribe, diagnose, order tests, initiate treatments, discharge patients, and make referrals. However, the extent of clinical activities varies depending on the specialisation (e.g. an APN in working in mental healthcare cannot perform endoscopies). Customising the scope of practice based on the context or patient condition is a recurring theme. In Finland, for example, individual agreements between physicians and nurses are established to delegate tasks when the physician validates the nurse's competencies (e.g. pacemaker follow-up in cardiac care). In the Netherlands, specialised nurses with bachelor-level training have more restricted prescriptive authority compared to APNs, which is connected to the patient's condition (more details, see below). In France, APNs are authorised to perform a range of activities, including technical procedures, patient follow-ups, prescription of medical devices, medical laboratory tests, and specific medications. For example, this list encompasses the ability for an APN to recommend non-prescription medications and renew or adjust certain medication prescriptions, such as anti-cancer drugs, anti-epileptics, or opiate substitutes. As mentioned earlier, collaboration agreements (section 7.5) at both the national and local levels are crucial in some of the regions for facilitating task delegation or shifting responsibilities between medical and nursing professionals.

The scope of practice can be expanded through extending the current lists of activities or by introducing the 'competent to practice' principle

In Belgium, the scope of practice for nurses is regulated by the coordinated law on the Practice of Healthcare Professions through the specification of A-B-C activities (section 4.1.3.1).[116] When revisiting the scope of practice of nurses within the current legal framework, a logical step involves evaluating and updating these activities, by either adding or removing tasks from the respective lists. This approach aligns with the recent advice from the federal working group's report on task differentiation, delegation, and shifting in which changes to the A-B-C activities are suggested.[117] While we noticed a similar expansion of activities in some studied best-practice regions (such as France, where this is incorporated into cooperation protocols in primary care), it has a clear disadvantage. The main concern lies in the risk that the legislation (and labour-intense task of creating exhaustive lists of activities) might not keep pace with the dynamic and fast evolving practice (as is currently the case). Moreover, the coordinated law on the Practice of Healthcare Professions has faced criticism over the years for impeding substantial changes in interprofessional collaboration, often due to professional protectionism – where certain professions resist the idea of other professional groups taking up activities reserved for them. Additionally, the law gives the misleading impression that a healthcare profession is solely comprised of a number of tasks, which is certainly not accurate. Consequently, some stakeholders have advocated for a comprehensive review of this law and a shift in underlying principles. Instead of delineating the scope of practice through lists of activities, an alternative approach is proposed through the 'competent to practice' principle. This principle is also implemented in some studied international best-practice regions (Chapter 3). In two regions (i.e. the Netherlands and Ontario), for instance, APNs undergo training as independent healthcare providers with a wide range of legal rights to perform clinical tasks. These professionals are expected to exercise their clinical judgment to assess their competence for carrying out specific clinical tasks. This principle has also been integrated into the Belgian Quality Practice Act.[135] Essentially, nurses are required to maintain a portfolio demonstrating their competence within their field of practice. However, as mentioned above, the practical application of this portfolio is lacking.

Prescriptive authority as an important element of nursing consultations

Prescribing authority for nurses varies across countries due to jurisdictional regulations. Generally, nurses can only prescribe medications, therapies, durable medical equipment, appliances, specific dressings, foods designated for therapeutic purposes, and electrolytes within their area of competence and in accordance with relevant guidelines.[168] In this section, we discuss the expansion of the scope of practice of nurses with prescriptive authority. After all, in all studied best-practice regions (Chapter 3) nurses, nurse prescribers, specialised nurses or APNs are authorised to prescribe medication, ranging from full prescriptive authority to a list of predefined medications. Prescription privileges are often outlined in cooperation or collaboration agreements (section 7.5). In all best-practice regions, nurses are allowed to prescribe certain types of medication or devices after completing designated training, with varying prescription rights based on their education level and expertise.

For example, in the Netherlands, nurse practitioners are allowed to prescribe any type of medication, while specialised nurses (with bachelor training) are limited to prescribing medication for specific patient groups: i.e. diabetes mellitus (i.e. blood glucose regulating medications), asthma and COPD (i.e. inhalation medication) or oncology (i.e. antidiarrheics, anti-emetics, benzodiazepines, laxatives, pain medication, secretion inhibitors). Yet, specialised nurses need to complete a pharmacotherapy module to obtain prescribing rights. While agreements provide clarity and transparency on prescription authority, experts of best-practice regions caution against detailed and long lists of products a nurse can prescribe, as they might be very time-consuming and counterproductive in a dynamic and rapidly evolving healthcare environment.

Box 7 – Summary guidelines prescriptive authority for nurses by ICN

According to a recent ICN report[168], the granting of prescriptive authority to nurses has been gaining momentum globally. However, there are variations in healthcare professionals' education, professional development, credentialing, and prescribing models, both between and within countries. Despite limited standardisation, the overarching goals of prescriptive authority remain consistent: improving patient access to treatment and outcomes without compromising safety, maximising nurses' skills and expertise, and providing legal protection for prescribers and those with delegated responsibilities.

Research shows that granting prescriptive authority to nurses can enhance the effectiveness, safety, and efficiency of healthcare services, promote integrated patient care, increase professional satisfaction, and improve overall healthcare quality.[168, 173-177]

Prescriptive authority can be categorised into three distinct models:

Independent prescribing: nurses in this model have complete autonomy and responsibility for clinically assessing patients, making diagnoses, and determining the appropriateness of medications, treatments, or appliances. They can issue prescriptions independently. This model is also referred to as autonomous, substitutive, or open prescribing.[8, 168, 178]

Dependent or supplementary prescribing: this model involves a voluntary collaboration between an independent prescriber and a supplementary prescriber. The independent prescriber conducts the initial assessment and diagnosis, while the supplementary prescriber prescribes from an open or limited formulary. The supplementary prescriber consults with the independent prescriber before issuing the prescription.[8, 17, 168, 178]

Prescribing via a structured arrangement or protocol: this model is designed for a specific group of patients with a particular condition. Prescriptions are provided solely within the terms of a predetermined protocol. Therefore, it can be considered a subcategory of supplementary prescribing.[8, 168, 178, 179]

When developing a legal framework for prescribing authority in Belgium, it is essential to specify which model of prescribing is being considered. Indeed, in its recent report, the International Council of Nurses (ICN) a distinction is made between independent prescribing, dependent or supplementary prescribing and prescribing via a structured agreement or protocol (Box 7). This distinction ensures appropriate education and practice support. Consistency in definitions throughout the legislation is crucial to uphold clarity and coherence. In this respect, it is worthwhile to consider an example of Belgian healthcare professionals related to nurses who have prescriptive authority beyond the medical profession. More specifically, midwives in Belgium have an extended scope of practice in certain situations, allowing them to prescribe specific medications or request additional tests (Box 8).

Box 8 – Expanded scope of practice midwives in Belgium

In Belgium, recognised midwives with an official National Institute for Health and Disability Insurance (NIHDI) number are authorised to independently prescribe certain medicines for various purposes related to normal pregnancy, childbirth and the care of healthy newborns, both in and out of hospital.[180]

These medications include:

- For monitoring normal pregnancies: folic acid, metoclopramide, paracetamol, anti-infectious vaginal creams or ovules, nitrofurantoin, anti-rho immunoglobulin D, influenza vaccine, oral iron preparations, ranitidine, omeprazole, and micronised progesterone.
- During labour and delivery: lidocaine or mepivacaine chloralhydrate without adrenalin, oxycontin or penicillin G or amoxicillin.
- For post-partum follow-up: oxycontin, diclofenac, ibuprofen, paracetamol, antimycotics and/or antibacterial cream, nystatin, misoprostol, phytomenadione, anti-rho immunoglobulin D, hepatitis D vaccine, immunoglobulins against hepatitis B, cabergoline, levonorgestrel, desogestrel, ethinyl estradiol or fourth-generation oestrogen-progestativa without progestatif.

In addition to prescribing medication, Belgian midwives can also request ultrasound scans (performed by a specialist) and laboratory tests for pregnant women or women suspected of being pregnant. It is important to note that these additional tests do not apply to newborn babies or to women after childbirth (in these cases it falls under the B2 nursing acts). In addition, during or after delivery, midwives are authorised to perform an amniotomy until the anterior part is no longer palpable, perform an episiotomy and suture the perineum as long as the sphincter remains intact (Chapter 5, Article 4, § 2).[116]

Need for organisational level support

The cross-sectional survey (Chapter 5) revealed that over half of the respondents are satisfied with the administrative and logistic support provided during their nursing consultations. However, a significant percentage (26.8% and 21.6% respectively) highlighted the lack of sufficient support in these areas. On the other hand, support from colleagues received positive evaluations. Yet, the support from direct supervisors and organisational management was evaluated as a problem area. When it comes to coaching, 43.3% of the respondents reported a lack of available coaching opportunities in their nursing consultations. 12.5% of the respondents believe that coaching should be given priority in the future implementation of nursing consultations. Interestingly, among the respondents working in Wallonia, 41.0% specifically prioritise supervision, whereas this aspect was not mentioned as a priority in Flanders or Brussels. The importance of practical support is also being identified as a crucial facilitator for successful implementation of nursing consultations in the international comparison of best-practices (Chapter 3).

According to the joint advices of the Federal Council and Technical Commission for Nursing regarding the new nursing roles of specialised nurses and APNs, there is a significant responsibility for providing support and coaching.[169, 170] One of the important roles that specialised nurses and APNs can fulfil is acting as educators, mentors and coaches for nursing staff

and other members of the interprofessional team within their respective areas of specialisation. This support and coaching in case of specialised nurses can be provided within the specific care context, and for APNs organisation-wide and throughout the broader care context.[169, 170] In the Netherlands, the implementation of coaching and mentoring by APNs has proven to improve team effectiveness, promote growth in various nursing roles, and increase overall satisfaction among nurses.[181]

7.6.3 Funding of nursing consultations

After reviewing international best-practices (Chapter 3) and conducting an umbrella review (Chapter 2), we cannot put forward a clear funding system for financing nursing consultations. The diversity among various best-practices and the settings in which nursing consultations are integrated, as well as the context-specificity of each healthcare system contributes to this complexity.

Nevertheless, several existing funding systems can be applied or developed further, depending on the setting. In primary care, for instance, nursing consultations can be stimulated by providing a lump sum or per capita payment for GPs. This approach is already in place for community health centres and is a component of the 'New Deal for GPs' program. The latter in fact aims to employ nurses in GP practices. While part of this initiative involves tasks that are delegated, such as blood sampling or monitoring blood pressure (which do not align with our definition of autonomous nursing consultations), it also involves the management of patients with stable chronic conditions (e.g. diabetes). Likewise, in the hospital sector, existing policy instruments can be adapted to foster the clinical function ladder necessary for encouraging nursing consultation development. Conventions for chronic conditions could outline criteria necessitating a specified number of specialised nurses and APNs for a given patient caseload. Integrating APNs and specialised nurses into care program criteria for patient groups requiring nursing consultations is another option. This integration will need to be accompanied by financial arrangements to provide hospitals (or hospital networks, depending on the need) with adequate budgets for employing these new roles. The same applies to other healthcare settings.

For instance, in residential care, exploring the potential roles of APNs and/or specialised nurses in clinical management alongside coordinating GPs is a consideration. As mentioned above (section 7.3), it is imperative that financial incentives are universally provided to support the employment of specialised nursing profiles capable of conducting nursing consultations in accordance with patients' needs.

7.6.4 Stepwise-implementation by means of small-scale pilot projects

Difficulties to quantify the impact of holistic care

It is important to highlight that both the international best-practice comparison (Chapter 3) and the umbrella review (Chapter 2) have brought to light difficulties in measuring outcomes for projects that adopt a holistic approach, such as nursing consultations. These consultations are grounded in interprofessional collaboration and complementary expertise. Consequently, assessing the impact of a single facet within the interprofessional healthcare provided to a patient – a system comprising numerous intervention components and addressing patient, provider, and organisational outcomes concurrently – will consistently pose challenges. In certain scenarios, it may even be unfeasible to isolate effects that solely stem from the nursing consultations.

Importance of demonstrating impact and added value of nursing consultations by means of small-scale pilot projects

The experts consulted from international best-practice regions (Chapter 3) emphasised the importance of research to demonstrate the impact and added value of nursing consultations, including aspects like quality, safety, and cost-effectiveness. This research plays a vital role in facilitating the implementation of nursing consultations. One approach suggested by the experts is the introduction of small-scale pilot projects. These projects have the advantage of producing quick results, building trust between healthcare professionals, enabling early adjustments, and providing valuable information for faster implementation and scaling-up. In addition, as the necessary preconditions for successful implementation of nursing

consultation are currently not yet met in Belgium, these small pilot projects could be a good first step in a gradual implementation.

Need for mixed-methods evaluation

Hence, we advocate for a mixed-methods evaluation approach when considering the expansion of nursing consultations within a specific setting or for a particular patient population. Undertaking small-scale pilot projects, complemented by mixed-methods evaluation where applicable, is crucial. The acquisition of empirical data remains a vital tool to support and refine the implementation and assessment of nursing consultations in distinct fields and regions, especially in the Belgian healthcare context. With the evolution of health services research towards a blend of effectiveness and implementation studies in recent years, the hybrid nature of mixed-method type 2 effectiveness-implementation studies emerges as a promising framework for guiding the further establishment and evaluation of nursing consultations.[98] In these implementation studies, involving patients at every stage of the research process is important to improve both the quality and relevance of each step.[182] Involving patients guarantees that research outcomes resonate with the people it aims to benefit, fostering a patient-centred approach, leading to more effective and empathetic healthcare delivery.

These small-scale pilot projects, mentioned above, roughly correspond with the concept of regulatory sandboxes proposed in the federal working group's report on task differentiation, delegation, and shifting.[117] The report recommends using regulatory sandboxes as a means to test new regulatory processes for APNs in specific domains of expertise. These sandboxes would operate under an interprofessional collaboration agreement and within a predefined timeframe. During this period, the new approach of working can be evaluated. If the evaluation study demonstrates that granting statutory power or expanding the scope of practice improves patient care and the healthcare organisation, the temporary regulatory sandboxes can be transformed into permanent regulations. Additionally, the report suggests that these regulatory sandboxes could be utilised for other professional groups and for introducing new nursing functions. By providing a secure framework, these regulatory sandboxes can support the expanded tasks of APNs and facilitate natural advancements in their scope of practice. The advice of the High Council of physician-specialists and general practitioners on the new APN function endorses the use of sandboxes as a strong starting point for implementing effective reforms.[171]

Box 9 – Types of regulatory sandboxes

A recent systematic literature review on the use of sandboxes identified three different categories of approaches for their implementation: (i) advisory, (ii) adaptive and (iii) anticipatory.[183, 184] In this respect, the proposed regulatory sandboxes in the federal working group's report align with the anticipatory approach. This approach aims to develop regulation in an iterative process alongside the advancement of new service models. It involves a more comprehensive understanding of regulatory requirements and requires input from a diverse range of stakeholders. While this approach carries risks and uncertainties, it is the most proactive and flexible, potentially leading to significant long-term improvements. Anticipatory regulatory approaches can be characterised by six key principles: inclusivity and collaboration, future focus, proactivity, iteration, outcome orientation, and experimentation.[185] For a sandbox to truly embody an anticipatory approach, it must incorporate all these principles in its activities and outcomes.[183]

7.7 Conclusion

Healthcare is facing significant challenges. Chronic diseases and multimorbidity are becoming more prevalent, especially in ageing populations. This is leading to more complex care needs, including specialised and remote care requirements. These changes are occurring alongside financial challenges in fragmented healthcare systems. Providing high quality, safe and efficient care is a major challenge. Many countries are responding by developing innovative models of care to improve the effectiveness, coordination, integration and collaboration within their health systems.[3, 6] As a result, the healthcare workforce, including the nursing profession, is changing in many countries.[3, 6-8] Many countries have introduced health workforce and regulatory reforms, often involving task-shifting, new tasks and/or re-allocation of responsibilities between professions. The feasibility and effectiveness of nurses taking up advanced roles has been established across a range of health systems. The extent to which advanced nursing roles have been fully integrated into routine healthcare services and scaled up depends upon the design of regulatory, educational and funding policies.

The existing body-of-evidence supports a further integration of nursing consultations into healthcare delivery to meet the future challenges mentioned above (e.g. changing care needs due to complex chronic conditions and workforce shortages). The umbrella review of this report confirmed that nursing consultations are non-inferior compared to standard care or medical consultations in terms of all patient and organisational outcomes and superior for a selection of patient outcomes.

In Belgium, nursing consultations emerge bottom-up in specific settings within the existing legal framework. Nevertheless, Belgium currently lacks the necessary elements to fully implement nursing consultations. Therefore, the current organisation of nursing consultations in Belgium demonstrates considerable variability in terms of organisational structure, financing, remuneration, accessibility, and availability. In order to implement nursing consultations systematically, certain requirements need to be met. These include further development of the ladder of clinical functions, establishment of specialised nursing roles able to conduct these consultations, adaptation of the scope of practice to promote interprofessional collaboration, development of collaboration practice agreements, and adequate funding.

While some progress has been made through recent initiatives, such as the New Deal for general practices and changes to the coordinated law on the Practice of Healthcare Professions, these need to be refined and further developed. In addition, there are already levers in pre-existing legislation that could potentially be used to further develop care consultations: for example, the Quality Practice Act or embedding nursing consultations in conventions for specific patient populations. Decisions will need to be made on whether scopes of practice should be explicit or flexible (i.e. based on list of activities or competence to practice).

A gradual implementation of nursing consultations in Belgium is essential because of the current context and complexity of its healthcare system, the need to build confidence among healthcare professionals and the time for the educational, regulatory and funding specific reforms needed to expand the practice profile of nurses. Therefore, the use of pilot projects is recommended. These projects have the advantage of producing quick results, building trust between healthcare professionals, enabling early adjustments, and providing valuable information for faster implementation and scaling-up. Given the complexity, evaluation of this gradual implementation of nursing consultations using mixed-methods research, with attention to patient involvement in all research process steps, is recommended to gain in-depth understanding about their effectiveness and challenges in practice.

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APPENDICES

APPENDIX 1. ANNEX TO CHAPTER 2

Appendix 1.1. Search strings

***PUBMED* (1756 hits on 15 February 2023)**

(“advanced practice nursing”[MeSH] OR “advanced practice nursing”[Tiab] OR "Advanced Nursing Practice*" [Tiab] OR “advanced practice nurs*”[Tiab] OR Nurse's Role[Mesh] OR Nurse Role*[Tiab] OR Nurses Role*[Tiab] OR Nurse's Role*[Tiab] OR "nurse practitioners"[MeSH] OR "nurse practitioner*"[Tiab] OR "nurse specialists"[MeSH] OR "nurse specialist*"[Tiab] OR “specialist nurse*” [Tiab] OR “specialist nursing”[tiab] OR "nurse clinician*"[Tiab] OR "nurse-led"[tiab] OR “nurse-managed”[Tiab] OR “nurse-delivered”[Tiab] OR “nurse led”[tiab:~2] OR “nurse managed”[tiab:~2] OR “nurse delivered”[tiab:~2] OR "nurses-led"[tiab] OR “nurses-managed”[Tiab] OR “nurses-delivered”[Tiab] OR “nurses led”[tiab:~2] OR “nurses managed”[tiab:~2] OR “nurses delivered”[tiab:~2]OR “cardiac nurse*”[tiab] OR “heart failure nurse*”[tiab] OR “oncology nurse*”[tiab] OR “cancer nurse*”[tiab] OR “COPD nurse*”[tiab] OR “diabetes nurse*”[tiab] OR “HIV nurse*”[tiab] OR “mental health nurse*”[tiab] OR “psychiatric nurse*”[tiab] OR “community health nurse*”[tiab] OR “home nurse*”[tiab] OR “health visitor*”[tiab]) **AND** (“referral and consultation"[MeSH] OR “referral*”[Tiab] OR "consult*"[Tiab] OR "Practice Patterns, Nurses'"[Mesh] OR “practice*”[tiab] OR "Counseling"[Mesh] OR “counsel*”[Tiab] OR "clinic*"[Tiab] OR “service*”[Tiab] OR “center*”[Tiab] OR “centre*”[Tiab] OR Telemedicine[Mesh] OR "telemedicine"[Tiab] OR "teleconsult*"[Tiab] OR "secondary care"[Tiab] OR “care delivery”[Tiab] OR “care model*”[Tiab]) **AND** (("Meta-Analysis" [Publication Type] OR "Meta-Analysis as Topic"[Mesh] OR metaanaly*[tiab] OR meta-analy*[tiab] or metanaly*[tiab] OR "Systematic Review" [Publication Type] OR systematic[sb] OR "Cochrane Database Syst Rev"[Journal] or prisma[tiab] OR preferred reporting items[tiab] OR prospero[tiab] OR ((systemati*[ti] OR scoping[ti] OR umbrella[ti] OR structured literature[ti]) AND (review*[ti] OR overview*[ti])) OR systematic review*[tiab] OR scoping review*[tiab] OR umbrella review*[tiab] OR structured literature review*[tiab] OR systematic qualitative review*[tiab] OR systematic quantitative review*[tiab] OR systematic search and review[tiab] OR systematized review[tiab] OR systematised review[tiab] OR systemic review[tiab] OR systematic literature review*[tiab] OR systematic integrative literature review*[tiab] OR systematically review*[tiab] OR scoping literature review*[tiab] OR systematic critical review[tiab] OR systematic integrative review*[tiab] OR systematic evidence review[tiab] OR Systematic integrative literature review*[tiab] OR Systematic mixed studies review*[tiab] OR Systematized literature review*[tiab] OR Systematic overview*[tiab] OR Systematic narrative review*[tiab] OR ((systemati*[tiab]

OR literature[tiab] OR database*[tiab] OR data-base*[tiab] OR structured[tiab] OR comprehensive*[tiab] OR systemic*[tiab]) AND search*[tiab]) OR (Literature[ti] AND review[ti] AND (database*[tiab] OR data-base*[tiab] OR search*[tiab])) OR ((data extraction[tiab] OR data source*[tiab]) AND study selection[tiab]) OR (search strategy[tiab] AND selection criteria[tiab]) OR (data source*[tiab] AND data synthesis[tiab]) OR medline[tiab] OR pubmed[tiab] OR embase[tiab] OR Cochrane[tiab] OR ((critical[ti] OR rapid[ti]) AND (review*[ti] OR overview*[ti] OR synthes*[ti])) OR (((critical*[tiab] OR rapid*[tiab]) AND (review*[tiab] OR overview*[tiab] OR synthes*[tiab]) **AND** (search*[tiab] OR database*[tiab] OR data-base*[tiab]))) OR metasynthes*[tiab] OR meta-synthes*[tiab]) NOT ("Comment" [Publication Type] OR "Letter" [Publication Type] OR "Editorial" [Publication Type] OR (("Animals"[Mesh] OR "Models, Animal"[Mesh]) NOT "Humans"[Mesh])))

***EMBASE* (1532 hits on 15 February 2023)**

(‘advanced practice nursing'/exp OR ‘advanced practice nursing':ti,ab,kw OR ‘advanced nursing practice':ti,ab,kw OR ‘advanced practice nurse*':ti,ab,kw OR ‘Nurse Role*':ti,ab,kw OR ‘Nurses Role*':ti,ab,kw OR ‘Nurse* Role*':ti,ab,kw OR ‘nurse practitioner'/exp OR ‘nurse practitioner*':ti,ab,kw OR 'clinical nurse specialist'/exp OR ‘nurse specialist*':ti,ab,kw OR ‘specialist nurse*':ti,ab,kw OR ‘specialist nursing':ti,ab,kw OR ‘nurse clinician*':ti,ab,kw OR ‘nurse-led':ti,ab,kw OR ‘nurse-managed':ti,ab,kw OR ‘nurse-delivered':ti,ab,kw OR nurse NEAR/3 led OR nurse NEAR/3 managed OR nurse NEAR/3 delivered OR ‘nurses-led':ti,ab,kw OR ‘nurses-managed':ti,ab,kw OR ‘nurses-delivered':ti,ab,kw OR nurses NEAR/3 led OR nurses NEAR/3 managed OR nurses NEAR/3 delivered OR ‘cardiac nurse*':ti,ab,kw OR ‘heart failure nurse*':ti,ab,kw OR ‘oncology nurse*':ti,ab,kw OR ‘cancer nurse*':ti,ab,kw OR ‘COPD nurse*':ti,ab,kw OR ‘diabetes nurse*':ti,ab,kw OR ‘HIV nurse*':ti,ab,kw OR ‘mental health nurse*':ti,ab,kw OR ‘psychiatric nurse*':ti,ab,kw OR ‘community health nurse*':ti,ab,kw OR ‘home nurse*':ti,ab,kw OR ‘health visitor*':ti,ab,kw) AND (patient referral'/exp OR ‘consultation'/exp OR ‘referral*':ti,ab,kw OR ‘consult*':ti,ab,kw OR ‘nursing practice'/exp OR ‘practice*':ti,ab,kw OR 'counseling'/exp OR ‘counsel*':ti,ab,kw OR ‘clinic*':ti,ab,kw OR ‘service*':ti,ab,kw OR ‘center*':ti,ab,kw OR ‘centre*':ti,ab,kw OR 'telemedicine'/exp OR ‘telemedicine':ti,ab,kw OR ‘teleconsult*':ti,ab,kw OR ‘secondary care':ti,ab,kw OR ‘care delivery':ti,ab,kw OR ‘care model*':ti,ab,kw) AND (('meta analysis'/exp OR 'meta analysis (topic)'/exp OR (metaanaly* OR 'meta analy*’ OR metanaly*):ti,ab OR 'systematic review'/de OR 'cochrane database of systematic reviews'/jt OR (prisma OR prospero):ti,ab OR (((systemati* OR scoping OR umbrella OR 'structured literature') NEAR/3 (review* OR overview*)):ti,ab) OR ((systemic* NEAR/1 review*):ti,ab) OR (((systemati* OR literature OR database* OR 'data base*') NEAR/10 search*):ti,ab) OR (((structured OR comprehensive* OR systemic*) NEAR/3 search*):ti,ab) OR ((literature NEAR/3 review*):ti,ab AND (search* OR database* OR 'data base*'):ti,ab) OR (('data extraction':ti,ab OR 'data source*':ti,ab) AND 'study selection':ti,ab) OR ('search strategy':ti,ab AND

'selection criteria':ti,ab) OR ('data source*':ti,ab AND 'data synthesis':ti,ab) OR (medline OR pubmed OR embase OR Cochrane):ab OR (((critical OR rapid) NEAR/2 (review* OR overview* OR synthes*)):ti) OR ((((critical* OR rapid*) NEAR/3 (review* OR overview* OR synthes*)):ab) AND (search*:ab OR database*:ab OR 'data base*':ab)) OR (metasynthes* OR 'meta synthes*'):ti,ab) NOT (('animal'/exp OR 'animal experiment'/exp OR 'animal model'/exp OR 'nonhuman'/exp) NOT 'human'/exp) NOT ('conference abstract'/it OR 'conference review'/it OR 'editorial'/it OR 'letter'/it OR 'note'/it))

Cinahl (2182 hits on 15 February 2023)

((MH "Advanced Nursing Practice+") OR TI "Advanced Practice Nursing" OR AB "Advanced Practice Nursing" OR TI "Advanced Nursing Practice*" OR AB "Advanced Nursing Practice*" OR TI "advanced practice nurse*" OR AB "advanced practice nurse*" OR (MH "Nurses by Role+") OR TI "Nurse Role*" OR AB "Nurse Role*" OR TI "Nurses Role*" OR AB "Nurses Role*" OR TI "Nurse's Role*" OR AB "Nurse's Role*" OR TI "nurse practitioner*" OR AB "nurse practitioner*" OR TI "nurse specialist*" OR AB "nurse specialist*" OR TI "specialist nurse*" OR AB "specialist nurse*" OR TI "specialist nursing" OR AB "specialist nursing" OR TI "nurse clinician*" OR AB "nurse clinician*" OR TI "nurse-led" OR AB "nurse-led" OR TI "nurse-managed" OR AB "nurse-managed" OR TI "nurse-delivered" OR AB "nurse-delivered" OR nurse N3 led OR nurse N3 managed OR nurse N3 delivered OR TI "nurses-led" OR AB "nurses-led" OR TI "nurses-managed" OR AB "nurses-managed" OR TI "nurses-delivered" OR AB "nurses-delivered" OR nurses N3 led OR nurses N3 managed OR nurses N3 delivered OR TI "cardiac nurse*" OR AB "cardiac nurse*" OR TI "heart failure nurse*" OR AB "heart failure nurse*" OR TI "oncology nurse*" OR AB "oncology nurse*" OR TI "cancer nurse*" OR AB "cancer nurse*" OR TI "COPD nurse*" OR AB "COPD nurse*" OR TI "diabetes nurse*" OR AB "diabetes nurse*" OR TI "HIV nurse*" OR AB "HIV nurse*" OR TI "mental health nurse*" OR AB "mental health nurse*" OR TI "psychiatric nurse*" OR AB "psychiatric nurse*" OR TI "community health nurse*" OR AB "community health nurse*" OR TI "home nurse*" OR AB "home nurse*" OR TI "health visitor*" OR AB "health visitor*") AND ((MH "Referral and Consultation+") OR TI "referral*" OR AB "referral*" OR TI "consult*" OR AB "consult*" OR TI "nursing practice" OR AB "nursing practice" OR TI "practice*" OR AB "practice*" OR (MH "Counseling+") OR TI "counsel*" OR AB "counsel*" OR TI "clinic*" OR AB "clinic*" OR TI "service*" OR AB "service*" OR TI "center*" OR AB "center*" OR TI "centre*" OR AB "centre*" OR (MH "Telemedicine+") OR TI "telemedicine" OR AB "telemedicine" OR TI "teleconsult*" OR AB "teleconsult*" OR TI "secondary care" OR AB "secondary care" OR TI "care delivery" OR AB "care delivery" OR TI "care model*" OR AB "care model*") AND ((MH "Literature Review+") OR TI (“Literature review*” OR “Systematic review*” OR “Scoping review*” OR “meta-analy*” OR “metaanaly*” OR “Prospero” OR “umbrella review*” OR “systematized review*” OR “systematised review*” OR “systematically review*” OR “evidence review*” OR “studies review*” OR “Systematic overview*” OR “Medline” OR “PubMed” OR “Embase” OR “Cochrane” OR “CINAHL”) OR AB

(“Literature review*” OR “Systematic review*” OR “Scoping review*” OR “meta-analy*” OR “metaanaly*” OR “Prospero” OR “umbrella review*” OR “systematized review*” OR “systematised review*” OR “systematically review*” OR “evidence review*” OR “studies review*” OR “Systematic overview*” OR “Medline” OR “PubMed” OR “Embase” OR “Cochrane” OR “CINAHL”))

Cochrane database of systematic reviews (436 hits on 15 February 2023)

([mh "advanced practice nursing"] OR "advanced practice nursing":ti,ab,kw OR "Advanced Nursing" NEXT Practice*:ti,ab,kw OR "advanced practice" NEXT nurs*:ti,ab,kw OR [mh "Nurse's Role"] OR Nurse NEXT Role*:ti,ab,kw OR Nurses NEXT Role*:ti,ab,kw OR Nurse's NEXT Role*:ti,ab,kw OR [mh "nurse practitioners"] OR nurse NEXT practitioner*:ti,ab,kw OR [mh "nurse specialists"] OR nurse NEXT specialist*:ti,ab,kw OR specialist NEXT nurse*:ti,ab,kw OR "specialist nursing":ti,ab,kw OR nurse NEXT clinician*:ti,ab,kw OR 'nurse led':ti,ab,kw OR 'nurse managed':ti,ab,kw OR 'nurse delivered':ti,ab,kw OR nurse near/3 led OR nurse near/3 managed OR nurse near/3 delivered OR 'nurses led':ti,ab,kw OR 'nurses managed':ti,ab,kw OR 'nurses delivered':ti,ab,kw OR nurses near/3 led OR nurses near/3 managed OR nurses near/3 delivered OR cardiac NEXT nurse*:ti,ab,kw OR "heart failure" NEXT nurse*:ti,ab,kw OR oncology NEXT nurse*:ti,ab,kw OR cancer NEXT nurse*:ti,ab,kw OR COPD NEXT nurse*:ti,ab,kw OR diabetes NEXT nurse*:ti,ab,kw OR HIV NEXT nurse*:ti,ab,kw OR "mental health" NEXT nurse*:ti,ab,kw OR psychiatric NEXT nurse*:ti,ab,kw OR "community health" NEXT nurse*:ti,ab,kw OR home NEXT nurse*:ti,ab,kw OR health NEXT visitor*:ti,ab,kw) AND (([mh "referral and consultation"] OR referral*:ti,ab,kw OR consult*:ti,ab,kw OR [mh "Practice Patterns, Nurses"] OR practice*:ti,ab,kw OR [mh "Counseling"] OR counsel*:ti,ab,kw OR clinic*:ti,ab,kw OR service*:ti,ab,kw OR center*:ti,ab,kw OR centre*:ti,ab,kw OR [mh "Telemedicine"] OR telemedicine':ti,ab,kw OR teleconsult*:ti,ab,kw OR "secondary care":ti,ab,kw OR "care delivery":ti,ab,kw OR "care model*":ti,ab,kw)

Appendix 1.2. Excluded reviews

Appendix 1.2.1. List of excluded studies resulting from database search

1. Abraham CM, Norful AA, Stone PW, Poghosyan L. Cost-Effectiveness of Advanced Practice Nurses Compared to Physician-Led Care for Chronic Diseases: A Systematic Review. Nurs Econ. 2019;37(6):293-305. Reason: other design
2. Afik A, Nursalam N, Sufyanti AY, Fikriana R. Effect of Nurse-led Program in Coronary Heart Diseases Patients: A Systematic Review. Open Access Macedonian Journal of Medical Sciences. 2021;9:109-14. Reason: other intervention
3. Akiboye F, Sihre HK, Al Mulhem M, Rayman G, Nirantharakumar K, Adderley NJ. Impact of diabetes specialist nurses on inpatient care: A systematic review. Diabetic Medicine. 2021;38(9). Reason: other design
4. Alex, er K, Smith JM, Gerolamo A, Bernhardt J. The impact of nursing on health outcomes of people receiving medication for opioid use disorder: An integrative review. Journal of nursing scholarship : an official publication of Sigma Theta Tau International Honor Society of Nursing. 2022. Reason: other design
5. Al-Ganmi AH, Perry L, Gholizadeh L, Alotaibi AM. Cardiovascular medication adherence among patients with cardiac disease: a systematic review. Journal of advanced nursing. 2016;72(12):3001-14. Reason: other intervention
6. Ali-Faisal S, Colella TJF, Medina-Jaudes N, Scott LB. Do Patient Navigators Improve Cancer Care Utilization Behaviors? A Meta-Analysis...Academy of Oncology Nurse & Patient Navigators, November 17-20, 2016, Las Vegas, Nevada. Journal of Oncology Navigation & Survivorship. 2016;7(9):35-6. Reason: other intervention
7. all S, Crawford T, Currie J, River J, Betihavas V. Impact of community based nurse-led clinics on patient outcomes, patient satisfaction, patient access and cost effectiveness: A systematic review. International journal of nursing studies. 2017;73:24-33. Reason: other design
8. Allsop S, Morphet J, Lee S, Cook O. Exploring the roles of advanced practice nurses in the care of patients following fragility hip fracture: A systematic review. Journal of advanced nursing. 2021;77(5):2166-84. Reason: other design
9. Almeida S, ra, Montayre J. An integrative review of nurse-led virtual clinics. Nursing Praxis in New Zealand. 2019;35(1):18-28. Reason: other design
10. Almukhaini S, Weeks LE, Macdonald M, Martin-Misener R, Ismaili ZA, Macdonald D, et al. Advanced practice nursing roles in Arab countries in the Eastern Mediterranean region: A scoping review. JBI Evidence Synthesis. 2022;20(5):1209-42. Reason: other design
11. Alotaibi T, Al Anizi CA. The impact of advanced nurse practitioner (ANP) role on adult patients with cancer: A quantitative systematic review. Applied nursing research : ANR. 2020;56:151370. Reason: other design
12. Amireault S, Fong AJ, Sabiston CM. Promoting Healthy Eating and Physical Activity Behaviors: A Systematic Review of Multiple Health Behavior Change Interventions Among Cancer Survivors. Am J Lifestyle Med. 2018;12(3):184-99. Reason: other intervention
13. Anderson DA, Clemett V. What impact do specialist and advanced-level nurses have on people living with heart failure compared to physician-led care? A literature review. J Res Nurs. 2021;26(3):229-49. Reason: other design
14. Ansell D, Crispo JAG, Simard B, Bjerre LM. Interventions to reduce wait times for primary care appointments: a systematic review. BMC health services research. 2017;17(1):295. Reason: other design
15. Anthony BF, Surgey A, Hiscock J, Williams NH, Charles JM. General medical services by non-medical health professionals: A systematic quantitative review of economic evaluations in primary care. British

Journal of General Practice. 2019;69(682):E304-E13. Reason: other design

16. Appannah A, Rice T, Ogrin R. A review of current models for initiating injectable therapy for people with type 2 diabetes in primary care. Journal of Clinical and Translational Endocrinology. 2017;8:54-61. Reason: other design
17. Aranburu-Imatz A, López-Carrasco JDLC, Moreno-Luque A, Jiménez-Pastor JM, Valverde-León MDR, Rodríguez-Cortés FJ, et al. Nurse-Led Interventions in Chronic Obstructive Pulmonary Disease Patients: A Systematic Review and Meta-Analysis. International Journal of Environmental Research and Public Health. 2022;19(15). Reason: other design
18. Bai M, Reynolds NR, McCorkle R. The promise of clinical interventions for hepatocellular carcinoma from the west to mainland China. Palliative & supportive care. 2013;11(6):503-22.
19. Baker E, Fatoye F. Patient perceived impact of nurse-led self-management interventions for COPD: A systematic review of qualitative research. International journal of nursing studies. 2019;91:22-34. Reason: other intervention
20. Baldwin A, Willis E, Harvey C, Lang M, Hegney D, Heard D, et al. Exploring the role of nurses in after-hours telephone services in regional areas; A scoping review. PLoS ONE. 2020;15(8).
21. Ballmann J, Ewers M. Nurse-led education of people with bleeding disorders and their caregivers: A scoping review. Haemophilia. 2022;28(6):e153-e63. Reason: other design
22. Barnett M, Balkissoon C, hu J. The level of quality care nurse practitioners provide compared with their physician colleagues in the primary care setting: A systematic review. Journal of the American Association of Nurse Practitioners. 2021. Reason: other design
23. Barr JA, Tsai LP. Health coaching provided by registered nurses described: a systematic review and narrative synthesis. BMC Nurs. 2021;20(1):74. Reason: other design
24. Barros Ferreira E, Almeida G, Rezende Simino GP, Aguiar B, Reis P. Nurse-Led Follow-Up Of Cancer Patients After Radiotherapy: An Integrative Review. 47th Annual Oncology Nursing Society Congress, April 27–May 1, 2022, Anaheim, CA. Oncology Nursing Forum. 2022;49(2):E4-E. Reason: other design
25. Benson L, Hasenau S, O'Connor N, Burgermeister D. The impact of a nurse practitioner rapid response team on systemic inflammatory response syndrome outcomes. Dimens Crit Care Nurs. 2014;33(3):108-15. Reason: other design
26. Bentley M, Stirling C, Robinson A, Minstrell M. The nurse practitioner-client therapeutic encounter: an integrative review of interaction in aged and primary care settings. J Adv Nurs. 2016;72(9):1991-2002. Reason: other design
27. Bobbink P, Pugliese MT, Larkin P, Probst S. Nurse-led patient education for persons suffering from a venous leg ulcer in outpatient's clinics and homecare settings: A scoping review. Journal of Tissue Viability. 2020;29(4):297-309. Reason: other design
28. Bonetti L, Tolotti A, Anderson G, Nania T, Vignaduzzo C, Sari D, et al. Nursing interventions to promote patient engagement in cancer care: A systematic review. International journal of nursing studies. 2022;133:104289. Reason: other design
29. Boyle M, Murphy-Tighe S. An integrative review of community nurse-led interventions to identify and respond to domestic abuse in the postnatal period. Journal of advanced nursing. 2022;78(6):1601-17. Reason: other design
30. Boyle M, Murphy-Tighe S. An integrative review of community nurse-led interventions to identify and respond to domestic abuse in the postnatal period. Journal of Advanced Nursing (John Wiley & Sons, Inc). 2022;78(6):1601-17. Reason: other design
31. Brenner R, Witzig-Brändli V, Vetsch J, Kohler M. Nursing Interventions Focusing on Self-efficacy for Patients With Multiple Sclerosis in

Rehabilitation: A Systematic Review. Int J MS Care. 2022;24(4):189-98. Reason: other design

32. Brewster S, Bartholomew J, Holt RIG, Price H. Non-attendance at diabetes outpatient appointments: a systematic review. Diabetic Medicine. 2020;37(9):1427-42. Reason: other design
33. Brown T, Cruickshank S, Noblet M. Specialist breast care nurses for support of women with breast cancer. Cochrane Database of Systematic Reviews. 2021;2021(1). Reason: other intervention
34. Brunelli VN, Ramis MA, Kynoch K. Roles and practices of specialist lung cancer nurses: a scoping review. JBI evidence synthesis. 2022. Reason: other design
35. Bryant-Lukosius DE, Cosby r, Earle C, Bakker D, Fitzgerald B, Burkoski V, et al. Effective use of Advanced Practice Nursing Roles in Cancer Control: Results of a Systematic Review...International Conference on Cancer Nursing (ICCN). July 8-11, 2015. Vancouver, Canada. Cancer Nursing. 2015;38:S43-S. Reason: other design
36. Bunn F, Goodman C, Pinkney E, Drennan VM. Specialist nursing and community support for the carers of people with dementia living at home: an evidence synthesis. Health & social care in the community. 2016;24(1):48-67. Reason: other design
37. Cangelosi G, Grappasonni I, Pantanetti P, Scuri S, Garda G, Cuc Thi Thu N, et al. Nurse Case Manager Lifestyle Medicine (NCMLM) in the Type Two Diabetes patient concerning post COVID-19 Pandemic management: Integrated-Scoping literature review. Annali di igiene : medicina preventiva e di comunita. 2022;34(6):585-602. Reason: other design
38. Cardoso AF, Queirós P, Ribeiro CF. Therapeutic self-care management interventions for individuals with diabetes mellitus: systematic review. Revista Portuguesa de Saude Publica. 2015;33(2):246-55. Reason: other design
39. Carranza AN, Munoz PJ, Nash AJ. Comparing quality of care in medical specialties between nurse practitioners and physicians. Journal of the American Association of Nurse Practitioners. 2020;33(3):184-93. Reason: other design
40. Carroll K, Murphy P, Romano E, Uremovich I. Organizational structures and processes in nurse-led, evidence-based practice projects that lead to measurable outcomes: A scoping review protocol. JBI Evidence Synthesis. 2021;19(10):2877-82. Reason: other design
41. Casey M, O'Connor L, Cashin A, Smith R, O'Brien D, Nicholson E, et al. An overview of the outcomes and impact of specialist and advanced nursing and midwifery practice, on quality of care, cost and access to services: A narrative review. Nurse education today. 2017;56:35-40. Reason: other design
42. Chan RJ, Crawford-Williams F, Crichton M, Joseph R, Hart NH, Milley K, et al. Effectiveness and implementation of models of cancer survivorship care: an overview of systematic reviews. Journal of cancer survivorship : research and practice. 2021. Reason: other design
43. Chan RJ, Marx W, Bradford N, Gordon L, Bonner A, Douglas C, et al. Clinical and economic outcomes of nurse-led services in the ambulatory care setting: A systematic review. International journal of nursing studies. 2018;81:61-80. Reason: other design
44. Chan RJ, Teleni L, McDonald S, Kelly J, Mahony J, Ernst K, et al. Breast cancer nursing interventions and clinical effectiveness: a systematic review. BMJ supportive & palliative care. 2020;10(3):276-86. Reason: other design
45. Chan S, Wilson DM, Santos Salas A. Examining the value and roles of palliative care nurse practitioners: A scoping review. Progress in Palliative Care. 2022. Reason: other design
46. Chan SMC. The Effectiveness of Nurse-Led Pre-Operative Assessment Clinic (POAC) for Patients Receiving Elective Orthopedic Surgery: Chinese University of Hong Kong (Hong Kong); 2014. Reason: other design
47. Chase JAD, Bogener JL, Ruppar TM, Conn VS. The Effectiveness of Medication Adherence Interventions Among Patients With Coronary

Artery Disease: A Meta-analysis. The Journal of cardiovascular nursing. 2016;31(4):357-66. Reason: other design

48. Chavez KS, Dwyer AA, Ramelet AS. International practice settings, interventions and outcomes of nurse practitioners in geriatric care: A scoping review. International journal of nursing studies. 2018;78:61-75. Reason: other design
49. Checa C, Canelo-Aybar C, Suclupe S, Ginesta-López D, Berenguera A, Castells X, et al. Effectiveness and Cost-Effectiveness of Case Management in Advanced Heart Failure Patients Attended in Primary Care: A Systematic Review and Meta-Analysis. International Journal of Environmental Research and Public Health. 2022;19(21). Reason: other design
50. Cheng H, George C, Dunham M, Whitehead L, Denney-Wilson E. Nurse-led interventions in the prevention and treatment of overweight and obesity in infants, children and adolescents: A scoping review. International journal of nursing studies. 2021;121:104008. Reason: other design
51. Cherdsak D, Matthews AK. The Effects of Nurse-Led Smoking Cessation Interventions for Patients with Cancer: A Systematic Review. Pacific Rim International Journal of Nursing Research. 2020;24(1):118-39. Reason: other design
52. Chowdhury S, Stephen C, McInnes S, Halcomb E. Nurse-led interventions to manage hypertension in general practice: A systematic review protocol. Collegian. 2020;27(3):340-3. Reason: other design
53. Chu PY, Maslow GR, von Isenburg M, Chung RJ. Systematic Review of the Impact of Transition Interventions for Adolescents With Chronic Illness on Transfer From Pediatric to Adult Healthcare. Journal of pediatric nursing. 2015;30(5):e19-e27. Reason: other design
54. Clark S, Parker R, Prosser B, Davey R. Aged care nurse practitioners in Australia: Evidence for the development of their role. Australian Health Review. 2013;37(5):594-601. Reason: other design
55. Connolly C, Cotter P. Effectiveness of nurse-led clinics on healthcare delivery: An umbrella review. Journal of clinical nursing. 2021. Reason: other design
56. Conway A, O'Donnell C, Yates P. The Effectiveness of the Nurse Care Coordinator Role on Patient-Reported and Health Service Outcomes: A Systematic Review. Eval Health Prof. 2019;42(3):263-96. Reason: other design
57. Cook O, McIntyre M, Recoche K. Specialist nurse role in gynaecological-oncology. Australian Nursing & Midwifery Journal. 2014;22(2):34-. Reason: other design
58. Cook O, McIntyre M, Recoche K. Exploration of the role of specialist nurses in the care of women with gynaecological cancer: a systematic review. Journal of clinical nursing. 2015;24(5):683-95. Reason: other design
59. Cook O, McIntyre M, Recoche K, Lee S. Experiences of gynecological cancer patients receiving care from specialist nurses: A qualitative systematic review. JBI Database of Systematic Reviews and Implementation Reports. 2017;15(8):2087-112. Reason: other design
60. Cooper SA, Compton PA. Nursing interventions for sexual dysfunction: An integrative review for the psychiatric nurse. Archives of psychiatric nursing. 2019;33(4):389-99. Reason: other design
61. Corones-Watkins K, Cooke M, Theobald K, White K, Thompson D, Ski C, et al. The Effectiveness of Post-Percutaneous Coronary Intervention Nurse-Led Clinics: A Systematic Review. Heart, Lung & Circulation. 2018;27:S388-S. Reason: other design
62. Corones-Watkins K, Cooke M, Theobald K, White K, Thompson DR, Ski CF, et al. Effectiveness of nurse-led clinics in the early discharge period after percutaneous coronary intervention: A systematic review. Australian critical care : official journal of the Confederation of Australian Critical Care Nurses. 2021;34(5):510-7. Reason: other design
63. Crawford CC. Addition of Advanced Practice Registered Nurses to the Trauma Team: An Integrative Systematic Review of Literature. Journal

of trauma nursing : the official journal of the Society of Trauma Nurses. 2019;26(3):141-6. Reason: other design

64. Creedon R, Byrne S, Kennedy J, McCarthy S. The impact of nurse prescribing on the clinical setting. Br J Nurs. 2015;24(17):878-85. Reason: other design

65. Crowe M, Jones V, Stone MA, Coe G. The clinical effectiveness of nursing models of diabetes care: A synthesis of the evidence. International journal of nursing studies. 2019;93:119-28. Reason: other design

66. Danna D, Garbee D, Kensler P. Effectiveness of advanced practice Nurse-Led heart failure clinics on All-Cause mortality: A systematic review of quantitative evidence protocol. JBI Database of Systematic Reviews and Implementation Reports. 2014;12(11):170-83. Reason: other design

67. Davis KM, Eckert MC, Hutchinson A, Harmon J, Sharplin G, Shakib S, et al. Effectiveness of nurse-led services for people with chronic disease in achieving an outcome of continuity of care at the primary-secondary healthcare interface: A quantitative systematic review. International journal of nursing studies. 2021;121:103986. Reason: other design

68. De la Fuente Coria MC, Cruz-Cobo C, Santi-Cano MJ. Effectiveness of a primary care nurse delivered educational intervention for patients with type 2 diabetes mellitus in promoting metabolic control and compliance with long-term therapeutic targets: Randomised controlled trial. International journal of nursing studies. 2020;101:103417. Reason: other design

69. de Morais Silva JL, Silva LSRd, Silva DRd, Santos EVSd, Fern, es de Melo AH, et al. Quality of life of women with gynecological cancer assisted by the nurse professional. Saude Coletiva. 2022;12(72):9470-5. Reason: other design

70. de Peralta S, Valente S, Emanuele D. Measuring a veteran's quality of healthcare managed by a nurse practitioner in a VA facility using professional practice evaluation and core performance measures. Journal of the American Association of Nurse Practitioners. 2016;28(5):258-68. Reason: other design

71. Deschodt M, Laurent G, Cornelissen L, Yip O, Zúñiga F, Denhaerynck K, et al. Core components and impact of nurse-led integrated care models for home-dwelling older people: A systematic review and meta-analysis. International journal of nursing studies. 2020;105:103552. Reason: other design

72. Dewey D. Cochrane Review Brief: Nurse Versus Physician-Led Care for the Management of Asthma. Online J Issues Nurs. 2014;19(3):11. Reason: other design

73. Dhar A, Needham J, Gibb M, Coyne E. The outcomes and experience of people receiving community-based nurse-led wound care: A systematic review. Journal of clinical nursing. 2020;29(15):2820-33. Reason: other design

74. Dickens GL, Ramjan L, Endrawes G, Barlow EM, Everett B. Effectiveness and experiences of mental health nurses in cases of medical emergency and severe physiological deterioration: A systematic review. International journal of nursing studies. 2019;95:73-86. Reason: other design

75. Dieng M, Cust AE, Kasparian NA, Mann GJ, Morton RL. Economic evaluations of psychosocial interventions in cancer: a systematic review. Psycho-Oncology. 2016;25(12):1380-92. Reason: other design

76. Donald F, Kilpatrick K, Reid K, Carter N, Martin-Misener R, Bryant-Lukosius D, et al. A systematic review of the cost-effectiveness of nurse practitioners and clinical nurse specialists: what is the quality of the evidence? Nurs Res Pract. 2014;2014:896587. Reason: other intervention

77. Donald F, Martin-Misener R, Carter N, Donald EE, Kaasalainen S, Wickson-Griffiths A, et al. A systematic review of the effectiveness of advanced practice nurses in long-term care. 2013. p. 2148-61. Reason: other design

78. Driscoll A, Gao L, Watts JJ. Clinical effectiveness and cost-effectiveness of ambulatory heart failure nurse-led services: an integrated review. BMC Cardiovascular Disorders. 2022;22(1). Reason: other design

79. Drury V, Ai Tee A, Hui Shan Lee A. PROFESSIONAL DIRECTIONS. An Integrative Literature Review of the Effectiveness of Nurse-led Clinics in Ophthalmology. Insight: The Journal of the American Society of Ophthalmic Registered Nurses. 2017;42(2):22-8. Reason: other design

80. Dunn T, Bliss J, Ryrie I. The impact of community nurse-led interventions on the need for hospital use among older adults: An integrative review. International journal of older people nursing. 2021;16(2):e12361. Reason: other design

81. Dutton M, Chiarella M, Curtis K. The role of the wound care nurse: an integrative review. Br J Community Nurs. 2014:S39-40, s2-7. Reason: other design

82. Edkins RE, Cairns BA, Hultman CS. A systematic review of advance practice providers in acute care: options for a new model in a burn intensive care unit. Annals of plastic surgery. 2014;72(3):285-8. Reason: other design

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84. Ersser SJ, Cowdell F, Latter S, Gardiner E, Flohr C, Thompson AR, et al. Psychological and educational interventions for atopic eczema in children. Cochrane Database of Systematic Reviews. 2014;2017(5). Reason: other intervention

85. Estrada LV, Cohen CC, Jingjing S, Stone PW. Community-Based Advance Care Planning Interventions for Minority Older Adults: A Systematic Review. Journal of Gerontological Nursing. 2021;47(5):26-36. Reason: other design

86. Fan L, Lukin W, Zhao J, Sun J, Hou XY. Interventions targeting the elderly population to reduce emergency department utilisation: A literature review. Emergency Medicine Journal. 2015;32(9):738-43. Reason: other design

87. Fergenbaum J, Bermingham S, Krahn M, Alter D, Demers C. Care in the Home for the Management of Chronic Heart Failure: Systematic Review and Cost-Effectiveness Analysis. The Journal of cardiovascular nursing. 2015;30(4):S44-S51. Reason: other intervention

88. Finley BA, Shea KD, Maixner R, Slebodnik M. Advanced Practice Registered Nurses Using Synchronous Telepsychiatry: An Integrative Systematic Review. Journal of the American Psychiatric Nurses Association. 2021;27(4):271-82. Reason: other design

89. Fong Yeong Woo B, Xin Yu Lee J, Wai San Tam W, Woo BFY, Lee JXY, Tam WWS. The impact of the advanced practice nursing role on quality of care, clinical outcomes, patient satisfaction, and cost in the emergency and critical care settings: a systematic review. Human Resources for Health. 2017;15:1-22. Reason: other design

90. Forero Villalobos J, Barrios Araya S. Rol de enfermería en la consulta de prediálisis en el paciente con enfermedad renal cónica avanzada. Enfermería Nefrológica. 2016;19(1):77-86. Reason: other design

91. Gabbard ER, Klein D, Vollman K, Chamblee TB, Soltis LM, Zellinger M. Clinical Nurse Specialist: A Critical Member of the ICU Team. AACN advanced critical care. 2021;32(4):413-20. Reason: other design

92. Galiana-Camacho T, Gómez-Salgado J, García-Iglesias JJ, Fernández-García D. Advanced Practice Nursing in emergency care, a proposal for the change: Systematic review. Revista espanola de salud publica. 2018;92. Reason: other design

93. Garner S, Lopatina E, Rankin JA, Marshall DA. Nurse-led care for patients with rheumatoid arthritis: A systematic review of the effect on

quality of care. Journal of Rheumatology. 2017;44(6):757-65. Reason: other design

94. Garry L, Rohan N, O'Connor T, Patton D, Moore Z. Do nurse-led critical care outreach services impact inpatient mortality rates? Nursing in critical care. 2019;24(1):40-6. Reason: other design

95. Georgiopoulos G, Kollia Z, Katsi V, Oikonomou D, Tsioufis C, Tousoulis D. Nurse's Contribution to Alleviate Non-adherence to Hypertension Treatment. Curr Hypertens Rep. 2018;20(8):65. Reason: other design

96. Gibson C, Goeman D, Pond D. What is the role of the practice nurse in the care of people living with dementia, or cognitive impairment, and their support person(s)?: a systematic review. BMC family practice. 2020;21(1):141. Reason: other design

97. Gielen SC, Dekker J, Francke AL, Mistiaen P, Kroezen M. The effects of nurse prescribing: a systematic review. International journal of nursing studies. 2014;51(7):1048-61. Reason: other design

98. Gill I, Dalbeth N, Ofanoa M, Goodyear-Smith F. Interventions to improve uptake of uratelowering therapy in patients with gout: A systematic review. BJGP Open. 2020;4(3). Reason: other design

99. Glarcher M, Lex KM. Advanced Nursing Practice in Austria under consideration of outcome measurement. Zeitschrift fur Evidenz, Fortbildung und Qualitat im Gesundheitswesen. 2020;155:11-6. Reason: other design

100. Gordon K, Gray CS, Dainty KN, deLacy J, Seto E. Nurse-Led Models of Care for Patients with Complex Chronic Conditions: A Scoping Review. Nursing leadership (Toronto, Ont). 2019;32(3):57-76. Reason: other design

101. Gould KA. Comprehensive Systematic Review for Advanced Practice Nursing. 2nd ed. Dimensions of Critical Care Nursing. 2017;36(3):322-. Reason: other design

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230. Spears JA, Craft M, White S. Outcomes of Cancer Survivorship Care Provided by Advanced Practice RNs Compared to Other Models of Care: A Systematic Review. Oncol Nurs Forum. 2017;44(1):E34-e41. Reason: other design

231. Spence BG, Ricci J, McCuaig F. Nurse Practitioners in Orthopaedic Surgical Settings: A Review of the Literature. Orthopaedic Nursing. 2019;38(1):17-24. Reason: other design

232. Stamp KD, Machado MA, Allen NA. Transitional Care Programs Improve Outcomes for Heart Failure Patients. Journal of Cardiovascular Nursing. 2014;29(2):140-54. Reason: other design

233. Strupeit S, Buß A, Dassen T. Effectiveness of nurse-delivered patient education interventions on quality of life in outpatients: A systematic review. Applied Nursing Research. 2013;26(4):232-8.

234. Strupeit S, Buss A, Dassen T. Effectiveness of nurse-delivered patient education interventions on quality of life in elders in the hospital: A systematic review. Applied nursing research : ANR. 2016;32:217-21. Reason: other intervention

235. Suh SR, Lee MK. Effects of Nurse-Led Telephone-Based Supportive Interventions for Patients With Cancer: A Meta-Analysis. Oncology nursing forum. 2017;44(4):E168-E84. Reason: other design

236. Suh Y, Lee S, Kim GE, Lee J. Systematic review and meta-analysis of randomization controlled and nonrandomized controlled studies on nurse-led nonpharmacological interventions to improve cognition in people with dementia. Journal of clinical nursing. 2022. Reason: other design

237. Suksatan W, Teravecharoenchai S, Sarayuthpitak J. Factors Associated with a Health-promoting Lifestyle among Adults and Older Adults in the Era of COVID-19: An Integrative Review. Open Access Macedonian Journal of Medical Sciences. 2022;10:725-32. Reason: other intervention

238. Sun CA, Parslow C, Gray J, Koyfman I, Hladek MD, Han HR. Home-based primary care visits by nurse practitioners. Journal of the American Association of Nurse Practitioners. 2022;34(6):802-12. Reason: other design

239. Sweeney AMT, McCabe C, Flurey CA, Robson JC, Berry A, Richards P, et al. The patient perspective of nurse-led care in early rheumatoid

arthritis: A systematic review of qualitative studies with thematic analysis. Journal of clinical nursing. 2021;30(1):145-60. Reason: other design

240. Takeuchi J, Yanagimoto Y, Sato Y, Ochiai R, Moriichi A, Ishizaki Y, et al. Efficacious interventions for improving the transition readiness of adolescents and young adult patients with chronic illness: A narrative review of randomized control trials assessed with the transition readiness assessment questionnaire. Frontiers in Pediatrics. 2022;10. Reason: other intervention

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242. Tang WYW, Amy Ng MF. The effectiveness of nursing management on improving health outcomes for hospitalized older adults with delirium: A systematic review protocol. JBI Database of Systematic Reviews and Implementation Reports. 2013;11(6):237-58. Reason: other design

243. Tay LH, Ong AKW, Lang DSP. Experiences of adult cancer patients receiving counseling from nurses: a qualitative systematic review. JBI Database System Rev Implement Rep. 2018;16(10):1965-2012. Reason: other design

244. Tenison E, James A, Ebenezer L, Henderson EJ. A Narrative Review of Specialist Parkinson's Nurses: Evolution, Evidence and Expectation. Geriatrics (Basel). 2022;7(2). Reason: other design

245. Thamm C, Teleni L, Chan RJ, Stone L, McCarthy A, L. r. Nurse-led interventions for cancer patients in emergency departments: Systematic review. Collegian. 2019;26(2):311-9. Reason: other intervention

246. Tho PC, Ang E. The effectiveness of a patient navigation program in adult cancer patients who are undergoing treatment: A systematic review protocol. JBI Database of Systematic Reviews and Implementation Reports. 2013;11(10):107-16. Reason: other design

247. Tho PC, Ang E. The effectiveness of patient navigation programs for adult cancer patients undergoing treatment: A systematic review. JBI Database of Systematic Reviews and Implementation Reports. 2016;14(2):295-321. Reason: other design

248. Townshend K, Jordan Z, Peters MDJ, Tsey K. The effectiveness of Mindful Parenting programs in promoting parents' and children's wellbeing: A systematic review protocol. JBI Database of Systematic Reviews and Implementation Reports. 2014;12(11):184-96. Reason: other intervention

249. Tsiachristas A, Wallenburg I, Bond CM, Elliot RF, Busse R, Van Exel J, et al. Costs and effects of new professional roles: Evidence from a literature review. Health Policy. 2015;119(9):1176-87. Reason: other design

250. Tunnicliff SA, Piercy H, Bowman CA, Hughes C, Goyder EC. The contribution of the HIV specialist nurse to HIV care: a scoping review. Journal of clinical nursing. 2013;22(23):3349-60. Reason: other design

251. van der Jeugd J. Long-term management of live kidney donors: advanced nurse-led clinics. Transplant Journal of Australasia. 2016;25(1):20-4. Reason: other design

252. van Erp RMA, van Doorn AL, van den Brink GT, Peters JWB, Laurant MGH, van Vught AJ. Physician Assistants and Nurse Practitioners in Primary Care Plus: A Systematic Review. Int J Integr Care. 2021;21(1):6. Reason: other design

253. van Vliet R, Ebben R, Diets N, Pelgrim T, Loef J, Vloet L. Nurse practitioners and physician assistants working in ambulance care: A systematic review. F1000Research. 2020;9. Reason: other design

254. Verloo H, Chiolero A, Kiszio B, Kampel T, Santschi V. Nurse interventions to improve medication adherence among discharged older adults: A systematic review. Age and Ageing. 2017;46(5):747-54. Reason: other design

255. Vipond J, Mennenga HA. Screening, Brief Intervention, and Referral to Treatment by Emergency Nurses: A Review of the Literature. J Emerg Nurs. 2019;45(2):178-84. Reason: other design

256. Walsh JC. A Nurse Led Clinic's contribution to Patient Education and Promoting Self-care in Heart Failure Patients: A Systematic Review. International Journal of Integrated Care (IJIC). 2017;17:1-2. Reason: other design

257. Walter E, Curtis K. The Role and Impact of the Specialist Trauma Nurse: An Integrative Review. Journal of Trauma Nursing. 2015;22(3):153-69. Reason: other design

258. Wang H, English M, Chakma S, Namedre M, Hill E, Nagraj S. The roles of physician associates and advanced nurse practitioners in the National Health Service in the UK: a scoping review and narrative synthesis. Human resources for health. 2022;20(1):69. Reason: other design

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260. Weeks G, George J, Maclure K, Stewart D. Non-medical prescribing versus medical prescribing for acute and chronic disease management in primary and secondary care. Cochrane Database of Systematic Reviews. 2016(11). Reason: other intervention

261. Weller CD, Buchbinder R, Johnston RV. Interventions for helping people adhere to compression treatments for venous leg ulceration. Cochrane Database of Systematic Reviews. 2016;2016(3). Reason: other intervention

262. White G. Comprehensive Systematic Review for Advanced Nursing Practice. Nurse Education in Practice. 2013;13(6):e39-e. Reason: other design

263. Whiteford C, White S, Stephenson M. Effectiveness of nurse-led clinics on service delivery and clinical outcomes in adults with chronic ear, nose and throat complaints: A systematic review protocol. JBI Database of Systematic Reviews and Implementation Reports. 2013;11(8):23-37. Reason: other design

264. Whiteford C, White S, Stephenson M. Effectiveness of nurse-led clinics on service delivery and clinical outcomes in adults with chronic ear, nose and throat complaints: A systematic review. JBI Database of Systematic Reviews and Implementation Reports. 2016;14(4):229-56. Reason: other design

265. Whitehead L, Kabdebo I, Dunham M, Quinn R, Hummelshoj J, George C, et al. The effectiveness of nurse-led interventions to prevent childhood and adolescent overweight and obesity: A systematic review of randomised trials. Journal of Advanced Nursing (John Wiley & Sons, Inc). 2021;77(12):4612-31. Reason: other intervention

266. Williams K. Advanced practitioners in emergency care: a literature review. Emergency nurse : the journal of the RCN Accident and Emergency Nursing Association. 2017;25(4):36-41. Reason: other design

267. Witzig Brändli V, Lange C, Kobleder A, Kohler M. Effectiveness and content components of nursing counselling interventions on self- and symptom management of patients in oncology rehabilitation-A systematic review. Nursing open. 2022. Reason: other design

268. Witzke T, Stojanov A, Ristau J, Berger-Höger B, Lindhardt CL, Balzer K, et al. Specialised nursing tasks in cancer care and their effects. Pflege. 2023;36(1):20-30. Reason: other design

269. Wong AKC, Bayuo J, Wong FKY, Yuen WS, Lee AYL, Chang PK, et al. Effects of a Nurse-Led Telehealth Self-care Promotion Program on the Quality of Life of Community-Dwelling Older Adults: Systematic Review and Meta-analysis. Journal of Medical Internet Research. 2022;24(3). Reason: other intervention

270. Wood EM, Zani B, Esterhuizen TM, Young T. Nurse led home-based care for people with HIV/AIDS. BMC health services research. 2018;18(1):219. Reason: other intervention

271. Woods CE, Jones R, O'Shea E, Grist E, Wiggers J, Usher K. Nurse-led postdischarge telephone follow-up calls: A mixed study systematic review. Journal of clinical nursing. 2019;28(19):3386-99. Reason: other design

272. Wu ML, Pu L, Grealish L, Jones C, Moyle W. The effectiveness of nurse-led interventions for preventing urinary tract infections in older adults in residential aged care facilities: A systematic review. Journal of Clinical Nursing (John Wiley & Sons, Inc). 2020;29(9):1432-44. Reason: other design

273. Wu MLW, Pu L, Grealish L, Jones C, Moyle W. The effectiveness of nurse-led interventions for preventing urinary tract infections in older adults in residential aged care facilities: A systematic review. Journal of clinical nursing. 2020;29(9):1432-44. Reason: duplicate

274. Xiaoqin Qiu, Chunhan L, Jinhua L, Xi X, Jinlian L, Qiu X, et al. The effect of nurse-led interventions on re-admission and mortality for congestive heart failure: A meta-analysis. Medicine. 2021;100(7):1-9. Reason: duplicate

275. Xu H, Mou L, Cai Z. A nurse-coordinated model of care versus usual care for chronic kidney disease: meta-analysis. Journal of clinical nursing. 2017;26(11):1639-49. Reason: other intervention

276. Yang BK, Johantgen ME, Trinkoff AM, Idzik SR, Wince J, Tomlinson C. State Nurse Practitioner Practice Regulations and U.S. Health Care Delivery Outcomes: A Systematic Review. Medical Care Research and Review. 2021;78(3):183-96. Reason: other design

277. Yu Z, Gallant AJ, Cassidy CE, Boulos L, Macdonald M, Stevens S. Case Management Models and Continuing Care: A Literature Review across nations, settings, approaches, and assessments. Home Health Care Management & Practice. 2021;33(2):96-107. Reason: other design

278. Yu-Mei Chen D, Wu XV, Chan EY, Goh YS. Nurse-Led Tele-Coaching on Modifiable Cardiovascular Risk Factors in People with Type 2 Diabetes Mellitus: A Systematic Review and Meta-Analysis. Worldviews on evidence-based nursing. 2019;16(6):424-32. Reason: other intervention

279. Zhang A, Kong D, Jiang L, Sun F, Dunkle RE, Liu C. Understanding the Effectiveness of Psychosocial Services for Anxiety and Depression in Chinese Older Adults: A Systematic Review and Meta-Analysis of Controlled Trials. The Gerontologist. 2020;60(1):e76-e92. Reason: other design

280. Zhang T, Qi X. Enhanced nursing care for improving the self-efficacy and health-related quality of life in patients with a urostomy. J Multidiscip Healthc. 2023;16:297-308. Reason: other design

281. Zhou K, Fitzpatrick T, Walsh N, Kim JY, Chou R, Lackey M, et al. Interventions to optimise the care continuum for chronic viral hepatitis: a systematic review and meta-analyses. The Lancet Infectious Diseases. 2016;16(12):1409-22. Reason: other design

282. Zhou L, Liu XL, Tan JY, Yu HP, Pratt J, Peng YQ. Nurse-led educational interventions on cancer pain outcomes for oncology outpatients: a systematic review. International nursing review. 2015;62(2):218-30. Reason: other design

Appendix 1.2.2. List of excluded studies resulting from reference search

1. Yu-Mei Chen D, Wu XV, Chan EY, Goh YS. Nurse-Led Tele-Coaching on Modifiable Cardiovascular Risk Factors in People with Type 2 Diabetes Mellitus: A Systematic Review and Meta-Analysis. Worldviews Evid Based Nurs. 2019;16(6):424-32. Reason: other intervention

2. Nicholson A, Coldwell CH, Lewis SR, Smith AF. Nurse-led versus doctor-led preoperative assessment for elective surgical patients requiring regional or general anaesthesia. The Cochrane database of systematic reviews. 2013(11):Cd010160. Reason: other population

3. Yang M, Ta N, Bai X, Wei C, Sun C, Han C. The Effectiveness of Personalized Nursing on Quality of Life in Cardiovascular Disease

Patients: A Systematic Review and Meta-analysis. Evidence-based complementary and alternative medicine : eCAM. 2023;2023:4689732. Reason: other intervention

4. Kappes M, Espinoza P, Jara V, Hall A. Nurse-led telehealth intervention effectiveness on reducing hypertension: a systematic review. BMC Nurs. 2023;22(1):19. Reason: other design
5. Davis KM, Eckert MC, Hutchinson A, Harmon J, Sharplin G, Shakib S, et al. Effectiveness of nurse-led services for people with chronic disease in achieving an outcome of continuity of care at the primary-secondary healthcare interface: A quantitative systematic review. Int J Nurs Stud. 2021;121:103986. Reason: other design
6. Stanik-Hutt J, Newhouse RP, White KM, Johantgen M, Bass EB, Zangaro G, et al. The Quality and Effectiveness of Care Provided by Nurse Practitioners. The Journal for Nurse Practitioners. 2013;9(8):492-500.e13. Reason: other design
7. Abraham CM, Norful AA, Stone PW, Poghosyan L. Cost-Effectiveness of Advanced Practice Nurses Compared to Physician-Led Care for Chronic Diseases: A Systematic Review. Nurs Econ. 2019;37(6):293-305. Reason: other design

Appendix 1.2.3. List of excluded studies due to lack of extractable effectiveness data

1. Afik A, Nursalam N, Sufyanti A, Fikriana R. Effect of Nurse-Led Program in Coronary Heart Diseases Patients: A Systematic Review. Open Access Macedonian Journal of Medical Sciences. 2022;9:109-14. Reason: no extractable effectiveness data
2. Çolak S, Vural F. Effect of nurse-led interventions on patient outcomes in patients with prostate cancer: A systematic review. International Journal of Urological Nursing. 2022;16(2):105-13. Reason: no extractable effectiveness data
3. Dickens GL, Al Maqbali M, Blay N, Hallett N, Ion R, Lingwood L, et al. Randomised controlled trials of mental health nurse-delivered interventions: A systematic review. Journal of psychiatric and mental health nursing. 2022. Reason: no extractable effectiveness data
4. Htay M, Whitehead D. The Effectiveness of the Role of Advanced Nurse Practitioners Compared to Physician-led or Usual Care: A Systematic Review. International Journal of Nursing Studies Advances. 2021;3:100034. Reason: no extractable effectiveness data
5. Kilpatrick K, Kaasalainen S, Donald F, Reid K, Carter N, Bryant-Lukosius D, et al. The effectiveness and cost-effectiveness of clinical nurse specialists in outpatient roles: A systematic review. Journal of Evaluation in Clinical Practice. 2014;20(6):1106-23. Reason: no extractable effectiveness data
6. Kilpatrick K, Reid K, Carter N, Donald F, Bryant-Lukosius D, Martin-Misener R, et al. A Systematic Review of the Cost-Effectiveness of Clinical Nurse specialists and Nurse Practitioners in Inpatient Roles. Nursing leadership (Toronto, Ont). 2016;28(3):56-76. Reason: no extractable effectiveness data
7. Lawton K, Royals K, Carson-Chahhoud KV, Campbell F, Smith BJ. Nurse-led versus doctor-led care for bronchiectasis. Cochrane Database of Systematic Reviews. 2018;2018(6). Reason: no extractable effectiveness data

8. Mares MA, McNally S, Fern, ez RS. Effectiveness of nurse-led cardiac rehabilitation programs following coronary artery bypass graft surgery: A systematic review. JBI Database of Systematic Reviews and Implementation Reports. 2018;16(12):2304-29. Reason: no extractable effectiveness data

9. Martínez-González NA, jung R, Djalali S, Rosemann T. The impact of physician-nurse task shifting in primary care on the course of disease: a systematic review. Human resources for health. 2015;13:55. Reason: no extractable effectiveness data

10. Morilla-Herrera JC, Garcia-Mayor S, Martín-Santos FJ, Uttumch K, ani S, Leon Campos Á, et al. A systematic review of the effectiveness and roles of advanced practice nursing in older people. International journal of nursing studies. 2016;53:290-307. Reason: no extractable effectiveness data

Appendix 1.3. Overlap between RCTs in included systematic reviews

Number of times included in a systematic review	Frequency	Percentage	Cumulative percentage
1	365	77.2	77.2
2	64	13.5	90.7
3	22	4.7	95.4
4	10	2.1	97.5
5	8	1.7	99.2
6	2	0.4	99.6
7	1	0.2	99.8
11	1	0.2	100
TOTAL	**473**	**100.0**	

Appendix 1.4. Study characteristics of the included reviews

Ref	Aim	Databases searched / time window covered	Setting	Population	Intervention
Al-Mallah 2016	To evaluate the effectiveness of NLCs in terms of morbidity and mortality in patients with cardio-vascular disease in outpatient settings	BIOSIS, Cochrane databases, EMBASE, MEDLINE, Web of Science Inception - Feb 2013	Outpatients settings	* Patients with CVD * Patients with multiple diseases if the outcomes for patients with coronary heart disease were reported separately or if these patients comprised at least half of the study participants.	*Trials that had a follow-up duration of less than 9 months were excluded * NLC (involves monitoring of patients with chronic diseases, managing their medications, providing health education and psychological support, and prescribing medications when permittable by jurisdiction).
Audet 2021	To synthesise the evidence of current roles of advanced practice nurses in postoperative cardiac surgery on patient and organizational outcomes	CINHAL, Cochrane Database, EMBASE, Joanna Briggs Database, MEDLINE, Web of Science 1999 - …	Hospital postoperative care **EX:** preoperative care setting (e.g., preoperative clinics)	**IN:** postoperative adult patients who underwent coronary artery bypass graft, cardiac or open heart surgery (e.g., isolated mitral valve replacements, LVAD) or heart transplantation **EX:** *patients with percutaneous coronary intervention, congenital cardiac surgeries, cardiac catheterization, thoracic and vascular surgeries *pediatric or neonatal population	Advanced practice nursing intervention (APN = clinical nurse specialists and nurse practitioners with graduate-level education e.g., master's or doctoral level)
Aurizki 2022	To synthesise evidence concerning task-shifting interventions led by general practice nurses compared with usual or specialist care in improving the mental health outcomes of adult patients in primary care	CINAHL, MEDLINE, PsycInfo, EMBASE, Cochrane EBM Reviews, Web of Science Core Collection, and ProQuest Dissertation and Thesis 2000 - 2020	Primary care or community	**IN:** Adults ≥18 years primarily diagnosed with mental health problems **EX:** *Studies focused on alcohol and substance use or neurological disorders * Studies including participants with physical-related conditions such as pregnant women, postpartum mothers and patients with chronic illnesses or disabilities.	Must involve various task-shifting interventions, among others, employing NSHWs in mental health interventions collaborative and stepped care, training and supervision, transdiagnostic or staged interventions, and digital innovations

Ref	Aim	Databases searched / time window covered	Setting	Population	Intervention
Baker 2017	To evaluate the clinical and cost effectiveness of nurse-led selfmanagement for patients with chronic obstructive pulmonary disease in primary care	AMED, BNI, CINAHL, Cochrane Library, EMBASE, MEDLINE, NHS Economic Evaluation Database Jan 2004 - Apr 2016	Primary care	Adults with COPD	Nurse-led self-management approach including at least two of the following components as part of the intervention: smoking cessation, self-recognition and self-treatment of exacerbations, an exercise or physical activity component, advice about diet, advice about medication or coping with breathlessness
Browall 2016	To explore how interventions using nurse-led follow-up in breast cancer care have been evaluated with a focus on patient outcomes and cost effectiveness	CINAHL, MEDLINE, PubMed In Process 2005 - 2013	Hospital and home	Adult women treated for breast cancer	Nurse follow-up after treatment for breast cancer at hospitals, at home or by telephone
Bryant-Lukosius 2015	To evaluate the clinical effectiveness and cost-effectiveness of master-prepared CNS providing transitional care	AMED, CENTRAL, CINAHL, DARE, EMBASE, Global Health, HealthStar, HEED, MEDLINE, Web of Science 1980 - Jul 2013	Transitional care	Patients of any age receiving care in all types (e.g., teaching and nonteaching, public and private), sizes (e.g., small, medium, and large), and locations (e.g., rural and urban) of hospitals or community settings (e.g., long-term care, primary care, and home care).	**IN:** NP = nurse with formal postbaccalaureate or graduate NP education program or licensed as an NP. CNS = nurse with graduate degree and role reflective of CNS role definition **EX:** * NP or CNS part of a multicomponent or multidisciplinary intervention in which the impact of their contribution could not be isolated from other healthcare providers * study evaluated a very specific intervention (e.g., cognitive behavioural therapy) that was delivered by an NP or CNS but could be delivered by other clinicians, such as an RN * control group also exposed to NP or CNS
Chen 2016	To evaluate the efficacy of nurse-led disease management programs in improving the quality of life for patients with chronic kidney disease	CENTRAL, CINAHL, MEDLINE Inception - Sep 2015	Not specified	Chronic kidney disease patients receiving either hemodialysis or peritoneal dialysis	Nurse-led disease management programs

Ref	Aim	Databases searched / time window covered	Setting	Population	Intervention
Cheng 2018	To evaluate the efficacy of the nurse-led disease management programs in improving the QoL for patients with cancer	Cochrane Library, EMBASE, MEDLINE … - Jun 2017	Not specified	Patients treated for cancer	Not specified
Chiang 2018	To evaluate the effects of nurse-led patient-centered care in changing behavioral risks, cardiac physiological parameters, mortality rate, health-related quality of life, and self-efficacy among patients with CHD	CINAHL, MEDLINE Inception - Oct 2017	Not specified	People ≥18 years with index diagnoses of CHD, acute coronary syndromes, angina pectoris or had received revascularization (percutaneous coronary intervention or coronary bypass grafting)	Nurse-led patient-centered care for secondary cardiac prevention ,1) actively engage patients in care planning; 2) provide individualised information according to the unique needs of a patient; 3) shared decision making and incorporate goal setting in care planning; and 4) empower patients to manage their health condition
Daly 2017	To evaluate whether nurse-led interventions have a beneficial effect across the broad range of risk factors associated with microvascular and cardiovascular complications in diabetes patients	CENTRAL, CINAHL, EMBASE, MEDLINE … - Feb 2016	primary care or outpatient clinics, tertiary center	Patients with Type 1 or Type 2 diabetes	Nurse-led if nurses, independently of the patient's primary or specialist physician, actively delivered the intervention, followed-up patients, monitored blood test results, titrated medications, organised follow-up prescriptions and consultations, and were able to make clinical decisions within the scope of their nursing role
de Thurah 2017	To compare the efficacy of embedded nurse-led versus conventional physician-led follow-up on disease activity in patients with rheumatoid arthritis	CENTRAL, CINAHL, EMBASE, MEDLINE, PsycINFO, Scopus, Web of Science Inception - 2016	Outpatient clinic	Patients diagnosed with rheumatoid arthritis according to the American College of Rheumatology 1997/2010 criteria	Nurses performed assessment of tender and swollen joints, evaluated blood samples and monitored the medical treatment in order to assess the patients' disease activity
Donald 2014	To determine the cost-effectiveness of nurse practitioners delivering transitional care in alternative or complementary roles and formulate	AMED, CINAHL, CENTRAL, DARE, EMBASE, Global Health, HealthStar, HEED, MEDLINE, Web of Science 1980 - 2012	Hospital	Patients of any age admitted for any reason to all types, sizes and locations of hospitals	**IN:** Transitional care delivered by a NP who had completed a formal postbaccalaureate or graduate nurse practitioner education programme or was licensed as a NP **EX:** * NP contribution could not be isolated from

Ref	Aim	Databases searched / time window covered	Setting	Population	Intervention
	recommendations based on the evidence				that of other providers * control group was exposed to the NP over the course of the study
Driscoll 2015	To assess the effects of nurse-led titration (NLT) of beta-adrenergic blocking agents, angiotensin converting enzyme inhibitors (ACEIs), and angiotensin receptor blockers (ARBs) in patients with heart failure with reduced ejection fraction (HFrEF) in terms of safety and patient outcomes	CENTRAL, EMBASE, MEDLINE 1946 - Dec 2014	Residential care facility, primary care and outpatient clinics	People ≥18 years diagnosed with symptomatic HFrEF and prescribed beta-adrenergic blocking agents, ACEIs, and/or ARBs	**NLT** = heart failure nurses or NPs, or both visiting the patient at home or in an outpatient clinic. The heart failure nurses have been delegated the responsibility for making protocolled changes in the dosage of beta-adrenergic blocking agents, ACEIs, and ARBs. The NPs are able to titrate the medications as part of their scope of practice. **Comparison**: Participants under the management of a primary care physician who is responsible for titration of ACEIs, ARBs, and/or beta-adrenergic blocking agents.
Ekers 2013	To evaluate the clinical effectiveness of nurse-delivered collaborative care for depression and long-term physical conditions	AMED, BNI, CINAHL, Cochrane Library, EMBASE, MEDLINE, PsycINFO Inception-May 2012	community or primary care	Primary diagnosis of depression and one or more long-term physical health problems	Specifically trained general nurse delivered brief proactive follow-up (collaborative care or a similar intervention)
Gan 2022	To summarise evidence on nurse-led dietary interventions for cancer patients and survivors	CENTRAL, CINAHL, CNKI, CQVIP, EMBASE, MEDLINE, Wan Fang, Web of Science, Index to Taiwan Periodical Literature System 1937 - Jan 2021	Not specified	Cancer patients or survivors	Nurse-led dietary interventions
Gok Metin 2022	To synthesise the outcomes of theory-based nursing interventions on primary (blood lipid profile, blood pressure, fasting blood glucose, and body mass	MEDLINE, Science Direct, Scopus, Web of Science 2013 - Aug 2021	Not specified	Participants with chronic heart disease	Theory-based nursing interventions compared with: Studies included routine nursing care or no intervention group

Ref	Aim	Databases searched / time window covered	Setting	Population	Intervention
	index) and secondary (healthy lifestyle and quality of life) outcomes for patients with coronary heart disease				
Gong 2017	To evaluate the effectiveness of nurse-led care compared with physician-led care for obstructive sleep apnoea	AMED, BNI, CENTRAL, CINAHL, EMBASE, HMIC, MEDLINE, PsycINFO, Health Business Elite Inception - Dec 2016	Community based	Adults with obstructive sleep apnoea	Nurse-led community-based treatments
Halcomb 2019	To synthesise the evidence about nurse-delivered interventions in primary care for adults with mental illness	CINAHL, EBSCO, MEDLINE 1998 - 2017	Primary care	Adults with a mental illness **EX:** patients with chronic conditions, or depressive symptoms in life limiting or serious illness (e.g. stroke, cancer)	**IN:** general practice nurse (GPN) intervention **EX:** interventions delivered by a mental health nurse GPN part of a collaborative intervention
Health Quality Ontario 2013	To determine the effectiveness of specialised nurses who have a clinical role in patient care in optimizing chronic disease management among adults in the primary healthcare setting.	Centre for Reviews and Dissemination database, CINAHL, Cochrane Library, EMBASE, MEDLINE, MEDLINE In-Process Inception - May 2012	**IN:** primary healthcare setting **EX**: nursing homes and long-term care	Adults with chronic disease (i.e., CHF, CAD, COPD, atrial fibrillation, type 2 diabetes, stroke, chronic wounds, general "chronic disease," or where the average patient was indicated to have chronic disease)	**IN:** specialised nurses (i.e., nurses with additional training, enhanced scope of practice, or providing nurse-led interventions) with a clinical role in patient care **EX:** nurses solely providing patient education, self-management, care coordination, case management, or action plan interventions
Helvaci 2020	To analyse the effects of nurse-driven self-management programs on physical and psychosocial health variables in people with COPD	CENTRAL, CINAHL, MEDLINE, ScienceDirect Jan 2010 - Dec 2019	Not specified	Adults > 18 years diagnosed with COPD	nurse-driven SM programs using home visits, follow-up phone calls, education and counselling programs for patients or their caregivers
Hussain Rawther 2020	To evaluate the effectiveness of specialist nurse interventions in the	CINAHL, Cochrane Library, IndMed, MEDLINE, Science	Hospital, outpatient clinics,	Women with a diagnosis of breast cancer at any age, stage,	Any specialist nurse initiated interventions. Specialist nurse = a registered nurse with additional qualification such as "breast care

Ref	Aim	Databases searched / time window covered	Setting	Population	Intervention
	care of women with breast cancer	Direct, Scopus, Shodhganga, Web of Science ? - Jan 2018	community or primary care centres	receiving any treatment in any setting	nurse," "clinical nurse specialist," "nurse consultant," "nurse practitioner," "nurse clinician" or any nurse with specialised training in breast cancer care
Kim 2022	To determine the effectiveness of nurse-led interventions on medication adherence, medication knowledge and clinical outcomes in adults taking medication for metabolic syndrome	CENTRAL, CINAHL, EMBASE, MEDLINE, PsycINFO 1980 - May 2021	Not specified	Patients ≥ 19 years at risk for metabolic syndrome according to the NCEP ATP III	Nurse-led interventions for medication adherence
Kobleder 2017	To evaluate the effectiveness of APN in the care for women with gynaecological tumors	CENTRAL, CINAHL, MEDLINE, PsycINFO ? - 2016	Hospital, outpatient or home care setting	Women ≥ 18 years with ovarian, uterine, cervical, endometrial, vaginal or vulvar cancer	Interventions by APNs which focus on the core competencies as defined by Hamric et al. (2014)
Kuethe 2013	To evaluate the effectiveness of nurse-led asthma care provided by a specialised asthma nurse, a NP, a PA or an otherwise specifically trained nursing professional, working relatively independently from a physician, compared to traditional physician-led care	AMED, CENTRAL, CINAHL, EMBASE, MEDLINE, PsycINFO Inception - Aug 2012	All outpatient care both in primary care and hospitals	Adults and children with the clinical diagnosis of asthma, as defined by the authors, reviewed on a regular basis in primary or in hospital care. No restrictions were made for co-morbidities.	Any aspect of asthma management, on a regular basis in primary or hospital care, led by an allied health professional (i.e. specialised asthma nurse, nurse practitioner, physician assistant or an otherwise specifically trained nursing professional), supervised by a physician (nurse-led care)
Lambert 2021	To compare cost and effectiveness of nurse-led delivered ART interventions with other forms of delivery	CINAHL, Cochrane Library, EMBASE, MEDLINE, Scopus, Web of Science Jan 2006 - Dec 2020	Not specified	Any population	Intervention delivery facilitated by a nurse
Laurant 2018	To investigate the impact of nurses working as substitutes for primary care	CENTRAL, MEDLINE, CINAHL	Primary care	Any persons presenting with a physical complaint	Any qualified RN working as substitutes for doctors in primary care. - Qualified nurse = a graduate who has been

Ref	Aim	Databases searched / time window covered	Setting	Population	Intervention
	doctors on patient outcomes, processes of care and utilisation (including volume and costs)	? - March 2017			legally authorised to practice after examination by a state board of nurse examiners or similar regulatory authority. Included are NP, CNS, APN, practice nurses, health visitors, etc. No selection based on job title. - Substitution = task(s) formerly performed by one type of professional (i.e. a doctor) are transferred to a different type of professional (i.e. a nurse), usually with the intention of reducing cost or addressing workforce shortages. **EX:** - Nurses supplementing the work of primary care doctors. Supplementation refers to the situation wherein a nurse supplements or extends the care provided by a doctor by providing a new primary care service. - Mental health nurses
Lee 2022	To evaluate the effectiveness of nurse-led telerehabilitation programs compared with traditional face-to-face rehabilitation programs; and compare the effects of telerehabilitation on patients with different chronic diseases	CENTRAL, CINAHL, EMBASE, MEDLINE, PsycInfo 2015 - 2021	Community care **EX:** nursing home, hospital	Adults ≥18 years with hypertension, cardiac diseases (coronary artery diseases, heart failure), chronic respiratory diseases (asthma, COPD), diabetes, cancer, or stroke	Telerehabilitation including telephone calls, smartphone apps, videoconferencing, or SMS text messaging), with nurses providing at least 50% of the program in terms of the frequency or duration of the provision of care
Li 2022	To determine the effect of community based nurse-led support intervention in the reduction of HbA1c levels compared to usual care	CENTRAL, MEDLINE, Science Direct Inception - Aug 2021	Community care	Type II Diabetes Mellitus patients (>18 years) who had their HbA1c levels measured at baseline and endpoint	Nurse-led self-management support interventions using any method of communication exchange or education–face to face health education, telemedicine, teleconsultations, health education through banners and role plays - nurse = “Any qualified nursing personal trained or untrained for diabetic care, working

Ref	Aim	Databases searched / time window covered	Setting	Population	Intervention
					as a healthcare worker attached to a government primary care centre/private or nongovernmental organisation, or also a subordinate attached to a primary care physician". This could include NP, CNS, APN, RN, practice nurses, etc.
Li 2020	To evaluate the impact of nurse-led interventions on early cancer detection	BNI, CENTRAL, CINAHL, EMBASE, Emcare, MEDLINE, Scopus, Web of Science, Chinese Biomedical Literature Databases, China Journal Net, Wanfang Data Inception - Sept 2019	Not specified	**IN:** General and high cancer risk populations (≥18 years) **EX:** Patients already diagnosed with cancer (focus is on the early detection of cancer)	Nurse-led intervention is a kind of intervention where nurses play central roles and have autonomous decision-making and authority on customizing patient care. All types of nurse-led interventions focusing on early cancer detection were considered, regardless of format, frequency, or duration.
Martinez-Gonzalez 2014 (BMC Health Serv Res)	To evaluate the clinical effectiveness and costs of nurses working as substitutes for physicians in primary care	CINAHL, Cochrane Library of Systematic Reviews, EMBASE, MEDLINE Inception - Aug 2012	Primary care (general practices, community or ambulatory care settings)	Patients of all ages seeking care for all conditions including mental health and addiction	Nurses (in any type of role) who substitute physicians by acting as the main figure of care with autonomous or delegated clinical responsibility for tasks that would have formerly been performed by physicians alone.
Martinez-Gonzalez 2014 (PLoS ONE)	To compare the effectiveness of nurse-led care and physician-led care on clinical parameters in studies in which nurses substituted physicians.	CINAHL, Cochrane Library of Systematic Reviews, Cochrane EPOC, EMBASE, MEDLINE Inception - Aug 2012	Primary care (general practices, community or ambulatory care settings)	Patients of all ages seeking first contact or undergoing care for all conditions including mental health and addiction restricted to primary care	Compare care from nurses to care from physicians (family physicians, paediatricians and geriatrician).
Martinez-Gonzalez 2015 (Swiss Med Wkly)	update of previous reviews (published in 2002 and 2005) with a focus on the **process of care outcomes**, other than those examined in the mentioned reviews (i.e.	CINAHL, Cochrane Library of Systematic Reviews, EMBASE, MEDLINE Inception - Aug 2012	Primary care (general practices, community or ambulatory care settings)	All ages and all conditions including mental health and addiction	Nurse-led care (all nurse roles) in comparison to physician-led care (family physicians, paediatricians and geriatricians) based on a substitution model

Ref	Aim	Databases searched / time window covered	Setting	Population	Intervention
	health outcomes (patient satisfaction, quality of life, other morbidity), use of resources and healthcare costs) and on the type and degree of nurses' competencies				
Martinez-Gonzalez 2015 (Medical Care Research and Review)	To synthesise the evidence from interventional studies investigating task-shifting from physicians to nurses in primary care and reporting on outcomes of resource utilization	CINAHL, Cochrane Library of Systematic Reviews, EMBASE, MEDLINE Inception - Feb 2014	Primary care (general practices, community or ambulatory care settings)	all ages and all conditions including mental health and addiction	Care delivered by nurses (nurse-led care) was compared to care from family physicians, paediatricians and/or geriatricians under a task-shifting model of care
Martin-Misener 2015	To assess the cost-effectiveness of nurse practitioners in primary and specialised ambulatory care	AMED, CENTRAL, CINAHL, DARE, EMBASE, Global Health, HealthStar, HEED, MEDLINE, Web of Science 1980 - Jul 2013	Primary or specialised ambulatory care	Not specified	NP working in alternative or complementary provider roles. NPs had completed a formal NP education programme and/or were licensed as NP,
Massimi 2017	To evaluate the effectiveness of nurse-led interventions to support self-management compared to usual care-in-the-community programs for chronic patients	CINAHL, MEDLINE, Scopus, Web of Science … - Jul 2016	Primary care EX: In-hospital based care and discharge planning program from hospital	patients >18 years old with a diagnosis of chronic disease (non-communicable disease) or multimorbidity EX: patients with mental disorders	Nurse-led self-management support interventions performed with any method of communication exchange or education Nurse assessed determinants to provide a tailored educational intervention through an holistic perspective, focused on preserving or enhancing health and patient's self-management goal achievement. Nurse provided health education to promote compliance and a healthy lifestyle. The intervention is finalised to help patient actively participate in either or both of the following: self-monitoring (of symptoms or of physiologic processes) or decision making (managing the

Ref	Aim	Databases searched / time window covered	Setting	Population	Intervention
					disease treatment or exacerbation or its impact through self-monitoring). Intervention can be either face to face or consultation followed by telephone follow up. All telephone calls including prescriptions and patient concerns were addressed by the nurse who facilitated consultation with physician or other health professionals, if necessary.
McCrory 2018	To evaluate the impact of the ANP on outcomes in adults with chronic kidney disease	CINAHL, EMBASE, MEDLINE, The Cochrane Library Inception - Dec 2015	Not specified	Adults ≥aged 18 years with CKD stages 2–4	Interventions provided by an ANP independently, collaboratively with a nephrologist, GP or as part of a multidisciplinary team. Interventions can include education and/or addressing the clinical needs of the participants
Molassiotis 2020	To evaluate the effectiveness of nurse-led advanced practice delivered through nurse-led clinics for patients with cancer	MEDLINE, CENTRAL, CINAHL, EMBASE, PsycINFO Inception - Jun 2019	Outpatient settings	Not specified	Nurse-led advanced practice by oncology nurses or palliative care nurses **EX:** nurses in other specialities, or general nurses
Qiu 2021	To evaluate the impact of nurse-led interventions on readmission and mortality in chronic heart failure patients with reduced ejection fraction	CENTRAL, EMBASE, MEDLINE, Web of Science Included reviews from 1998 - 2020	Hospital	Participants with CHF	Not specified
Sezgin 2021	To evaluate the impact of nurse-led care practices on fatigue	CINAHL, Cochrane Library, MEDLINE, OVID databases, ProQuest, Science Direct, Springer Link, Web of Science Mar 2003 - Jun 2021	Hospital	Adults ≥18 years with reumatoid artritis-related fatigue	All types of nurse-led care such as education, psychosocial support, consultation and briefing

Ref	Aim	Databases searched / time window covered	Setting	Population	Intervention
Sharma 2021	To examine the impact of a nurse-led diabetic clinic versus a standard physician-led diabetic clinic on glycaemic control of type 2 diabetes patients	Cochrane Library, EMBASE, MEDLINE, SCOPUS Inception - Mar 2021	Outpatient settings	Adults > 18 years wih type II diabetes (any severity)	Nurse led follow up clinic or joint clinic with physician **EX**: Nurse-led clinic focus on multidisciplinary approach; Independent nurse-led clinic; studies where nurse-led education was an intervention
Smigorowsky 2020	To appraise the existing evidence related to the effectiveness of cardiovascular nurse practitioner-led care on the outcomes of care for adult patients	CENTRAL, CINAHL, EMBASE, MEDLINE, ProQuest, Scopus, Web of Science Jan 2007 - Jun 2017	Not specified	Adults ≥ 18 years diagnosed with cardiovascular disease (e.g. coronary artery disease, cardiac risk reduction, cardiac arrhythmias, congenital heart disease, cardiomyopathy, heart failure, cardiac surgery or interventional cardiology)	The NP had to be the lead care provider either as an independent practitioner or a member of an interprofessional healthcare team. The NP may have completed assessments, diagnosed new findings, ordered and monitored medications/diagnostic testing and completed interventions. The NP could also have consulted other healthcare professionals to give specialty services. (e.g. a physiotherapist or a physician). **Usual care:** Care led by another CV healthcare provider (typically physician-led care but could be a physician assistant or other model of care).
Snaterse 2016	To investigate the efficacy of NCC and its components in secondary prevention of coronary heart disease	CENTRAL, CINAHL, MEDLINE 1990 - Jan 2015	Inpatient and outpatient settings, community health clinic, a secondary prevention unit, primary care (general practices)	* Patients hospitalised or being treated by a GP for secondary prevention of CHD; * Trials with at least 70% of their included study population had cardiovascular disease (CVD) or reported data separately on a secondary prevention group	A registered nurse was involved as a 'nurse coordinator' defined as the development and implementation of a therapeutic plan to integrate the efforts of multiple health professionals
Son 2020	To evaluate the effectiveness of nurse-led heart failure self-care education on health	CINAHL, Cochrane library, EMBASE, MEDLINE, Scopus, Web of Science	Not specified	Adults ≥18 years receiving treatment for a diagnosis of heart failure	Interventions on heart failure self-care or self-management that are designed and/or delivered by nurses

Ref	Aim	Databases searched / time window covered	Setting	Population	Intervention
	outcomes in patients with heart failure	Jan 2000 - Oct 2019			
Stephen 2021	To evaluate the impact of GPN-led interventions for BP control and CVD risk factor reduction in adult patients with hypertension	CINAHL, MEDLINE, Scopus 2000 - 2021	General practice	Adults with hypertension	Interventions undertaken in general practice by registered (baccalaureate or equivalent prepared) nurses to reduce BP in adults with hypertension. Trials including other health professionals (eg doctors or allied health professionals), as part of the broader intervention were included if the intervention was predominately nurse-led.
Swan 2015	To evaluate the safety and effectiveness of primary care provided by APNs and evaluate the potential of their deployment to help alleviate primary care shortages	CINAHL, MEDLINE No date restriction	Primary care setting	**IN:** Adults **EX:** Studies with a complete pediatric sample	Care provided by APNs and physicians in equivalent primary care provider roles. APNs were defined as nurses who had received additional formal education and training that expanded their scope of practice to include services traditionally considered to fall under the practice of medicine, such as diagnosis and treatment of medical conditions. The APN role had to be that of a PCP, with an educational background allowing them to manage their own panel of patients.
Tabesh 2017	To examine the effectiveness of nurse-led clinics, in which nurses were involved in prescribing, on HbA1c	CENTRAL, CINAHL, EMBASE, MEDLINE Jan 1980 - May 2015	Not specified	Adults aged ≥18 years with type 2 diabetes	**IN** * Nurses involved in prescribing glucose-lowering medication following protocols or algorithms with or without direct supervision of a physician **EX** * Nurses educating people without prescribing any medication * Nurses providing self-management support only
Van Camp 2012	To synthesise the effect of nurse-led interventions on	MEDLINE, ISI Web of Knowledge 2006 - 2011	Not specified	Adults aged ≥ 18 years who are chronically ill, defined as being permanent, leaving residual disability and being caused by	Nurse-led interventions to enhance medication adherence

Ref	Aim	Databases searched / time window covered	Setting	Population	Intervention
	adherence to chronic medication			non-reversible pathological alteration, requiring special training of the patient for rehabilitation or being expected to require a long period of supervision, observation or care	
Wang 2019	To evaluate the impacts of nurse-led clinic and nurse-led prescription on HbA1c control in type 2 diabetes	CENTRAL, MEDLINE, Science Direct, Web of Science, Chinese Databases Inception - Mar 2019	Not specified	Patients with type 2 diabetes	Nurse-led clinic or nurse-led prescription
Zhang 2022	To evaluate the effectiveness of nurse-led cares on cardiovascular risk factors among individuals with type 2 diabetes mellitus	CINAHL, Cochrane Library, EMBASE, MEDLINE Inception - Dec 2021	Not specified	Patients with type 2 diabetes	Nurse-led diabetes education nurse-led care = nurse plays a central role during diabetes management, e.g. follows up with patients, monitoring blood tests results, providing continuous education
Zhu 2015	To compare the effectiveness of nurse-led early discharge planning programmes to standard care	CINAHL, Cochrane Library, EMBASE, MEDLINE Inception - Mar 2014	Hospital setting	Inpatients with chronic illness or rehabilitation **EX** * patients with acute, critical illness, or social admissions * patients transferred to a nursing home or a long term care facility	**IN:** * interventions delivered by trained nurses started after the early initial visit of hospital admission (usually within 48 hours) **EX:** * interventions initiated at time of discharge from index hospital admission * postdischarge care

Ref	Number of RCTs	Total patients (intervention / control group)	Countries	Outcomes reported
Al-Mallah 2016	12	9840 (4886 / 4954)	UK (7), USA (4), Canada (1), Europe (1)	All-cause mortality, cardiovascular mortality, myocardial infarction, major adverse cardiac events, revascularization rate, adherence to lipid-lowering and antiplatelet medications achieving cholesterol and low-density lipoprotein targets
Audet 2021	10	2376 (1268 / 1217)	USA (5), Canada (4), Korea (1),	Patient satisfaction, adherence to cardiac rehabilitation, depressive symptoms, dietary management, HR-QoL, postoperative complication, physical activity, smoking status, symptoms inventory, cholesterol management (TC level, LDL-C level, TG level), functional status, mortality, rehospitalization after discharge, healthcare resources utilization after hospital discharge, length of stay, cost analysis
Aurizki 2022	12	3755 (NR)	USA (5), UK (2), Spain (2), Sweden (1), Iran (1), Germany (1)	Mental health, patient satisfaction, cost- effectiveness
Baker 2017	20	3384 (1759 / 1625)	Netherlands (4), UK (3), USA (3), Japan (1), Australia (1), Hong Kong (1), New Zealand (1), Taiwan (1), Iceland (1), Norway (1), Canada (1), Sweden (1), Spain (1), Belgium (1)	Health related quality of life, physical health status, mortality, psychological health status, use of medication, knowledge, psychosocial factors, self-management behaviours, use of healthcare resources, cost, patient satisfaction
Browall 2016	13	2185 (NR)	UK (5), Australia (4), Sweden (2), Canada (1), USA (1)	Quality of life, symptoms, psychosocial support, cost effectiveness
Bryant-Lukosius 2015	13	2463 (1156 / 1163)	USA (12), UK (1)	Length of stay, re-hospitalization, healthcare costs incurred by patients, providers or organizations, patient/caregiver health status, quality of life, satisfaction with care, quality of care, job satisfaction
Chen 2016	8	1520 (766 / 754)	Taiwan (2), Hong Kong (2), Netherlands (2), China (2)	Quality of life, self-care self-efficacy, depression, non-adherence, satisfaction, symptom and complication control, health service utilization, composite of cardiovascular mortality, cardiovascular morbidity, overall mortality, decline of renal function, change in markers of vascular damage, blood pressure, Laboratory biochemical parameters, functional capacity, complication control, gait speed, 10-repetition sitto-stand

Ref	Number of RCTs	Total patients (intervention / control group)	Countries	Outcomes reported
Cheng 2018	7	1110 (554 / 556)	Netherlands (2), Korea (1) UK (1) Sweden (1), China (1), Australia (1)	Quality of life
Chiang 2018	15	2640 (NR)	Asia (4), Western countries (11)	Smoking prevalence, Smoking cessation, Physical activity, Diet, Weight control, Alcohol consumption, blood pressure, Lipoproteins, Blood glucose, mortality, HR-QoL, self-efficacy
Daly 2017	42	9955 (5022 / 4933)	USA (17), Netherlands (4), Australia (2), UK (2), South Korea (2), Brazil (2), Spain (1), Western Samoa (1), Italy (1), Switzerland (1), Japan (1), Sri Lanka (1), China (1), Turkey (1), Iran (1), Belgium (1), Hong Kong (1), not specified (2)	HbA1c, systolic, blood pressure, diastolic blood pressure, lipids, BMI, smoking-cessation
de Thurah 2017	5	723 (NR)	Denmark (3), UK (2), Norway (1), Sweden (1)	Disease activity Patient satisfaction, physical disability, quality of life, fatigue and self-efficacy
Donald 2014	5	1171 (NR)	USA (3), UK (1), Canada (1)	Length of stay, re-hospitalisation, costs of healthcare, health resource used, mortality, morbidity, quality of life, patient satisfaction, quality of care, job satisfaction
Driscoll 2015	7	1684 (NR)	USA (2), Sweden (1), Netherlands (1), Australia (1), UK (1), Germany (1)	All-cause hospital admissions, heart failure-related hospital admissions, all-cause mortality, all-cause event free survival, proportion reaching target dose of medications
Ekers 2013	14	4400 (NR)	USA (11), UK (1), Netherlands (1), Australia (1)	Change in depression symptom level
Gan 2022	3	618 (NR)	USA (1), South Korea (1), Spain (1)	Change in dietary intake, body weight, QoL
Gok Metin 2022	18	1558 (NR)	Iran (8), China (5), Turkey (3), Thailand (1), South Korea (1)	Blood lipid profiles, high-density lipoprotein, low-density lipoprotein, triglyceride, cholesterol, systolic blood pressure, diastolic blood pressure, fasting blood glucose, BMI, healthy lifestyle, QoL
Gong 2017	4	655 (NR)	Australia (1), Sweden (1), UK (1), China (1)	Continuous positive airway pressure (CPAP) use Changes in Epworth Sleepiness Scale (EPSS)

Ref	Number of RCTs	Total patients (intervention / control group)	Countries	Outcomes reported
				36-Item Short Form Health Survey scale (SF-36) Functional Outcomes of Sleep Questionnaire (FOSQ) Hospital Anxiety and Depression Scale (HAD) Patient satisfaction
Halcomb 2019	9	2404 (1307 / 1097)	UK (4), Netherlands (2), USA (1), Canada (1), Australia (1)	Depressive symptoms, anxiety symptoms, functional symptoms, medication use, patient satisfaction
Health Quality Ontario 2013	6	4 874 (2554 / 2320)	USA (2), UK (2), NL (2)	Hospitalization, length of stay, mortality, ED visits, specialist visits, HR-QoL, patient satisfaction, disease-specific measures, examinations or medication prescribing, number and length of primary healthcare visits, physician workload
Helvaci 2020	12	2 121 (1 055 / 1 066)	UK (3), China (3), Netherlands (2), USA (1), Australia (1), Iceland (1), Korea (1)	Health status, maximum speed of expiration, walking distance, QoL, anxiety–depression, self-efficacy
Hussain Rawther 2020	13	11 423 (NR)	UK (6), Netherlands (4), USA (3)	Resource utilization outcomes, health status, morbidity, mortality, quality of life, satisfaction, knowledge, adherence, preferences, length of stay, re-admission, re-attendance, need for admission, cost
Kim 2022	20	6017 (NR)	Iran (6), USA (4), UK (2), Malaysia (2), South Korea (1), Thailand (1), India (1), Brazil (1), Jordan (1), Spain (1)	Medication adherence, systolic blood pressure, HbA1C, medication knowledge
Kobleder 2017	4	467 (247 / 220)	UK (2), USA (1), Austria (1)	Quality of life, satisfaction, symptoms, psychological morbidity and sexual function
Kuethe 2013	5	588 (274 / 314)	Netherlands (3), UK (1), Australia (1)	Asthma exacerbations, asthma severity, objective lung tests, quality of life, symptom-free days, patient satisfaction with care, quality of care, compliance with medication, use of rescue medication, absence from school or work, hospital admissions, referrals from primary to hospital care, duration of consultation, stepping down therapy, healthcare costs
Lambert 2021	23	7917 (NR)	USA (12), China (4), Kenya (2), Netherlands (2), Tanzania (2), Estonia (1)	HIV medication adherence (via behavioral measure or viral load)
Laurant 2018	18	41 446 (NR)	UK (6), Netherlands (3), USA (3), Canada (3), Sweden (1), Spain (1), South-Africa (1)	Patient outcomes: mortality, health status, satisfaction, quality of life, other

Ref	Number of RCTs	Total patients (intervention / control group)	Countries	Outcomes reported
				Processes of care: adherence to guidelines, consultations, prescriptions, tests and investigations; hospital referrals and hospital admissions, costs
Lee 2022	38	9677 (5105 / 4572)	USA (4), Denmark (4), Iran (4), China (3), Korea (3), Turkey (2), Australia (2), Sweden (2), Brazil (2), UK (2), Singapore (2), Canada (2), Taiwan (1), Israel (1), Italy (1), Netherlands (1), Spain (1), Belgium (1)	Quality of life, disease-specific physical indicators, self-care ability, depression, anxiety, health-resource use
Li 2022	10	7370 (3706 / 3664)	Turkey (4), China (1), Canada (1), Iran (1), France (1), UK (1), USA (1)	Uptake rates of early cancer detection (screening tests, clinical examination and self-examination), cancer knowledge, early detection beliefs (perceived threat, barriers, benefits and self-efficacy to undergo early cancer detection), diagnosed pre-cancerous lesions and early-stage cancers
Li 2020	21	4649 (2330 / 2319)	USA (6), Netherlands (2), Canada (2), Norway (1), UK (1), Iran (1), Italy (1), Brazil (1), Singapore (1), Sweden (1), Belgium (1), Malaysia (1), Australia (1), China (1)	HbA1c values
Martinez-Gonzalez 2014 (BMC Health Serv Res)	24	38 974 (NR)	UK (9), Netherlands (6), USA (6), South Africa (2), Russia (1)	Patient satisfaction with quality of care, hospital admissions, mortality, quality of life, cost of care
Martinez-Gonzalez 2014 (PLoS ONE)	12	22 617 (NR)	UK (6), Netherlands (3), South Africa (2), Russia (1).	Heart disease outcomes, lung disease outcomes, infectious disease outcomes, diverse, acute and minor conditions metabolic disease outcomes, digestive disease outcomes, skin disease outcomes, common complaints
Martinez-Gonzalez 2015 (Swiss Med Wkly)	18	13 171 (NR)	UK (9), USA (5), Netherlands (4)	Frequency of consultations, mean number of visits, length of consultation, number of referrals, number of prescriptions, number of tests and investigations ordered
Martinez-Gonzalez 2015 (Medical Care Research and Review)	14	10 743 (NR)	UK (6), the Netherlands, (5), USA (2), Russia (1)	Adherence to practical guidelines, blood pressure management according to guidelines, lipids and HbA1c BMI and waist circumference, asthma, feet at risk visuomotor coordination appropriate secondary intervention

Ref	Number of RCTs	Total patients (intervention / control group)	Countries	Outcomes reported
				adherence to treatment, medication and diet patient information and knowledge
Martin-Misener 2015	11	7600 (NR)	USA (7), Netherlands (2), UK (2)	Health system utilisation: use of services (eg, length of consultation, referrals, emergency department visits, hospitalisations); costs of healthcare (eg, personnel costs, medications, family costs); and health resource use (eg, diagnostic tests), patient health status, quality of life, satisfaction, quality of care, job satisfaction
Massimi 2017	23	10 162 (NR)	USA (14), UK (5), Netherlands (4), Mexico (1)	Systolic blood pressure, diastolic blood pressure, HbA1c, total cholesterol, LDL cholesterol, fasting serum glucose, triglycerides, mortality, quality of life
McCrory 2018	4	1426 (NR)	Canada (1), Netherlands (3)	Blood pressure, lipid, PTH/phosphate, glucose/HbA1c ACEi/ARB, aspirin, statin, vitamin D
Molassiotis 2020	17	NR	UK (5), Netherlands (3), Australia (2), Sweden (2), Hong Kong (2), Germany (1), South Korea (1), USA (1)	Clinical outcomes, functional outcomes, costs, service utilisation, satisfaction with nurse-led clinics
Qiu 2021	15	3282 (1571 / 1711)	Not reported	High blood pressure, diabetes mellitus, left ventricular ejection fraction, mortality, rehospitalisation
Sezgin 2021	6	994 (505 / 489)	UK (3), Norway (2), Denmark (1)	Fatigue
Sharma 2021	4 RCT's	470 (241 / 229)	Canada (2), Netherlands (2)	HbA1c, BMI, blood pressure, intensification of hypoglycaemic agents, patient satisfaction, hypoglycaemic adverse events, patient's quality of life
Smigorowsky 2020	5	887 (405/482)	Canada (2), USA (2), Netherlands (1)	30-day readmission rate for heart failure, length of stay after cardiac surgery, HR-QoL SF-36 physical and mental health scores, vascular risk reduction
Snaterse 2016	18	11195 (NR)	USA (6), UK (4), Netherlands (2), Sweden (1), Germany (1), Europe (1), Canada (1), China (1), Australia (1)	Risk factor levels: integrated risk score, GARDIAN status, total cholesterol, LDL cholesterol, HDL cholesterol, triglycerides, blood pressure, HbA1c/glucose, pharmacological treatment/medication adherence, smoking cessation, BMI, weight loss, waist circumference, healthy diet, physical activity

Ref	Number of RCTs	Total patients (intervention / control group)	Countries	Outcomes reported
				Clinical events: all-cause/cardiovascular readmission (rates, days), time to readmission or death, all-cause mortality, event free survival, number of ED/cardiology visits, diagnostic and therapeutic services/rehabilitation, healthcare costs Patient-perceived health outcomes: SCL-90 symptom checklist, social isolation questionnaire, HADS, QoL/health status, PACIC chronic illness care, shortness of breath, chest pain Guideline adherence: adequate assessment
Son 2020	8	1979 (949 / 1030)	USA (3), Australia (2), Brazil (1), UK (1), Spain (1)	All-cause readmission, heart failure specific readmission, all-cause mortality Patient-reported quality of life, heart failure knowledge
Stephen 2021	11	4461 (2300 / 2161)	USA (2), Netherlands (1), Australia (1), Italy (1), Turkey (1), Finland (1) Sweden (1), Norway (1) Germany (1), China (1)	Blood pressure and CVD risk outcomes (Diet, anthropometry, physical activity, smoking, cholesterol, alcohol, general life style or adherence to medication)
Swan 2015	7	10 911 patients (4344 / 2585) - 1 study only reported total sample	Netherlands (3), UK (2), USA (1), Canada (1)	Blood pressure, glycaemic control, lipid profile, mortality, change in BMI, change in LDL, peak expiratory flow rate, quality of life, measures of symptoms and symptom resolution, patient satisfaction, provider salary, annual laboratory and monthly medication costs, consultation length, total number of primary care visits, hospitalization and emergency department or urgent care visits, number of referrals, return/follow-up visits
Tabesh 2017	9	1974	USA (7), Netherlands (2)	HbA1c
Van Camp 2012	9	2587	USA (5), Netherlands (1), UK (1), Spain (1), China (1), Kenya (1)	Medication adherence
Wang 2019	17	2701 (1342 / 1359)	USA (6), Ireland (1), China (8), Netherlands (2)	HbA1c
Zhang 2022	13	3757 (NR)	USA (2), Netherlands (2), Australia (1), South Korea (1), Iran (1), Sri Lanka (1), Sweden (1), China (1), Italy (1), Belgium (1), UK (1)	HbA1c, systolic blood pressure, low-density lipoprotein cholesterol, BMI

Ref	Number of RCTs	Total patients (intervention / control group)	Countries	Outcomes reported
Zhu 2015	10	3438 (1709 / 1729)	USA (5), Spain (1), Taiwan (1), Lebanon (1), Hong Kong (1), China (1)	Length of stay, hospital readmission, readmission length of stay, all-cause mortality, total cost, readmission cost, quality of life, satisfaction with DPPs

Appendix 1.5. Quality assessment of included reviews

Reference	Year	PICO	Methods prior	Explain design	Comprehensive. Search	Study duplicate	Data duplicate	List exclusions	Adequate details	Assessment risk of bias	Funding	Meta-analysis methods	Meta-analyses impact	Risk of bias interpretation	Heterogeneity	Publication bias	Conflict of interest
Al-Mallah	2016																
Audet	2021																
Aurizki	2022																
Baker	2017																
Browall	2016																
Bryant-Lukosius	2015																
Chen	2016																
Cheng	2018																
Chiang	2018																
Daly	2017																
de Thurah	2017																
Donald	2014																
Driscoll	2015																
Ekers	2013																
Gan	2022																
Gok Metin	2022																
Gong	2017																
Halcomb	2019																
Health Quality Ontario	2013																
Helvaci	2020																

Reference	Year	PICO	Methods prior	Explain design	Comprehensive. Search	Study duplicate	Data duplicate	List exclusions	Adequate details	Assessment risk of bias	Funding	Meta-analysis methods	Meta-analyses impact	Risk of bias interpretation	Heterogeneity	Publication bias	Conflict of interest
Hussain Rawther	2020																
Kim	2022																
Kobleder	2017																
Kuethe	2013																
Lambert	2021																
Laurant	2018																
Lee	2022																
Li	2022																
Li	2020																
Martinez-Gonzalez (PLoS ONE)	2014																
Martinez-Gonzalez (BMC HSR)	2014																
Martinez-Gonzalez (Swiss Med Wkly)	2015																
Martinez-Gonzalez (Med Care Res Rev)	2015																
Martin-Misener	2015																
Massimi	2017																
McCrory	2018																
Molassiotis	2020																

Reference	Year	PICO	Methods prior	Explain design	Comprehensive. Search	Study duplicate	Data duplicate	List exclusions	Adequate details	Assessment risk of bias	Funding	Meta-analysis methods	Meta-analyses impact	Risk of bias interpretation	Heterogeneity	Publication bias	Conflict of interest
Qiu	2021	Yes	No	No	No	No	Yes	No	Partially yes	Yes	No	Yes	Yes	No	Yes	No	Yes
Sezgin	2021	Yes	Partially yes	No	No	Yes	No	No	Partially yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes
Sharma	2021	Yes	Partially yes	No	No	Yes	No	No	Partially yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes
Smigorowsky	2020	Yes	No	Yes	No	No	Yes	No	Partially yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Snaterse	2016	Yes	No	No	Partially yes	Yes	Yes	Yes	Yes	Yes	No	Yes	No	Yes	Yes	Yes	Yes
Son	2020	Yes	No	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Stephen	2021	Yes	Partially yes	No	Partially yes	Yes	No	No	Yes	No	No	Yes	Yes	Yes	Yes	No	No
Swan	2015	Yes	No	Yes	No	No	No	No	Partially yes	Yes	No	Not applicable, no meta-analysis performed	Not applicable, no meta-analysis performed	No	Yes	Not applicable, no meta-analysis performed	No
Tabesh	2017	Yes	No	No	No	Yes	Yes	No	Partially yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Van Camp	2012	Yes	No	No	No	No	No	No	Partially yes	Yes	No	No	No	No	No	No	Yes
Wang	2019	Yes	No	No	No	Yes	Yes	No	Partially yes	Partially yes	No	Yes	No	No	Yes	No	Yes
Zhang	2022	Yes	Partially yes	No	No	No	Yes	No	Partially yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Zhu	2015	Yes	No	No	No	No	Yes	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes	Yes

	Yes
	Partially yes
	No
	Not applicable, no meta-analysis performed

Appendix 1.6. Subgroup analyses of effectiveness data in meta-analyses

Legend for all tables

+	Statistically significant effect in favour of nurse-led consultations
NS	Non-significant effect
-	Statistically significant effect in favour of control group
Green	At least half of meta-analyses reported statistically significant effects in favour of nursing consultations
Orange	Meta-analyses reported a mix of non-significant effects and statistically significant effects
Blue	None of meta-analyses reported effects statistically significant in favour of nursing consultations
Red	All of the meta-analyses reported effects statistically significant in favour of control group

Appendix 1.6.1. Meta-analyses in cardiology studies

Outcome (Number of reviews with min 1 MA)	Subdomain	Meta-analyses			
		Number	+	NS	-
Quality of life (n=2)	**Quality of life**	**2**	**1**	**1**	**0**
Physical status (n=4)	**Physical status**	**7**	**4**	**3**	**0**
	Physical functioning	5	2	3	0
	Symptom burden	1	1	0	0
	Pain	1	1	0	0
Psychosocial health (n=5)	**Psychosocial health**	**8**	**3**	**5**	**0**
	Depressive symptoms	3	2	1	0
	Mental Health	3	0	3	0
	Mental QoL	2	1	1	0
Health behaviour (n=4)	**Health behaviour**	**8**	**6**	**2**	**0**
	Smoking	3	3	0	0
	Self-care	3	2	1	0
	Physical activity	1	1	0	0
	Healthy life style	1	0	1	0
Medication adherence (n=1)	**Medication adherence**	**2**	**2**	**0**	**0**
Mortality (n=4)	**Mortality**	**8**	**6**	**2**	**0**
	All-cause mortality	6	5	1	0
	Cardiovascular death	1	0	1	0
Clinical outcomes (n=6)	**Clinical outcomes**	**26**	**10**	**16**	**0**
	Lipid profile	9	2	7	0
	Systolic blood pressure	7	3	4	0
	Diastolic blood pressure	5	3	2	0
	Cardiac outcomes	3	1	2	0
	Body mass index / weight	1	1	0	0

	Blood sugar	1	0	1	0
Patient satisfaction (n=1)	**Patient satisfaction**	**1**	**1**	**0**	**0**
Healthcare resources use (n=6)	**Healthcare resources use**	**11**	**7**	**4**	**0**
	Hospital admissions	3	2	1	0
	Hospital readmissions	8	5	3	0

Appendix 1.6.2. Meta-analyses in oncology patients

Outcome (Number of reviews with min 1 MA)	Subdomain	Meta-analyses			
		n	+	NS	-
Quality of life (n=2)	**Quality of life**	**2**	**0**	**2**	**0**
Physical status (n=1)	**Physical status**	**9**	**1**	**7**	**0**
	Physical functioning	1	0	1	0
	Symptom burden	1	1	0	0
	GI symptoms	3	0	3	0
	Pain	1	0	1	0
	Sleep / insomnia	1	0	1	0
	Fatigue	1	0	1	0
	Dyspnoe	1	0	1	0
Psychosocial health (n=6)	**Psychosocial health**	**8**	**1**	**5**	**2**
	Social functioning	2	0	2	0
	Anxiety	1	0	1	0
	Cognitive functioning	1	0	1	0
	Depressive symptoms	2	1	0	1
	Mental health	1	0	0	1
	Mental QoL	1	0	1	0
Health behaviour (n=1)	**Health behaviour**	**2**	**2**	**0**	**0**

	Self-monitoring	2	2	0	0
	Health resources use	**1**	**0**	**1**	**0**
Health resources use (n=1)	Hospital readmission	1	**0**	**1**	**0**
Costs (n=1)	**Costs**	**1**	**1**	**0**	**0**

Appendix 1.6.3. Meta-analyses in endocrinology

Outcome (Number of reviews with min. 1 MA)	**Subdomain**	**Meta-analyses**			
		n	**+**	**NS**	**-**
Psychosocial health (n=1)	**Psychosocial health**	**1**	**1**	**0**	**0**
	Depressive symptoms	1	1	0	0
Health behaviour (n=2)	**Health behaviour**	**2**	**2**	**0**	**0**
	Smoking	1	1	0	0
	Self-care	1	1	0	0
Medication adherence (n=1)	**Medication adherence**	**1**	**1**	**0**	**0**
Clinical outcomes (n=8)	**Clinical outcomes**	**24**	**12**	**12**	**0**
	Lipid profile	5	1	4	0
	Blood sugar	9	6	3	0
	Systolic blood pressure	4	3	1	0
	Diastolic blood pressure	2	0	2	0
	Body mass index / weight	3	2	1	0
	Blood pressure	1	0	1	0
Patient satisfaction (n=1)	**Patient satisfaction**	**1**	**0**	**1**	**0**

Appendix 1.6.4. Meta-analyses in patients with respiratory disease

Outcome (Number of reviews with min. 1 MA)	Subdomain	Meta-analyses			
		n	+	NS	-
Quality of life (n=3)	**Quality of life**	**4**	**3**	**1**	**0**
Physical status (n=2)	**Physical status**	**8**	**2**	**6**	**0**
	Physical functioning	4	0	4	0
	Exercise capacity	1	2	0	0
	Sleep / insomnia	2	0	2	0
Psychosocial health (n=3)	**Psychosocial health**	**6**	**4**	**2**	**0**
	Depressive symptoms	2	2	0	0
	Anxiety	2	2	0	0
	Self-Efficacy	1	0	1	0
	Mental QoL	1	0	1	0
Health behaviour (n=2)	**Health behaviour**	**2**	**1**	**1**	**0**
	Adherence to CPAP	**1**	**0**	**1**	**0**
	Physical activity	**1**	**1**	**0**	**0**
Clinical outcomes (n=2)	**Clinical outcomes**	**3**	**1**	**3**	**0**
	Lung function	2	0	2	0
	Disease activity	1	1	0	0
Healthcare resources use (n=2)	**Healthcare resources use**	**3**	**0**	**3**	**0**
	Hospital admissions	3	0	3	0

Appendix 1.6.5. Meta-analyses in APN-studies

Outcome (Number of reviews with min. 1 MA)	Subdomain	Meta-analyses			
		Number	+	NS	-
Physical status (n=1)	**Physical status**	**1**	**0**	**1**	**0**
	Physical functioning	1	0	1	0
Psychosocial health (n=2)	**Psychosocial health**	**3**	**0**	**1**	**2**
	Depressive symptoms	1	0	0	1
	Mental Health	1	0	0	1
	Mental QoL	1	0	1	0
Mortality (n=1)	**Mortality**	**2**	**0**	**2**	**0**
	All-cause mortality	2	0	2	0
Clinical outcomes (n=1)	**Clinical outcomes**	**6**	**4**	**1**	**1**
	Lipid profile	1	1	0	0
	Systolic blood pressure	1	1	0	0
	Diastolic blood pressure	1	1	0	0
	Thyroid function	1	1	0	0
	Kidney function	1	0	0	1
	Blood sugar	1	0	1	0
Patient satisfaction (n=1)	**Patient satisfaction**	**1**	**1**	**0**	**0**
Healthcare resources use (n=6)	**Healthcare resources use**	**10**	**3**	**7**	**0**
	Hospital readmissions	9	3	6	0
	Ambulatory consultation	1	0	1	0

APPENDIX 2. ANNEX TO CHAPTER 3

Appendix 2.1. Interview guide

WARMING-UP

Can you give a short introduction of yourself?

- How do you connect to the topic of nursing consultations?
- Which other relevant expertise related to nursing consultations do you have?

Which consultations would you include under nursing consultation in your country?

- What are essential elements characterizing nursing consultations in your country?

TOPIC 1: CHARACTERISTICS OF NURSING CONSULTATIONS

Are nursing consultations available in all settings in your country? (community care, ambulatory care, hospital care, nursing homes)

- In which setting were the first nursing consultations?
- Why were nursing consultations started in a certain setting?
- Why are nursing consultations in a certain setting prioritised?
- How does nursing consultations in different settings differ from each other?
- Which patient populations are targeted by nursing consultations?
- Are there current scale-up initiatives for nursing consultations?
- Why were scale-up initiatives for nursing consultations taken and how?
- Are there known problems or resistance encountered within the scale-up initiatives for nursing consultations?

Are there any requirements for nurses to perform nursing consultations?

- Is the practice of nursing consultations restricted to specific nursing profiles?
- Is the practice of nursing consultations restricted to advanced practice nursing roles?
- What are the differences between nursing consultations done by registered nurses and advanced practice nurses?

- Are there formal competence profiles for nurses performing nursing consultations?
- Do there exist specific training programs for nurses performing nursing consultations?

For which clinical tasks are nurses authorised?

- Are there documents describing the authority for certain nursing profiles?
- Are nurses allowed to prescribe medication?
- What are the differences in prescribing rights between different nursing profiles?
- How are prescribing rights regulated?
- How were prescribing rights implemented?
- Are nurses allowed to perform medical diagnoses and health assessments?
- Are nurses allowed to order medical tests & exams?
- Are nurses allowed to make treatment decisions regarding medication or other (eg.: physio)?
- Are nurses authorised to refer patients?
- Are nurses first point of contact for patients?
- Is this authority applicable for all settings?
- Is this authority applicable for all domains?
- How does the education ensure that nurses have the competences to perform these clinical tasks?
- Are there any requirements to ensure that nurses maintain the competences during their career necessary to perform these clinical tasks?

Are there legislative frameworks regarding the organisation of nursing consultations?

- Does legislative frameworks define nursing consultations, nursing consultations, nursing clinics, …?
- Are nursing consultations regulated on national or regional level?
- Are nursing consultations regulated by the organisation where they are performed?
- Is the regulation of nursing consultations depending on the setting where they occur in?
- Is there an organ controlling how nursing consultations are organised?

- Is there an organ controlling if nurses performing nursing consultations are educated correctly?

Is there a financial regulation in place for the nursing consultations?

- Can nurses charge patients for their consultations? If yes, how?
- Can nurses register if they did a consultation?

TOPIC 2: EVOLUTION OF NURSING CONSULTATIONS

Who is at the initiative of the emergence of nurse-eld consultations ?

- Since when are nursing consultations performed?
- Were there other relevant reasons to invest in nursing consultations?

Is the impact of nursing consultations measured in your region?

- By whom is the impact of nursing consultations measured in your region?
- Are there documents available about the indicators used to measure the impact of nursing consultations?

According to you, which factors facilitate the implementation of nursing consultations?

- Could adaptations in the legal framework facilitate the implementation?
- Could another financial model or financing possibilities facilitate the implementation?
- Could educational evolutions facilitate the implementation?
- Which policy reforms are essential for the sustainable implementation of nursing consultations?

According to you, which factors hinder the implementation of nursing consultations?

- Does the existing legal framework hinder the implementation?
- Does the existing financial model hinder the implementation?
- Does the existing education hinder the implementation?

CLOSURE

Are there other topics that you consider relevant to know about regarding nursing consultations in your region?

Appendix 2.2. Summary of NLC characteristics and contextual factors influencing the implementation of NLC per region

Appendix 2.2.1. The Netherlands

Characteristics of nursing consultation in the Netherlands

Characteristics of NLC	Notes
Availability	Nurses are available in all settings to perform consultations: primary care, ambulatory care, hospital care and nursing home care. In general, specialised nurses or nurse practitioners (NPs) perform these consultations. A specialised nurse should be considered a nurse with some form of in-depth knowledge and expertise, but does not hold a formal advanced practice title. NPs do hold a formal advanced practice title (see below) and are also allowed to perform consultations as well as perform the role of 'coordinating practitioner'. This includes that the healthcare provider takes leadership of a patient's entire care trajectory. Although this additional role is not restricted to specific care settings, it is anno 2023 mainly used in mental health care. In the Netherlands, all nurses are registered in the 'BIG register' ('Individual Health Care Professions register' or the 'Beroepen in the Individuele Gezondheidszorg register'). In addition, NPs are legally required to subscribe in the specialism register. Without this registration, one is not authorised to practice nor to bear the title. Legal NP registration takes place in one category of the Nursing Specialists Register: Somatic health care or Mental health care. The first NPs were registered in 2009. By 2020, the Netherlands had over 4 400 NPs, and that number is increasing every year. Currently, more than 5 000 NPs are registered and more than 1 000 are in training.[181] Re-registration is obliged every 5 year. This requires for example having worked at least 4 160 hours within the nursing specialty during the past five years with a minimum of 2 080 hours direct advanced clinical care.[186] Besides compulsory registration in the BIG register, (specialised) nurses are encouraged to register in the 'quality register'. This is a tool allowing care professionals to record learning and development activities in a personal portfolio. This quality register is freely accessible to retrieve data of nurses and other care professionals.[187]
Profile nurses/educational requirements	
• **Recognised titles**	The NP title is legally recognised since 2009, as one of the recognised specialist titles.
• **Formal competencies profile**	NPs employ five generic skills related to: - performing diagnoses and treatments based on intended care outcomes - conducting scientific research and applying the results - teaching and training - developing quality of care - taking up leadership roles The competence profile of NPs is based on the CanMEDS model and comprises seven domains: - Clinical expertise: the nurse specialist as practitioner with nursing and medical expertise - Communication: the nurse specialist as communicator - Collaboration: the nurse specialist as collaborative partner - Organisation: the nurse specialist as organiser of quality of care

Characteristics of NLC	Notes
	- Health promotion: the nurse specialist as health promoter - Science: the nurse specialist as academic and researcher - Professionalism: the nurse specialist as a self-aware professional.
• **Educational requirements/specific training programs**	**Nurse Practitioners have to fulfil following requirements[181]:** - Bachelor of Nursing (4 years, 240 ETCS). - A minimum of 2 years of experience in the field they want to specialise in. - Master of Advanced Nursing Practice (MANP). The training takes 2 years (120 ECTS) and is based on the competence profile of a NP (clinical incorporation of medical tasks, role development and leadership and academic training). To be granted access to the MANP, the student needs to arrange her/his own place for an internship, as the aim of the master's program is for the trainee to implement a new ANP role at the place of the internship, where she/he can continue working after graduation. MNAP students graduate in one of two specialization programs: NP in Somatic Health Care or NP in Mental Health Care. Obviously, the latter can only work in mental health care, while the former can be active in a variety of domains. **Specialised nurses have to fulfil following requirements[188, 189]:** - Bachelor of Nursing (4 years, 240 ETCS). - Nurses should complete in-depth domain-specific training, but it is not further specified what this entails. - Nurses should have a few years of experience in the specific field of practice, but it is not further specified what this entails.
Nurses' autonomy	
• **Nurses' authority to perform clinical activities (prescriptions, diagnosis, order tests, treatment, discharge, referral)**	Nurses' authority to perform clinical activities in the Netherlands is regulated by law, by means of the Individual Health Care Professions Act or the 'BIG' act ('Beroepen in de Individuele Gezondheidszorg'). The implications of the BIG act on NPs' and specialised nurses' authority are summarised below. **Nurse Practitioner[105]** - An NP has special expertise in the provision of complex nursing care and/or medical care of limited complexity. NPs are authorised to perform following clinical activities: prescriptions, diagnosis, order tests, treatment, discharge and referral. The authorisation to perform clinical activities varies per specialism and is regulated with a list [103] For example, a NP in Mental Health Care cannot perform endoscopies. . Despite this legal authority, all NPs are expected to self-assess whether they are capable to perform certain activities. This entails assessing whether their skills and the activities to be performed are in accordance with their required competences and the professional standards, respectively. So in conclusion, an NP is 'authorised if competent' to perform a variety of clinical activities. - Besides performing clinical activities, NPs are also authorised to supervise the entire care trajectory of patients. They can act as 'coordinating practitioner' overseeing the entire treatment of the patient, coordinating the care delivery and referring the patient to other professionals if necessary (according to the general decision of the Council for Nurse Practitioners of 10 Feb. 2020[190]). **Specialised nurse[188]** - Specialised nurses with authorisation to prescribe drugs can work more autonomously than other specialised nurses. To acquire 'prescribing authority', specialised nurses need to complete a pharmacotherapy module. This training can be part of the in-depth domain-specific training or can be completed as a separate module. - Article 36 of the BIG Act describes which specialised nurses are allowed to prescribe medication for their patient group: ○ Nurses specialised in diabetes mellitus: blood glucose regulating medications.

Characteristics of NLC	Notes
	○ Nurses specialised in asthma and COPD: inhalation medication. ○ Nurses specialised in oncology: antidiarrheics, anti-emetics, benzodiazepines, laxatives, agents of pain relief and secretion inhibitors.
Legislative framework	
• **Relevant regulation (national, regional, organisation)**	**Nurse Practitioner[105]** - The NP title is legally recognised since 2009 (BIG act, article 14). - In 2012, a time-limited amendment (article 36a) was added to the BIG Act stating that NPs are legally authorised to independently execute and delegate certain clinical activities, such as diagnosing and prescribing. In 2018, after a positive evaluation, this time-limited amendment was anchored in the BIG Act (article 36). **Specialised nurse[188]** - The function of specialised nurses is covered by the same regulation as registered nurses. - The authority to prescribe medication is included in article 36 of the BIG Act since 2014 for nurses specialised in diabetes mellitus and nurses specialised in asthma and COPD and since 2015 for nurses specialised in oncology.
• **Governance organisations and professional organisations**	***Verpleegkundigen & Verzorgenden Nederland (V&VN)*** is the biggest professional nursing organisation in the Netherlands, with the mission for enabling nurses to practice their profession with pride, passion and professionalism.[191] The V&VN regulates the registration and re-registration for NPs. Within the professional organisation V&VN there are different working group. One of these groups is the ***V&VN VS (verpleegkundig specialisten)***, which focuses on the professional development and positioning of the NP.[181] Furthermore, there are two independent public bodies that perform a partly regulatory task delegated by the Ministry of Public Health (article 14 BIG). These include the ***Council for Nurse Practitioners (CSV),*** the ***Registration Commission for Nurse Practitioners (RSV) and the College Quality Register:*** - The ***RSV*** was established with the aim of promoting and monitoring the quality of specialist professional practice. The RSV ensures that the NP education courses are of the required level and that registered NPs meets the requirements of the BIG Act and the regulations laid down by the ***CSV***. The RSV controls the requirements by an obligation of registration after your NP-education and an obligation for re-registration each 5 years. The registration is necessary to be included in the NP-Register and receive a certification to be allowed to work as NP. After registration, the NP needs to manage a digital portfolio where all the courses and trainings that are being followed, are registered. This is necessary for the re-registration every five years. The RSV collaborates with the Dutch-Flemish accreditation organisation to audit the universities of applied science. It is possible for an NP to change specialism after approval of a director of an approved educational program, and following additional training when necessary.[192] - The ***College Quality Register V&V*** is an independent public body of the V&VN that decides about the regulations for registration in the quality register. The quality register is a tool to support nurses to maintain their expertise and competencies, for instances by promoting to keeping a portfolio to track the followed education and courses.[187]
Financing structures	
• **Relevant financing regulations**	- Since 1 January 2023, all care providers, including NPs, are obliged to register performed clinical activities under their own unique care provider code (I.e. AGB-code; comparable to the Belgian NIHDI-code). The aim of the registration is to receive transparency about the care provided by coordinating practitioners, and support the policy surrounding task shifting.[193] - Nurses work in a salary-based model.

Context factors influencing the implementation of nursing consultations in the Netherlands, according to the context domains of the CICI-framework[100]

Context factor	Notes
Geographical	A dense network of health care services provides a high geographical availability of both general practitioner practices and hospitals. In 2020, 99% of the population lived within 30 minutes of the hospital by car and 99,85% lived within 10 minutes of a general practitioner practice by car.[194]
Epidemiological	In 2020 life expectancy was 81.5 years, which is higher than the EU average (80.6 years). In 2019 ischemic heart disease, stroke and lung cancer caused the highest mortality. 35% of all deaths can be related to behavioural risk factors, below the EU average. In 2020, mortality related to dietary risks (11%), alcohol (5%), air pollution (3%) and low physical activity were lower than the EU average, but was higher than the EU average for tobacco consumption (21%). Smoking and alcohol consumption is decreasing as consequence of several public health policies implemented since the early 2000s.[194]
Socio-economic	The Netherlands spent € 3 967 per capita on healthcare (10.2 % of GDP). Health spending for long-term care, outpatient care and prevention is higher than he EU average, while the health spending for inpatient care is lower than the EU average. The Netherlands show to have a strong primary care and outpatient specialist treatment, with high numbers of outpatient contacts and low rates of hospital discharges. Nurses strengthen the primary care by participation in task-shifting and advanced nursing practices.[194] The ratio of nurses is 10.7 per 1 000 population (EU-average of 8.4) and he ratio of doctors is 3.7 per 1 000 population (EU-average of 3.9).[194] Despite the high ratio of nurses, the nursing workforce faces shortages. Because the care in hospitals (due to stricter admission criteria and shorter length of stays) and in the primary care setting (due to the ageing population with multiple conditions and problems) has become more complex, there is a need for more nurses that are higher-educated.[195] Overall, nurses are participating highly in task shifting and ANP-roles increases the attractiveness of the nursing profession. However, a continued investment in the attractiveness of the nursing profession remains important. The recent obligation for care providers, including NPs, to register performed clinical activities under their own unique care provider code aims to create a better visibility of the work done by NPs. A reported barrier is the difficulty to register all additional care activities that nurse perform during a nursing consultation. In the future it is necessary to better match the reimbursement schemes to the actual care provided by nurses. *(Personal communication*)
Socio-cultural	In the Netherlands a paradigm shift in patient care was observed in terms of a solely medical focus towards a more comprehensive holistic approach. Having a biopsychosocial model of care is considered the most important benefit of the implementation of nursing consultations. This also explains the fast uptake of more advanced nursing roles within the Mental Health Care setting. *(Personal communication*) The different nursing roles, including the role of nurses performing consultations, have created role confusion among the public, nurses and other professionals. Having a clear description of each role within the nursing profession and a clear differentiation between the different nursing roles will help for all parties involved to have clearer role expectations. *(Personal communication*) Having a formal NP competence profile has already supported to clearly define the NP role. However, NPs themselves also need to better position and explain their role. Besides developing research, innovation and clinical skills competences, the NP-education needs to prepare NPs to position themselves better as independent practitioners with their own competences and responsibilities. Having sufficient working experience can also help nurses to consider themselves competent enough to protect their role and scope of practice. *(Personal communication*) The need for clear communication is even more important towards the medical profession. In the Netherlands resistance from physicians was experienced when nurses were entering the medical field. However, the introduction of new nursing roles, including the NP role, was not intended to replace physicians. Nurses and NPs apply an holistic approach and addressing all patient needs in their consultations. Although

	medical needs can be addressed, nurses and NPs are expected to refer patients to physicians if necessary. An important facilitator for the implementation of nursing consultations is to focus on the complementary role of nurses and NPs in patient care instead of focusing on substitution/task shifting of medical activities. *(Personal communication*)
	The societal image of the nursing profession is fundamental for the trust that patients have in nurses performing consultations. The NP, being a legal specialist in the Netherlands, needs to be known by the public. Hence, patient brochures have been developed where their profile and role, based on the NP competence profile, is explained to the general public. *(Personal communication*) Furthermore, in July 2023 a documentary about the NP was released to create more public awareness about this advanced nursing role.{Gwen, #7}
	Nurses indicated that it is important to have career prospects. A clear career path is essential for the retainment of nurses in the profession. Collaboration between the different institutions offering nursing education is important to meet this need.[195] *(Personal communication*)
Political	The NP role is not intended to be limited to task-shifting of medical activities. In 2000, because of the prospections of physician shortages, the need to control costs and the urge to increase continuity of patient care, 'physician assistants' were introduced as a new health care profession in the Netherlands. Physician assistants can perform various medical tasks, including prescribing medication and certain medical procedures. Having physician assistants, was considered helpful in protecting the nursing scope of NPs and avoided that NPs was used solely to take over medical tasks. In practice, however, there are still cases where NP perform solely medical tasks and in act more as a physician assistant. Involving the medical profession in the NP-education was a reported facilitator for preparing nurses to maintain their nursing scope after graduating.[196] (*Personal communication*
	Demonstrating the impact of nursing consultations is considered essential. When the time-limited amendment (article 36), authorising NPs to independently perform clinical tasks, was added to the BIG Act, a research plan was made by the Universities which offer the education to become NP. This is considered necessary to prove to the public and to physicians that the quality and safety are ensured. (*Personal communication*) 'Platforms Zorgmasters' is an online platform which collects, creates and shares knowledge about task reallocation for NPs and physician assistants.[197] However, because it can be challenging to prove effect of nursing consultations on certain outcomes (e.g. patient autonomy), qualitative research is also considered essential. (*Personal communication*)
	Advocacy from professional nursing organisations is crucial to strengthen the position of nurses. V&VN is a strong professional nursing organisation, promoting and strengthening the position of nurses and NPs. (*Personal communication*)
Legal	Authorising NPs to independently execute and delegate certain clinical activities has supported the professionalisation of nursing, which subsequently opened doors for other nurses to take up more autonomy. (*Personal communication*)

Appendix 2.2.2. Ontario

Characteristics of nursing consultations in Ontario

Characteristics of NLC	Notes
Availability	In Ontario NPs were first regulated in primary care since the mid-1960s to increase patients' access to health care, but in the meantime NP roles have been expanded their activities to other areas and all other care settings.[198] Nursing consultations are performed by Nurse Practitioners (NP), Registered Nurses (RN) and Registered Practical Nurses (RPN) and nurse midwives. • NPs are autonomously performing consultations in community and primary care in different organisations and programs, like NP-led clinics, home visit programs, geriatric assessment and intervention network (GAIN) clinics and home-based palliative care. RNs and RPNs are allowed to perform consultations in primary and community care, as long as they are working within their legislative scope of practice and within their individual competence and this is always in collaboration with a NP and/or physicians and other members of the inter/multidisciplinary teams. • In long-term care, NPs can do assessment, diagnosis, treatment and follow-up of nursing home residents. These NPs are called attending NPs. However, a nursing home can also collaborate and consult with a NP who is part of a nurse-led outreach team. Outreach NP roles were established to prevent avoidable hospital transfers by addressing acute, episodic and palliative issues at home. They also strive to build capacity of nursing home staff through education. RNs and RPNs are performing nursing assessments in alignment with the care plan according the resident's needs and initiate treatment, interventions or follow-up in alignment with the care plan. • In the hospital setting, NPs have extensive authority to perform clinical tasks and work as part of an interdisciplinary health care team. In some cases, NPs have admission and discharge authority and run and lead units, such as transitional care unit or geriatric units. These NPs may seek consultation from other experts, including physicians, when appropriate. In some cases, NPs in hospitals have less autonomy compared to NPs in community care or nursing home care. Their work may involve performing nursing consultations, but also capacity building to train RNs to perform nursing consultations themselves as part of a multidisciplinary team. Another structures where NPs independently perform nursing consultations are NP-led clinics. NP-led clinics are an innovative model for delivery of comprehensive primary health care, where NPs lead of an interprofessional team, constituting physicians, RNs, RPNs, registered dietitians, registered social workers, mental health workers, pharmacists, occupational therapists, physiotherapists, and other health care providers. The majority of patients seen in NP-led clinics are vulnerable, marginalised patients. The NP-led clinics provide primary care services to patients under NPs' roster. These services may include annual physical examinations, episodic illness care management, programs for falls prevention for older persons, immunizations, smoking cessation or injury prevention, and monitoring and management of chronic diseases, such as diabetes, arthritis, asthma, heart disease and mental health conditions.[107] NPs in the GAIN clinics lead an interprofessional team to provide specialised consultation services that involve comprehensive geriatric assessment, intensive case management and coordination for older adults living in the community.
Profile nurses / educational requirements	
• **Recognised titles** [199]	Registered Practical Nurse, Registered Nurse and Nurse Practitioner are legally recognised titles. A Nurse Practitioner is also called Registered Nurse in the 'Extended class', they can be registered under three specialties: Adults, Paediatrics and Primary Health Care.

Characteristics of NLC	Notes
• **Formal competencies profile**	'Entry-to-Practice Competencies' is the national educational standard set across Canada, and maps the required knowledge, skills and judgement that are needed for nurses to provide safe and effective patient care. All entry-to-competencies are revised regularly to ensure they align with current evidence, patient needs and changes in the practice setting. - Entry-to-Practice Competencies for Nurse Practitioners [200] - Entry-to-Practice Competencies for Registered Nurses [201] - Entry-to-Practice Competencies for Registered Practical Nurses [202]
• **Educational requirements / Specific training programs**	**Registered Practical Nurses have to fulfil following requirements:** - Diploma Nursing Program (2 years). **Registered Nurses have to fulfil following requirements:** - Bachelor of Science in Nursing (4 years). **Nurse Practitioners have to fulfil following requirements:** - Bachelor of Science in Nursing (4 years). - A Nurse Practitioner program (in Ontario, those programs are at Masters level and can focus on adult, paediatric or primary health care) (2 years). Admission requirements to start the NP Program are set by the University, and include for example 2 year working experience in the past 5 years, a minimum of 70% overall average in Bachelor of Science in Nursing. The College of Nurses of Ontario (CNO) reviews and approves NP programs on annual basis. - If they are graduated before 2018, or didn't followed a NP program that integrated the course, they need to pass the approved controlled substances educational course for prescribing controlled substances (except for opium, coca leaves and anabolic steroids) (short course, e.g. at the University of Toronto it's an online course from 10-20 hours followed by an online exam).[203] All RPNs, RNs and NPs need to receive and renew annual membership at the CNO to practice nursing. Entry requirements[204]: - Have the required education - Have relevant recent experience practicing as a nurse (in the last three years). - Successfully complete the registration and pass the Jurisprudence examinations for the specific practice. - Show proficiency in English or French. - Provide proof of citizenship, residency status or authorisation to practice nursing in Ontario. Requirements for renewal[204]: - Pay the annual Membership fee ($270 in 2023). - Declare that they took part in the College's Quality Assurance Program with the obligation of actively updating their knowledge and skills, maintaining their continued competences and showing this by an annual Learning Plan (e.g. with CNO's template, a notebook, …) with at least two learning goals. The nurse needs to keep a copy for two years of this learning plan and submit this copy to CNO if they are selected for Quality Assurance assessment.[205]

Characteristics of NLC	Notes
	- Declare they have recent experience practicing as a nurse (in the last three years). For the NP it's obliged to maintain clinical NP practice (direct interaction with the client population consistent with each specialty certificate held by the NP + the use of advanced nursing knowledge and decision-making skills).
Nurses' autonomy	
• **Nurses' authority to perform clinical tasks (prescriptions, diagnosis, order tests, treatment, discharge, referral)**	**Registered Practical Nurse & Registered Nurse:** - The Code of Conduct is the overarching standard of practice, applying to all nurses.[107] - RPNs and RNs cannot diagnose but they can identify an individualised plan based on patients' needs assessed through nursing assessment. Nurses are expected to use their clinical judgement to determine whether they can safely and competently complete and assessment and provide care to a specific patient. - CNO proposed changes to permit RNs to prescribe medication for certain non-complex conditions, governmental approval is still required for the regulation to take effect.[205] - RPNs or RNs can work under medical directives from their collaborative partners (e.g. an NP or physician), following the Interprofessional Guide on the Use of Orders, Directives and Delegation for Regulated Health Professionals in Ontario.[199] **Nurse Practitioner:** The Practice Standard for NP practice (members of the extended class) are very broad, including health assessment, diagnosis, therapeutic management (including prescribing and dispensing medications), collaboration, consultation, discharge and referral. They can perform clinical tasks completely autonomously.[106, 206] Canada is the only country where NPs can provide medical assistance in dying according to the Federal law. NPs who participate in medical assistance in dying must comply with the legal requirements outlined in the College's document: Guidance on Nurses' Roles in Medical Assistance in Dying.[106] All nurses are expected to seek help and refrain from performing any activity that they are not competent for. If there is a concern about a nurse's practice, CNO can receive a complaint or a report from public or employers. If a case of professional misconduct is determined, e.g. "contravening a standard of practice of the profession" or "failing to meet the standard of practice of the profession", a statutory committee can determine consequences for the nurse.
Legislative framework	
• **Relevant regulation (national, regional, organisation)**	The Regulated Health Professions Act (1991), the Nursing Act (1991) and the CNO by-laws set the Governance framework. [199, 207] In 2017 the Ontario government approved changes to the regulation under the Nursing Act to enable NPs to prescribe controlled substances. This is recorded in the Controlled Drugs and Substances Act.[206]
• **Governance organisations and professional organisations**	On a provincial level, the ***Ministry of Health*** is accountable for the legal framework. However, in each Canadian jurisdiction a regulatory body is mandated for the regional governance in line with the overall legal framework. In Ontario, ***the College of Nurses of Ontario*** (CNO) is the governing body for RPNs, RNs and NPs. CNO sets the requirements for entry-to-practice for the profession, articulates practice standards for its members, approves nursing programs, administers the Quality Assurance Program and enforces standards of practice and conduct (e.g. through complaints and reports). CNO provide all the detailed information about nurses in an easy-to-use online tool, which shows if a nurse is allowed to practice nursing in Ontario and if there are any restrictions

Characteristics of NLC	Notes
	on their practice (e.g.: if a NP has not completed the education for prescribing controlled substances, their profile on Find a Nurse will state: "Entitled to practice. Cannot prescribe controlled substances until specialised education is completed.").[208] The ***Quality Assurance Committee*** is responsible for ensuring members comply with all aspects of the Quality Assurance Program by self-, practice- and peer-assessment. The Quality Assurance Program is designed to promote lifelong learning and continuing competence among nurses.[205] There are several unions and professional organisations in Ontario for nurses. Some examples: ***the Ontario Nurses' Association*** empowers members to take collective action for safe, equitable workplaces and high-quality health care, ***the Registered Nurses' Association of Ontario*** advocates for healthy public policy, promotes excellence in nursing practice, and power nurses to influence the profession of nursing, ***the Nurse Practitioners' Association of Ontario*** empowers NPs to shape and improve the health system and **the Registered Practical Nurses Association of Ontario** is the voice of the registered practical nursing in Ontario.[199]
Financing structures	
• **Relevant financing regulations**	RPNs, RNs and NPs work mostly in a salary-based model. For specific programs, financial agreements are made. E.g.: funding for NP-led clinics and nurse-led outreach teams is provided by the Ministry of Health and Long-Term Care. The funding can be requested by everyone, and will be granted based on present needs.

Context factors influencing the implementation of nursing consultations in Ontario, according to the context domains of the CICI-framework

Context factor	Notes
Geographical	Canada as a whole, but Ontario too, is challenged by a dispersed population. As a result, there are significant differences in the health of people according to their location. E.g.: people in Ontario's two northern regions faces health inequities compared with the rest of the province. In these regions, people are more likely to die at a younger age, are less likely to report good access to primary health care and are more likely to report several chronic conditions.[199] Nursing consultations can increase the access to health care in rural areas. Extending the autonomy of NPs enables them to work more independently, which allows to better respond to current health care and patient needs. (*Personal communication*).
Socio-economic	In 2022, 12.2 % of GDP in Canada was spend in health care. The health spending was the highest for inpatient care (24.3 %), physicians (13.6 %) and medication (13.5 %). In 2022, the ratio of nurses was 10.9 per 1 000 population, where the ratio of doctors was 2.8 per 1 000 population. In 2021 there were about 312 000 RNs, 6 300 RPNs and 7 400 NPs. The group of NPs experienced the highest growth with an increase of 10.7 % in the prior year. Among physicians, the increase of family physicians was the smallest.[11] In that regard, NPs play an important role in reducing pressure on family physicians, and improving access to primary care. *(Personal communication*) Workforce planning according to health care needs, facilitated the implementation of nursing consultations. Severe physician shortages allowed nurses to fill the workforce gap. *(Personal communication*) In addition, the ageing population and more patients with chronic conditions, results in more complex patient profiles requiring a more holistic health care approach. In general, consultations for older patients with complex and chronic conditions, demand more time. General practitioners often work with a fee-for-service system and in such system, the additional time spent is not always chargeable. Therefore, NPs

	can support general practitioners in caring for patients with more complex profiles and multidimensional needs. In general, NPs have a lower patient case load than a general practitioner, but their consultation time per patient is longer. *(Personal communication*)
Socio-cultural	NPs, RNs and RPNs are trained to integrate different patient needs according to the biopsychosocial model of care, rather than only focusing on the medical part. It is important to communicate about the role of nursing consultation as being complementary to the physician's consultation. If NPs, RNs and RPNs focus on complex patient profiles, with more comprehensive needs (e.g. social and psychological needs), physicians are able to focus more on patients with complex medical needs. It is important to inform physicians about nurses their training and scope of practice, to explain the difference between nursing and medical consultations. Clear communication and finding a common vision can facilitates the implementation, as in the end both groups of professionals aim for safe patient care. *(Personal communication*) Implementing new nursing roles can be challenging. If someone is new to performing nursing consultations, it can be helpful to be able to rely on experienced colleagues are be part of a community to share experiences. E.g.: coming together with NP-colleagues on a regular basis, exchange experiences about challenges in the job, … *(Personal communication*) Stakeholder and management support is essential for NPs, RNs and RPNs. They need to get the necessary resources to maintain their competency level and work to their full scope of practice. E.g.: support is needed in terms of access to electronic materials and libraries to keep up to date with the latest evidence, dedicated time and money is necessary to attend educational courses to expand knowledge and maintain competences, … . Overall, hospitals provide good support to nurses who are starting in new roles. They provide clear policies about roles and responsibilities. Furthermore, having someone to report to, being the Chief Nursing Executive in a hospital, often facilitates the implementation of a new role. *(Personal communication*)
Political	When starting in a new role as NP, RN or RPN, it is important to give all stakeholders a clear view on these roles. The Practice standards and Entry-to-practice competences provided by the CNO help to get clarity, and to support NPs, RNs and RPNs to perform activities within their full scope of practice. Their mandatory learning plan can guide in setting realistic goals and communicating these to colleagues. *(Personal communication*) The NP role is not intended to be limited to task-shifting of medical tasks. The profession of physician assistant, who perform various medical tasks under supervision of a physician, helped in avoiding that NPs are hired to perform solely medical tasks. *(Personal communication*) Advocacy from professional nursing organisations is crucial to strengthen the position of nurses. There is a need of strong voices to defend the rights of nurses and push the agenda at political level. Demonstrating that nursing consultations are safe and cost-effective, was important for the implementation. To convince the medical field about the added value of nursing consultations, demonstrating the impact on outcomes is needed. By starting with small scale pilot projects, results can be shown early one, which can subsequently support large-scale implementation. *(Personal communication*)
Legal	Changing legislation takes a lot of time and slows down the implementation process. If legislation is broad, it is easier to adapt later on, than having to change everything that was too specific. E.g.: it took a long time to adapt the list of medications that was specifically made for NPs listing the medication they are allowed to prescribe. *(Personal communication*)

Appendix 2.2.3. Ireland

Characteristics of nursing consultation in Ireland

Characteristics of nursing consultations (NC)	Notes
Availability	In Ireland, nursing consultations have developed in all practice areas since the early 2000s. The main drivers for implementing these consultations and advanced nursing roles were increasing access to health care and decreasing waiting times. Nursing consultations can be performed by Clinical Nurse Specialists (CNS) and Registered Advanced Nurse Practitioners (RANP). An important difference between both is that only the RANP has autonomy to independently manage an episode of medical care and usually has an assigned patient caseload.. This means that RANPs are allowed to work independently (albeit under a prior agreed scope of practice agreement under the supervision of a physician) and have sufficient autonomy to assess, treat and follow up patients without other disciplines (e.g. a physician). In addition, RANPs can also autonomously decide whether referral to diagnostics and other services is necessary or not. In 2022 the Nursing and Midwifery Board of Ireland (NMBI) registered 657 ANPs, of which 489 declared that they were patient-facing.[47] Anno 2023, nursing consultations are mainly performed in the hospital or outpatient setting. This is driven by the necessity and availability of a medical consultant to arrange a collaborative practice agreement, which is mandatory for both CNS as RANPs to work to their full scope of practice (e.g.: a collaborative practice agreement is needed to receive prescribing rights). The scarce availability of RANPs in community care can also be explained by financial incentives. Here, RANPs are working in a salary-based model without access to a fee-for-service system, as general practitioners (GP) do. It is more attractive for GPs to hire a practice nurse to increase the efficiency of their practice. More specifically, hiring a practice nurses decreases physician time per patient, which can be quite long in patients with multiple chronic conditions. *(Personal communication*) To answer most recent evolutions, such as increasing waiting lists in primary care, increasing patient complexity and more focus on integrated care, the Irish government is setting up new pilot projects on nursing consultations in community care. For example, one ongoing project aims to train 32 nurses as RANP with a designated workplace in a general practitioner practice to manage the chronic illness program. Another pilot project focusses on expanding nursing consultations in nursing homes in the format of outreach teams. Their main outcomes are increasing access to specialist geriatric knowledge and decision making and avoidance of unnecessary emergency department visits and hospitalizations. *(Personal communication*) To obtain annual renewal of registration, each RANP used to be in the past obliged to submit a portfolio presenting evidence of meeting the competency to retain their registration. However, due to resources issues with NMBI this was no longer considered feasible and evidence of competency follow-up is now undertaken within the respective employing organisation. *(Personal communication*)
Profile nurses / educational requirements	
• **Recognised titles**	The CNS and RANP title are both legally recognised employment titles. The formal divisions on the NMBI register are Registered Nurse, Advanced Nurse Practitioner, and Nurse Prescriber. Thus, the title of CNS is not recognised by the NMBI so they register as Registered Nurses, with the option to manually record in CNS as job title.
• **Formal competencies profile**	In 2017, the NMBI published the Standards and Requirements for Advanced Practice Nursing.[108] Besides the Code of Professional Conduct and Ethics for Registered Nurses and Registered Midwifes, it reports the Competences for Advanced Practice. These are focused on six domains: - Professional Values and Conduct of the RANP Competences

Characteristics of nursing consultations (NC)	Notes
	- Clinical-Decision Making Competences - Knowledge and Cognitive Competences - Communication and Interpersonal Competences - Management and Team Competences - Leadership and Professional Scholarship Competences
• **Educational requirements / Specific training programs** [209, 210]	**Registered Advanced Nurse Practitioners have to fulfil following requirements[47]:** - Level 8 Bachelor degree in Nursing (4 years full-time). - Minimum 2 years of experience as a nurse in the medical discipline where they will work as a RANP (until 2018 this was 5 years). - Level 9 Master of Science in Nursing-Advanced Practice (2 years full-time). Before starting the Master training, applicants already need to have determined their field of advanced practice, their trainee post and a medical consultant willing to supervise their process and collaborate in the future. - Registration at NMBI as Registered Advanced Nurse Practitioner and as a Registered Nurse Prescriber. The education for RAPN prepare and allow to prescribe medication, but to receive this right in practice a RANP need to register additionally as a Nurse Prescriber and have a collaborative practice agreement in their site of employment. When advanced nursing positions were initially implemented to perform nursing consultations, transitional regulations were also installed to recognise prior training and experience. **Clinical Nurse Specialists have to fulfil following requirements[47]:** - Level 8 Bachelor degree in Nursing (4 years full-time). - Minimum 1 year of experience as a nurse in the medical discipline where they will work as a CNS. - Level 8 Post Graduate Diploma (1 year part-time). - Registration at NMBI as a Registered General Nurse. They can manually indicate CNS as job title. A CNS can obtain authority to prescribe specific medications within the own field of practice, if following requirements are fulfilled: - Level 8 Post Graduate Diploma in Nurse/Midwife Prescribing of Medicinal Products (1 year part-time). - Registration at NMBI as a Registered Nurse Prescriber. In 2022 there were 1 154 Nurse Prescribers registered that declared to practice patient-facing.[47]
• **Nurses' authority to perform clinical tasks (prescriptions, diagnosis, order tests, treatment, discharge, referral, …)**	In theory, **RANPs** work autonomously. They can undertake an independent patient case load, involving assessment, diagnosis, autonomous decision making regarding treatment, provision of interventions and referral and discharge from a full episode of care.[211] However, in practice, an RANP needs to have a scope of practice agreement and a collaborative practice agreement for prescribing with a named medical consultant describing their authorities more precisely. The scope of practice agreement needs to include all agreements like, among others, under which circumstances the RANP can refer or discharge the patient and how the RANP will report to the medical supervisor. The collaborative practice agreement needs to include a list of the prescription drugs which the RANP is allowed to prescribe. A **CNS** can perform clinical assessment and provide suggestions for diagnosis and treatment to their collaborating medical consultant. Decisions about their scope of practice are supported by the Scope of Practice Decision-Making Flowchart.[109] If the CNS is registered as Nurse Prescriber, the CNS can prescribe medications following a decision-making framework. They need to follow the guiding principles

Characteristics of nursing consultations (NC)	Notes
	enlisted in the Guidance for Registered Nurses and Midwives on Medication Administration.[104] Additionally, the controlled drugs, which registered Nurse Prescribers are allowed to prescribe needs to be documented in an additional collaborative practice agreement with the supervising medical consultant.[212]
Legislative framework	
• **Regulation (national, regional, organisation)**	**The Nursing and Midwifery Act 2011** (Government of Ireland, 2011) does not mention specific details regarding advanced nursing practice, policy makers expect the NMBI to specify the criteria for (advanced) nursing practice.[210] The NMBI provides Standards and Guidance to guide nurses and midwives to make the right decisions for patient care and achieve standards of professional practice. In 2017, the Irish Department of Health published a document '**Developing a Policy for Graduate, Specialist and Advanced Nursing and Midwifery Practice: Consultation Paper**'. This paper provides a framework for the introduction of ANP's in older persons' care, rheumatology, respiratory care and unscheduled care. The first 124 Candidate Advanced Practitioners commenced their education programme as part of a pilot project. In 2022, 657 ANPs were registered at the NMBI. In 2019, the Department of Health published a '**Policy on the Development of Graduate to Advanced Nursing and Midwifery Practice**' outlining the model for introduction of five national integrated care pathways (Midwifery, Paediatrics, Older Persons, Chronic Diseases and Unscheduled/Scheduled care).[112, 213] The Policy documents reiterated the target to have 2% of the nursing and midwifery workforce working as Advanced Practitioners which would see the number increase to 750 approximately.[213]
• **Relevant governance and professional organisations**	***The Nursing and Midwifery board (NMBI)*** is the protection of the public in dealing with nurses and midwives and protects the integrity of the profession through the promotion of high standards of education, training and practice and professional conduct.[108] All nurses in Ireland must be annually registered with NMBI. If not renewed, a removal letter is sent to the nurse.[210] Different trade unions and professional organisations support the nursing profession in Ireland, like ***the Irish Nurses and Midwives Organisation (INMO)*** as the largest nursing trade union in Irish Republic and ***the Irish Association of Advanced Nurse Midwife Practitioners (IAANMP)*** is providing a forum to support those involved in the promotion and development of advanced Nursing and Midwifery practice in Ireland.[112, 163]
Financing structures	
• **Relevant financing structures**	All nurses work in a salary-based model.

Context factors influencing the implementation of nursing consultations in Ireland, according to the context domains of the CICI-framework

Implementation of NLC	Notes
Geographical	Significant inequalities in the supply of primary, community and long-term care were observed in a report of 2014 about the geographical profile of healthcare needs in Ireland.[214] Current policy programs are orienting to a more integrated community care approach, to make a move from secondary to primary care.[215]
Epidemiological	In 2019 life expectancy was 82.8 years, which is higher than the EU average (81.3 years). 14 % of all deaths were caused by ischemic heart disease in 2020. COVID-19 (7 %), lung cancer (5.8 %), chronic obstructive pulmonary disease (5.6 %) and stroke (5.3 %) were the following leading causes of mortality. 35 % of all deaths can be related to behavioural risk factors, which is below the EU average. In 2019, deaths relating to dietary risks (13 %), alcohol (5 %) and air pollution (2 %) were lower than the EU averages. However, the deaths related to tobacco consumption (20 %) and low physical activity (3 %) are higher than the EU averages. The smoking rates declined substantially over the past two decades, partly due to the national tobacco control policy developed in 2013.[215]
Socio-economic	In 2019, Ireland spent € 3 513 per capita in health (6.7 % of GDP). Health spending for inpatient and long-term care was higher than the EU average, where spending on outpatient care and prevention was lower than the EU average. The majority of general practitioners provide care for private fee-paying patients. Therefore, many of other patients lack therefore access to primary care, resulting in an inefficient gatekeeper system from primary to secondary care. For example, avoidable hospital admission rates for COPD and asthma are the highest among EU countries. Current policy programs are orienting to a more integrated community care approach.[215] There are different ongoing projects in primary and community care were nursing consultations support this integrated approach. For example, spread across Ireland 32 nurses are trained as RANP to work in general practitioner practices. *(Personal communication)* The national health service is funded primarily through general taxation. However, almost half of the population purchase an additional voluntary health insurance.[215] This widespread private fee-paying system, ensuring patients to have faster access to general practitioners, forms a barrier for the implementation of nursing consultations in primary care. Nurses work in a salary-based model, with the impossibility of billing own services. *(Personal communication)* Ireland had a ratio of nurses of 12.9 per 1 000 population in 2019, remarkably higher than the EU average of 8.4. Although, this is probably an overestimation as many of nurses work part time or are registered under more than one division in the registers. Furthermore, the number of nurses is decreasing. The number of doctors in 2019 was the sixth lowest rate in the EU, with 3.3 per 1 000 population. The 2021 budget supported the recruitment up to 16 000 new staff across the health sector, in an attempt to compensate these shortages.[215]
Socio-cultural	It is essential to attain a clear role description, scope of practice and expectations to implement a new nursing consultation role. The NMBI provides standards and guidelines, including decision making framework, which help to exploit full scope of practice without creating unrealistic expectations. However, the standards and guidelines are very general and site- and role-specific agreements are needed when a nursing consultation role is implemented. How an institution handles these agreements differs from institution to institution. Role clarification at all levels help to accept new nursing roles. An example from a hospital: a practice development team from the hospital discusses policy and procedures around the individual scope of practice with all stakeholders. The individual scope of practice depend on the role itself, patients' needs and the nurse's experience and education level. The agreements from the discussions are signed by both the nursing director as medical supervisor. Furthermore, a memorandum of understanding is made up to be signed by collaborating partners from other organisations and institutions. *(Personal communication)* Unawareness of the public about nursing roles with a broader autonomy and extended authorities, is appointed as another barrier for the implementation. Due to the increase of advanced nursing roles in the past three years, the public became more familiar with these roles.

	However, the need to have an agreement regarding the scope of practice undermines the opinion and trust patients have in the autonomy of the nurse performing the patient consultation. *(Personal communication)* In Ireland, APNs are not educated as general APNs. The role APNs build-out during their training, is linked to a specific setting and pathology. If APNs want to change jobs they cannot easy transfer to other settings and roles, which results in time consuming individual investments. Furthermore, it is difficult to replace one individual, who has developed and advanced the specific role, by another. Experts indicated that planning around a role, rather than around an individual, is a more sustainable approach. Having a network of several APNs in one organisation makes covering during absence of one APN, and therefore the sustainable implementation, more feasible. *(Personal communication)* All nurses are obliged to pay an annual registration fee to retain their registration with the NMBI. In the past, a portfolio was mandatory for APNs to receive the re-registration. The portfolio, and the support of NMBI for the portfolio, helped to maintain necessary competencies and to define your role as APN. If local policies were not clear about the APN role, the portfolio empowered the APN to stand up for its rights. The obligation for maintaining a portfolio for re-registration fell away because of a lack of funding to mandate someone of NMBI to ensure the follow-up of the portfolios. *(Personal communication)*
Political	Policy programs are moving toward a more integrated community care approach, with the aim of a better organisation and efficiency of the primary health care. Advanced practice of nurses is seen as an opportunity to support the shift from secondary to primary care.[195] Being a policy priority facilitated the implementation of nursing consultations. The funding provided for the education of APNs reflected in an accelerated growth of the number of APNs the previous years. *(Personal communication)* The possibility to receive the authority to prescribe medication, gave nurses the change to work more autonomously.[195] Quantifying contribution is indicated as an essential, but challenging facilitator for the implementation of nursing consultations. Services are set up so differently that a 'one size fits all' model for the quantification of nurses' contribution would not reflect the reality. Nurses need to make their activities identifiable, to become visible in the system. In the report about the evaluation on the 'Draft Policy to Develop Advanced Nurse Practitioners' a Logic Model is presented, which was developed to identify inputs, activities, outputs, outcomes and impact of the APN roles.[112] *(Personal communication)* A barrier for the quantification of the contribution nurses make, is the low level of electronic patient records in some settings in Ireland, like general practitioner-practices and emergency room. *(Personal communication)* Scientific research to show impact on outcomes, is necessary to uncover success factors for nursing consultations. The evaluation report on the Draft Policy to Develop Advanced Nurse Practitioners proved to be of great importance for the further development of the APN role.[112] *(Personal communication)* The change of acceptation proofs to be higher when emphasizing the impact on outcomes of nurses as complementary partners of physicians. Comparing outcomes of nursing consultations with those of physicians, is more likely to create resistance. *(Personal communication)* Organisational readiness and stakeholder and management support is an important facilitator to allow nurses to do their job. Implementation has been hampered when there is resistance of managers to properly resource their services, like equipment of a proper laptop and consultation room, a secretary to support administrative tasks, … A network of APNs within one organisation supports to advocate for necessary resources. *(Personal communication)*
Legal	The mandatory presence of collaborative practice agreements creates flexibility, clear role delineation and expectations, and reduces resistance with people who are less familiar with the different nursing roles and accompanying authorities. However, the mandatory presence of the agreements emphasises the dependence on the medical profession. The implementation of a collaborative practice agreements as facilitating factor, turns out to actually be a barrier for some settings. In settings with less presence of medical assistants, such as nursing homes or home care, advanced nursing roles are little implemented. Furthermore, the nurses autonomy and authorities depend on the medical supervisors' knowledge and opinion on new nursing roles. Readiness to expand nurses' autonomy increased when medical supervisors had experience in countries like the United States, where advanced nursing roles are well known and implemented. *(Personal communication)*

Appendix 2.2.4. France

Characteristics of nursing consultation in France

Characteristics of NLC	Notes
Availability	Nurses are available in all settings to perform consultations: primary care, ambulatory care, hospital care and nursing home care. Yet, there is a wider implementation of NLC in primary care and hospital care as compared to other settings. NLC can be performed by Advanced Practice Nurses (APN) and Registered Nurses (RN; called Infirmier diplôme d'Etat (IDE) in France). Tasks delegated from a physician to a Registered Nurse are regulated by cooperation protocols. The protocols define the medical care entrusted from a physician to another health care professional (e.g. a Registered Nurse), the methods and frequency of information exchange and the methods and frequency of multidisciplinary consultation. These cooperation protocols are widely used in the hospital setting, where the care follows the hyper-specialization of the medical disciplines. Cooperation protocols are also developing in ambulatory and primary care. The law allows the possibility for cooperation protocols since 2009. The first cooperation protocol between healthcare professionals was signed in 2011 and pertained the technical act of taking bone marrow samples.[216] APNs have more rights and responsibilities, allowing them to take more initiatives and work more autonomously than Registered Nurses. However, they also use organisational protocols with physicians in order to set up clear agreements. The organisational protocols focus on the complementary role of an APN rather than task delegation, and allow APNs to perform clinical tasks and medication prescriptions as long as the tasks remains within their framework of competences. The organisational protocol establishes the terms of collaboration between the APN and the physician who refers the patient for APN follow-up. It is no longer a question of delegating an act, but of providing guidance and support. The first APN in France graduated only in 2019, which make it a relatively new role in the health care organisations, where its implementation is still ongoing. The number of graduated APNs is estimated to increase to 1700 by 2023.[217] 'Action de Santé Libérale en équipe' (Asalée) is a new type of cooperation between physicians and nurses, which could be either RN or APN. The idea was piloted in 2004 and expanded to a regional level in 2008. Following the expansion to a national level in 2019, there are currently 2 555 sites working with this type of cooperation, including 7801 physicians and 1792 nurses (target ratio of 0.2 nurses for each physician). The nurse always works in a team with a physician according to the agreements of the cooperation protocols. The nursing consultation is organised in relation to the physician's consultation for patients with diabetes, cardiovascular risk, COPD, asthma, sleeping disorders or cognitive impairment. The goal is to give personalised education, enable patients to take ownership of their condition and become more autonomous and active. The criteria defining the collaboration between the physician and the nurse are written down in a cooperation protocol.[218]
Profile nurses / educational requirements	
Recognised titles	Advanced Practice Nurse is a recognised titles in France.
Formal competency profile	Until now, no formal competency profiles are in place, but they are expected to be published soon. In 2017, a document was published describing the mission and competencies of APNs, according to the 'L'Ordre National des Infirmiers'. The competencies described in this document are the following [219]: 1. Clinical practice. 2. Consultation skills, to carry out consultations, including in primary care. 3. Clinical leadership competence to express leadership in care teams.

Characteristics of NLC	Notes
	4. Research skills to integrate research results in practice. 5. Training / teaching skills to contribute to the training of healthcare professionals. 6. Collaboration skills to work towards universal disciplinarity. 7. Ethical competence for ethical decision-making. In 2018, the decree no 2018-629 was published about advanced practice nursing.[128]
Educational requirements / Specific training programs	**Registered Nurses have to fulfil the following requirements:** - State Nursing Diploma (3 years) - Register with the French Order of Nurses (mandatory since 2006). If the Registered Nurse work under a cooperation protocol, the nurse need to register this too. - There is a wide range of non-mandatory specialization options (e.g. wound care, diabetes, occupational health, …). The specialization courses are mainly attended by those practicing in cooperation protocols. **Advanced Practice Nurse have to fulfil the following requirements:** - State Nursing Diploma (3 years) - 3 years of experience as a nurse (not necessarily in the field they will specialise in). - State Nursing Diploma in Advanced Practice (2 years at academic level).[220] To attend this program, the applicant needs to send a motivation letter, and a professional project. The projects could be constructed by the applicant, the board or the medical profession of the institution where the applicant works. In these cases, the employer is expected to ensure financial support for the training and the project. Another option is a project that is in line with the health needs of a region. In this case, the regional agencies for health care (Agence régionale de santé – ARS) decide to approve or disapprove the project and ensure financial support for the training and the project.[221] - Register with the French Order of Nurses. An APN specialises during his/her training in one of the following fields, and can only work as an APN in this field: • Stabilised chronic pathologies - prevention and polypathology that is common in primary care • Oncology and haemato-oncology • Chronic kidney disease - dialysis and kidney transplantation • Psychiatry / mental health • Emergency All RNs and APNs have a personal space, once registered in the formal bodies mentioned above, where they can add elements to track their work experience, continued education followed and acquired competences (which is not mandatory).
Nurses' autonomy	
Nurses' authority to perform clinical tasks (prescriptions, diagnosis, order tests, treatment, discharge, referral)	**Registered Nurse** During their NLC RNs mainly focus on non-clinical assessment, education, empowerment of patients, smoother care pathways and support for relatives and caregivers. RNs performing NLCs under a cooperation protocol can have more rights to perform clinical tasks than under their initial scope of practice. E.g.: in the context of the heart failure cooperation protocol, nurses can prescribe, carry out, analyse and interpret biological tests, electrocardiograms, as well as clinical examinations, all within the strict limits described in the protocol (according to a precise

Characteristics of NLC	Notes
	list, and according to decision trees specific to each protocol, but valid for all in this context). Depending on the rights prescribed in the protocol, they can take decisions themselves. These decisions may refer to prescriptions, medical referrals or taking no action at all. **Advanced Practice Nurse** APNs have a wider authority for the overall care of patients. However, they always need to have an organisational protocol signed by the physician, indicating the arrangement, procedures for exchanging information, and the conditions for the patient's return to the physician. In addition to their initial scope of nursing practice, they can perform the following acts: - Technical acts, e.g. plaster therapy, incision and drainage of abscesses, manual defibrillation.[110] - Follow-up of patients and preventive acts. - Prescribe medical devices, e.g. peak flow meters, external breast prosthesis, wheel chairs[222] - Prescribe medical biology exams, e.g. eye examination, resting electrocardiography, functional respiratory investigations.[110] - Prescribe medications not subject to compulsory medical prescription and authorised for direct access.[222] - Renew or adapt medication prescriptions like anticancer drugs, anti-epileptics, or opiate substitution if clearly regulated by an organisational protocol.[222]
Legislative framework	
Relevant regulation (national, regional, organisation)	In the light of the demographic ageing with an increase in demand of care, challenged by a decline in the number of physicians, an unevenly distributed density of physicians and drastic economic constraints, the APN role was first mentioned in 2000. It took however until 2018 to legalise and regulate this role.[223] The number of APNs is estimated to increase to 1700 by 2023.[217] The following laws and decrees have been of great importance to evolve the APN role: - The 'Decree no. 2019-835 on advanced practice nursing and its reimbursement by the health insurance scheme' extents the scope of practice of APNs. - The 'Decree no. 2018-633 and 2019-836' and 'Decree no. 2018-629' describe the competences of APNs and the requirements for the education for APNs. - The 'Order of 18 July 2018 setting the lists allowed to advanced practice nursing' present the list of technical procedures that APNs can request, the examinations they can prescribe and the medical prescriptions they can renew (modified in Arrêté du 12 août 2019).[110] - The 'Law no. 2023-379' of 19 May 2023 give APNs the right for direct access of patients and primary prescribing rights. The procedures will be specified at a later date by legislative decree.[224] The 'Protocole de coopération' refers to the so-called cooperation protocols that enable healthcare professionals to transfer certain tasks to other healthcare professionals, including nurses. As a team, you can apply to national protocols, which are published and authorised by the Ministry of Public Health. The regional agencies for health care (ARS) will decide whether or not your team has the competences to work according to the national protocol. Bottom-up protocols, designed by teams themselves concerning local needs, are regulated by the law on local protocols. For the validation of local protocols, approval of the medical committee is needed. The regional agencies for health care (ARS) decide whether or not a team has the competences to work according to the regional or national protocol. The protocols define the care entrusted to an RN or APN (the 'delegee'), the methods and frequency of information exchange and the methods and frequency of multidisciplinary consultation. The protocols can include tasks related to chronic diseases, geriatrics, oncology, technical procedures, ophthalmology, emergency department management, unplanned care, imaging, vaccination and infectious diseases, or dietetics. The protocol defines how a nurse will work together with the physician, and thus, to what extent they can perform NLC for the patient population targeted

Characteristics of NLC	Notes
	by the cooperation protocols. The decree of the cooperation protocol defines the requirements for quality and safety, the necessary training and the missions of delegates and delegators.[102] The following laws have been of great importance for the implementation of cooperation protocols: - The 'Law no. 2009-879 of 21 July 2009 on hospital reform and patients, health and territories' initiates the system of 'protocoles de cooperation'. - The 'Law no. 2020-1525 of 7 December 2020 on accelerating and simplifying public action' authorises the implementation of local 'protocoles de cooperation'.
Governance organisations and professional organisations.	The **'Ordre National des Infirmiers'** is the regulatory body delegated by the Government controlling access and conditions of practice in the nursing sector. **Haute Autorité de Santé (HAS)** is an independent, scientific public authority with the aim to improve healthcare quality. The HAS informs the public authorities to make informed decisions and supports professionals in the optimization of their practices and organisations. The '**Comité National des Coopérations Interprofessionelles**' from the Ministry of Health steer the cooperation protocol system. They ask HAS for advice about national cooperation protocols and authorise the protocols after receiving advice from HAS.[225] The 'Association Nationale Française des Infirmières et Infirmiers Diplômés et des Etudiants' (**ANFIIDE**) is an important professional nursing organisation in France, with the mission of contributing to the population health, promoting nursing leadership and encouraging the development of nursing as a science.[226] The 'Association Nationale Francaise des Infirmier.es en Pratique Avancée' (**ANFIPA**) is the professional nursing association specifically for APNs. The organisation contributes to the development of advanced practice, promotes quality of care provided by APNs, participates in developing teaching and research in advanced practice and defends the interests of APNs.[227] The 'Union Nationale des Infirmier.es en Pratique Avancée (**UNIPA**) is an union dedicated to defending APNs interests, working conditions and remuneration.
Financing structures	
Relevant financing regulations	Nurses working in hospital settings work in a salary-based model according to index tables. Nurses working outside the hospital setting can be as self-employed, work salary-based or mixed. When working according to a 'protocol de cooperation', nurses in public hospitals receive an additional fee. For those outside the hospital: the organisation decides how the money is divided between the delegating physician, the nurse performing the activities and the organisation (e.g. to cover operational and infrastructure costs, like e-health software). The model for reimbursing APNs is not yet fully known. A few decisions were already made, like the reimbursement of self-employed APNs in primary care. Self-employed APNs can work with a fixed fee for first contacts, follow-up packages, annual lump sums to help with the modernization of communication and a sum for aid in the first 2 years (minimum number of patients followed by APN: 50 in the first year, 150 in the second year).

Context factors influencing the implementation of NLC in France, according to the context domains of the CICI-framework

Context factor	Notes
Geographical	The density of health care professionals differs a lot across regions. The government took several initiatives, like financial support for general practitioners to set up practices and engaging medical students to undertake part of their training in ambulatory care to increase access.[228]
Epidemiological	In 2020, the life expectancy was 82.3 years, which is higher than the EU average (80.6 years). In 2020, COVID-19 caused many deaths in France, being the leading cause of mortality with 9.6 %, followed by ischemic heart disease (5.6 %), stroke (5.4 %) and lung cancer (5.4 %). 33% of all deaths can be related to behavioural risk factors, which is below the EU average. However, the rates of smoking and alcohol consumption (not necessarily related to mortality) are clearly higher than the EU average. The proportion of teenagers participating in physical activity is significantly lower than the EU average. France has stayed behind in investing in health promotion and disease prevention compared with other European countries.[228]
Socio-economic	In 2019, France spent € 3 645 per capita on health (11.1 % of GDP), which is the highest share in the EU together with Germany. Inpatient care (32 %) and outpatient care (28 %) counted for a large amount of the health care spending. On the other hand, only 2 % of health spending went to prevention.[228] In 2019, the ratio of nurses was 11.1 per 1 000 population (EU-average of 8.4), where the ratio of doctors was 3.2 per 1 000 population (EU-average of 3.9). The number of nurses increased enormously since 2008. Measures to support physicians in the management of the increasing number of patients with chronic conditions were implemented. Asalee, the type of cooperation between general practitioners and nurses, where nurses are trained to improve the management of diabetes, cardiovascular risk, COPD, asthma or sleeping disorders is an example of NLC successfully meeting patients' needs.[228] The introduction of the APN role is another example of nurses supporting the care for chronically ill patients and patients with complex morbidities. University training of APNs is established in 2017, with the first APN graduating in 2019.[217] This training is established to partly answer the actual challenges health care is facing in France: an ageing population, an increase in chronic pathologies and a decline in the number of physicians.[228] Despite important steps in the implementation of APNs, the number of graduated APNs is lower than expected because of several barriers such as an unattractive business model and a lack of clarity about this role.[216] In all settings, APNs indicate that their salary increase is insufficient to compensate their investments in advanced education and building and maintaining competences. More specifically, APNs only have an average increase of 10 % in their salary compared to the salary of nurses, which is discouraging the investment. APNs working in primary care work with a fee-for-service system. In a cross-sectional national survey held with graduated APNs in France in 2021, APNs indicated that the income generation of their APN practice was insufficient to be sustainable.[229] The financial model for future NLC hence must be defined. *(Personal communication)*
Socio-cultural	The strength of NLC lies in addressing patients' biopsychosocial and educative needs, and not only the medical needs. Therefore, it is necessary for nurses to have sufficient time for a consultation in order to be able to integrate a more holistic nursing vision. One of the APNs being interviewed suggested for instance that a nursing consultation should last at least one hour. APNs and RNs are supposed to work complementary to physicians. If APNs or RNs not have enough time for the consultation, they end up doing the delegated medical tasks only when there is a lack of recognition of the preventive actions like screening for frailty, support for dietary behaviour, physical activity, … *(Personal communication)* Visibility of APNs or new nursing roles is extremely important to make sure people get familiar with the functions. APNs in France are visible in the media, which influences the public opinion and help to reinforce their role. APNs themselves take their responsibility in communicating

Context factor	Notes
	about their role at a local level. Therefore, it is very important that they have sufficient knowledge about their own role within the organisation and health care system. *(Personal communication)* It is stated that reflection on new nursing roles and professional boundaries between physicians, APNs, other nurses and stakeholders is needed. It is important to highlight the positive experiences and emphasise the condition enabling this positive experiences.[230] *(Personal communication)*
Political	The establishment of a regulation and policy on APN roles facilitated the implementation of NLC, mainly in the hospital setting. *(Personal communication)* Lack of understanding and clarity about the role is mentioned as a major barrier.[223, 231] There was resistance of the medical field because they feared to lose work or control over the patients' trajectory. A clear description of new nursing roles can help to inform and negotiate with other health professionals. *(Personal communication)* In 2017, there was a document published describing the mission and competencies of APNs, according to the 'L'ordre des Infirmiers', but up until today, there is no formal competency profile. However, an APN competency framework is expected to be published soon.[223] *(Personal communication)* The government aimed to educate 3000 APNs by 2022, but no national strategy for the implementation of this new role was established.[223] A lack of positions being created for APNs within hospital care is observed. In a cross-sectional national survey held with graduated APNs in France in 2021, 30 % of the graduated APNs were not working as an APN. The main identified barrier was absence of APN positions in their organisation. On the other hand, having a secured position as APN prior to training was seen as a major facilitator.[229] *(Personal communication)* Despite the lack of a national strategy for the implementation of the APN role, the Provence-Alpes-Côte d'Azur Regional Health Agency and Aix-Marseille University established a partnership. This partnership aimed to guarantee quality education and successful implementation based on the principles of the 'Participatory, Evidence-based, Patient-centred process for Advanced practice nurse (APN) role development, implementation, and evaluation (PEPPA)' framework.[223] PEPPA is a tool developed by Bryant-Lukosius & DiCenso (2004) to guide the implementation and utilization of the APN role and which is commonly used in education and clinical practice.[231] There are several publications available about NLC in France, such as a publication on the implementation of the both APN role, and the new physician-nurse cooperation Asalée. Research was indicated as an important contribution to guide and evaluate the practice.[223, 229, 231-233] *(Personal communication)* No specific indicators are monitored to quantify the impact of NLC on specific outcomes. The benefits of the holistic approach is not always measurable. Furthermore, it was mentioned that the impact of other professions is not measured either. *(Personal communication)* Lobbying and advocacy by the professional organisations, nursing workforce and professional organisations were reported as major facilitators for the NLC implementation. Consultation and lobbying at the medical department were essential to counter the initial resistance. *(Personal communication)* Stakeholder and management support is an important facilitator to allow nurses to do their job. Implementation has been hampered when there is resistance of managers to properly resource their services, like equipment of a proper laptop and consultation room, a secretary to support administrative tasks, … *(Personal communication)*
Legal	France works with cooperation protocols for the task delegation from physicians to other healthcare professionals, including nurses. Those protocols give a team the flexibility to engage in a cooperation in favour of patients' needs. Activities, acts of care or prevention can be transferred between different healthcare professionals and the way of working can be reorganised. The cooperation protocols are useful to prepare the field for extended authority for nurses and are deemed of great value by nurses. *(Personal communication)* On the other hand, although increasing the autonomy and flexibility of a team, the requirements of cooperation protocols can also be a barrier for NLC

Context factor	Notes
	implementation. More specifically, the requirement of a cooperation protocol emphasises the dependency of the nurse on the physician. Additionally, the cooperation protocols are set up for one disease, limiting the authority for extended clinical tasks to this specific disease. As many complex patients have more than one condition, nurses stay highly depended on the physician for consulting the patient for the other conditions.[229] APNs still have limited authority to prescribe medication and to establish a diagnosis. These restrictions limit the APN in working to their full scope of practice.[229] Furthermore, a patient always needs to be referred by a physician and cannot consult an APN directly, which hampers patients' access to healthcare. However, the law is changing: direct access to APNs has recently been approved and the implementation is expected soon. *(Personal communication)*

Appendix 2.2.5. Finland

Characteristics of nursing consultation in Finland

Characteristics of NLC	Notes
Availability	Nursing consultations are performed in primary health care, specialist care in the hospital (e.g. cardiac care, pain management, asthma care, diabetes care) and mental health care. Until now, nursing consultations are not implemented in residential long-term care. Nurses performing nursing consultations can be Registered Nurses, Public Health Nurses and/or Midwives. In practice, Registered Nurses generally work in close collaboration with physicians, while Public Health Nurses and Midwifes more often work independently. Master-educated nurses often work in management roles, rather than in direct clinical practice. If they work in clinical practice, they have the same rights and responsibilities as Registered Nurses. In primary health care, nursing consultations are very well implemented. Registered Nurses and Public Health Nurses work in health centres and perform nursing consultations for acute health problems and non-communicable diseases.[195] A Registered Nurse or Public Health Nurse always conducts the first assessment in a health centre before referring the patient to a Registered Nurse, Public Health Nurse or a physician for further consultation. The most common reasons for referral to a nurse for further consultation are health promotion, wound care and follow-up of diabetes. Public Health Nurses and Midwifes performing nursing consultations are the main drivers of the family health care implemented by the Finnish social care system. A Public Health Nurse or Midwife follows each new-born from 8 weeks until 6 years old by means of an annual consultation with the child and the parents. Between the age of 6 to 12 years, a school nurse continues the family health care follow-up.[234] This means that the Finnish population is familiar with nurses being a first point of contact for preventive and health care issues. Immediately after they graduate, nurses need to apply for licencing, the right to practice and right to use occupational title. They need to register in the national Terhikki register as a nurse, and if applicable (depending on further education) as a Midwife or Public Health Nurse. In 2018, more than 6% of the nurses in Finland were registered as a Midwife, and almost 21% as Public Health Nurse. Renewal of registration is not necessary.[235] If nurses have followed additional education for nurse prescribing, and have received the special qualification in limited prescribing of medicines, they can additionally enrol in the Terhikki Register as Nurse Prescriber. In 2023, there were 806 nurses with the qualification in limited prescribing of medicines, of which 500 were enrolled as Nurse Prescriber and the majority working in community care.
Profile nurses / educational requirements	
• **Recognised titles**	The titles for nurses performing nursing consultations are Registered Nurse, Public Health Nurse, Midwife and Nurse prescriber. Advanced practice nursing roles have been developed over the last 15 years, but to date, there are no legislative and regulatory mechanisms or protected titles in place for nurses in these advanced roles.
• **Formal competencies profile**	No formal competency profiles are in place. However, the universities of applied sciences have jointly worked on the creation of a competency profile for nurses and nurse practitioners.
• **Educational requirements / Specific training programs**	**Registered Nurses have to fulfil the following requirements:** - Bachelor in Health Care (3.5 years, 210 ECTS Credits) - Licensed as a Registered Nurse.

Characteristics of NLC	Notes
	Public Health Nurses have to fulfil the following requirements: - Bachelor in Health Care (3.5 years, 210 ECTS Credits) + 0.5 year specialization for public health (30 ECTS Credits). - Licensed as a Registered Nurse and as a Public Health Nurse. **Midwives have to fulfil the following requirements:** - Bachelor in Health Care (3.5 years, 210 ECTS Credits) + 1 year specialization as a midwife (60 ECTS Credits). - Licensed as a Registered Nurse and as a Midwife. **Nurse Prescribers have to fulfil the following requirements:** [236] - Additional education controlled by a governmental decree of 45 ECTS credits. After completing thistraining, nurses can apply for a special qualification in limited prescribing of medicines from the National Supervisory Authority for Welfare and Health. - Applicants needs to be Registered Nurses. - Minimally three years of experience in a prescription-related field within the last 5 years. Master-educated Nurse Practitioners work often in management roles, rather than in direct clinical practice. To start the Master in Health Care (1.5 years, 90 ECTS Credits), nurses need to have at least 2 years working experience.
Nurses' autonomy	
• **Nurses' authority to perform clinical tasks (prescriptions, diagnosis, order tests, treatment, discharge, referral)**	The level of autonomous practice for all nurses is high compared to other countries. Registered Nurses, Public Health Nurses and Midwives perform independent consultations, although there are many different job descriptions depending on the setting in which they work . - In community care, nurses most often are the first point of contact. They cannot perform medical diagnosis (as this is limited to physicians according to the Finnish Health Care Professionals Act), but they can perform a health care assessment and start treatment based on their expertise, their education and the patient's needs. They can also discharge patients independently and refer them to other healthcare professionals.[237] - Nurses employed in a hospital are doing their consultations mostly prior to, or after a physicians' consultation and in a more dependent way than in community care. Tasks can be delegated from a physician to a nurse if the physician approves the nurse to have the competence to perform this task (e.g.: pacemaker follow-up, placement of a deep venous catheter, …). Task delegation needs to be documented in a written agreement and be signed by both parties. The limited right of nurses prescribe medication was included in the Finnish law in 2010, mainly driven by a lack of physicians and as measure to improve the patient's care process. In order to be allowed to prescribe, nurses need to obtain "the special qualification in limited prescribing of medicines" and there needs to be a written order specifying the medicines that the nurse can and cannot prescribe. The written order needs to be issued by the physician in charge of the health care unit where the nurse is employed. This means that the nurse's limited right to prescribe medication is always site-specific based on the organisational needs.[236]
Legislative framework	
• **Regulation (national, regional, organisation)**	In Finland, there are 21 well-being services counties, which are self-governing public bodies with the responsibility of organising healthcare and social welfare.[238] There is minimal legislation and there are minimal orders on ministry level, but there remains a large freedom to work within this legislation.

Characteristics of NLC	Notes
• **Governance and professional organisations**	The ***Finnish Nurses Association*** is a professional nursing organisation, providing professional support to the nursing field from research to work: they influence nursing education and promote nurses' role in the workplace and society.[236] The Social Insurance Institution of Finland, ***Kela***, organises the family health care system in which nurses have an important role by performing annual consultations for children and their parents, as described above.[234]
Financing structures	
• **Relevant financial regulations**	All nurses are working in a salary-based model. The salaries of Registered Nurses, Public Health Nurses and Midwives are similar. Nursing' consultations in primary health care are classified under free public health care services.[213] Nurses need to register their activities performed during a nursing consultation in a registration system. The wellbeing service- counties have freedom to choose their own registration systems, but there are requirements for the data to be coherent and to be accumulated to national statistical system (e.g.: the reasons for visits of patients and the care provided).

Context factors influencing the implementation of nursing consultations in Finland, according to the context domains of the CICI-framework

Context factor	Notes
Geographical	For many years, Finland was characterised by a decentralised health care system, which allowed adapting to the needs of a geographically dispersed population. However, the system was heavily criticised for producing inequalities and inefficiencies. Geographical barriers, together with financial reasons and long waiting times contribute to the highly reported unmet needs for medical care (5 %), which are high compared to the EU average (2 %). The criticisms led to a major health care reform: from January 2023, 21 well-being services counties and Helsinki City are now responsible for the organisation of healthcare and social welfare. Further expansion of the role of nurses in primary care, may improve access.[238]
Epidemiological	In 2020, the life expectancy in Finland was 82.2 years, which is higher than the EU average (80.6 years). Between 2000 and 2020, the life expectancy increased by more than four years, and, together with Denmark, Finland is the only country in Europe where the life expectance in 2020 increased despite the COVID-19 pandemic. The mortality rates for COVID-19 was significant lower than in other EU countries (185 per million population compared with 1 590 per million population). Ischemic heart disease, Alzheimer's disease, stroke and lung cancer caused the highest mortality in 2020. Mortality rates for ischemic heart disease, stroke and lung cancer decreased since 2000. Mortality rates of Alzheimer's disease increased, and is the highest of all EU countries, but this is partly due to improvements in diagnosis. A great proportion of the population reported to have at least one chronic condition (49 %), compared with 36 % in the EU. Deaths attributed to behavioural risk factors is lower compared to the EU average. Deaths attributed to unhealthy diet (18 %), excessive alcohol use (5 %) and low physical activity is close to the EU average. Deaths attributed to tobacco use (13 %) and air pollution (1 %) is significant lower than the EU average. There are large inequalities in behavioural risk factors, life expectancy and reports of being in good health between different socio-economic groups (higher versus lower educated and higher versus lower income).[238]
Socio-economic	In 2019, Finland spent € 3 153 per capita on health (9.2 % of GDP). Outpatient care (39 %) is the largest category of health spending (24 %), followed by inpatient care and long-term care (17 %).[238] The most recent data available on health personnel dates back to 2014. In 2014, the ratio of nurses was 14.3 per 1 000 population (EU-average of 8.9) where the ratio of doctors was 3.2 per 1 000 population (EU-average of 3.8). More recent data on education showed a further increase in graduated nurses.[238] Historically, nurses have a broad autonomy in Finland as compared to other countries. Over the past years,

	their role expanded to consultations for acute and chronic health conditions, outpatient consultations, care coordination, prescribing and advanced roles in operating theatres, making it an attractive profession. *(Personal communication)* In 2021 51% of the primary health care outpatient visits were taken care by RNs, and 49% by physicians. Finnish health and social services are very much nurse-led and dependent on the nursing workforce. In almost half of the cases the RN did not consult the physician at all (according to 2019 statistics). In less than 30% of the cases the RN consulted the physician and in little more than 20% of the cases the RN referred the patient to the physician. Despite the high ratio of nurses, there is a predicted shortage of nurses by 2025. Increasing the number of students and retain actual nursing staff is necessary. This will be needed to define a clear division of labour between different professions, supporting citizens to stay at home for as long as possible, using e-health applications, and rethinking current service chains and ways of working.[195] For optimal workforce planning, there is a need to collect data to learn which healthcare professionals a patient consults and for which need, so that it can be defined which healthcare professionals are needed to address a patient's needs. *(Personal communication)*
Socio-cultural	Because of the long tradition of nurses performing nursing consultations, the Finnish population is familiar with nurses having an autonomous and independent role. However, when new roles are implemented, like the Nurse Prescriber, it needs to be very clear where it will differ from the regular nursing tasks. A clear role description, highlighting new authorities and requirements, is essential for the implementation of a new role.[239] *(Personal communication)* Further investment in the attractiveness of the nursing profession is necessary. The education needed to become a Public Health Nurse or Midwife requires an investment of 3.5-4.5 years. It was indicated that it would make the profession more attractive if the education would be at academic level. *(Personal communication)* Nurses are an essential part of the reforms that are needed to shorten waiting lists. Master-educated advanced practice nurses could play a role in offering autonomous nursing consultations to patients in a holistic and cost-effective way. Therefore, it is deemed necessary to think about the requirements for implementing those master-educated advanced practice nurses in clinical practice. *(Personal communication)*
Political	To implement new training or education for nurses, a clear curriculum endorsed by all stakeholders proved to be successful. The implementation of the training for becoming a Nurse Prescriber was set up with agreement of the government, employers and education institutions. In contrast, the curriculum for the master to become a Nurse Practitioner was not agreed with all institutions. Although the training for Nurse Practitioner started earlier than training for Nurse Prescriber, the implementation of the Nurse Practitioner-role stays limited until now. To facilitate the implementation of the advanced practice role, the development of a competence profile started 5 years ago. However, until now, there is no clear agreement. *(Personal communication)* It is essential to demonstrate on which outcomes nurses can have an impact. These data could support the organisation of care according to patient needs. *(Personal communication)* In 2014, an evaluation of the introduction of new nursing roles showed that patients felt an improvement in access to care and continuity of care. They received more counselling, which improved their knowledge and self-care. The majority of patients had positive perceptions regarding task shifting from physicians to nurses.[195] According to experts, representation of nurses in management and policy also facilitates the advancement of nursing roles. *(Personal communication)* Professional nursing associations play an important role in advocating for the nursing profession, and in giving advice on how nursing should evolve. *(Personal communication)* An Advanced Practice Nursing-work group of the Finnish Nurses Association gave the recommendations about the development of new roles for nurses[240]: - The titles of nurses working at various levels of practice must be standardised, their job descriptions need to be specified and the legal changes need to be determined. - Education must be developed based on the expertise required for advanced roles. - The number of nurses working in advanced roles must meet the health needs of the population. - The remuneration for advanced roles must be progressive according to the level of practice.

	- The effectiveness of advanced roles must be evaluated and monitored.
Legal	Ensuring that nurses have enough autonomy and authority is crucial for them to work to their full scope of practice. Giving nurses the possibility to prescribe medication broadened their autonomy and proofs to be of great added value in view of efficiency of the health care organisation. *(Personal communication)* Nurses need to register their activities in a nation-wide registration system. This gives visibility to the work nurses are performing. Additionally, it is of great importance to enable workforce planning according to patient needs. *(Personal communication)*

APPENDIX 3. ANNEX TO CHAPTER 5

Appendix 3.1. Descriptive statistics of respondents who provide nursing consultations

	Belgium (n = 638)	Flanders (n = 428)	Wallonia (n = 148)	Brussels (n = 62)
Gender, n (%)				
Male	86 (13.5)	66 (15.4)	14 (9.5)	6 (9.7)
Female	552 (86.5)	362 (84.6)	134 (90.5)	56 (90.3)
Age, n (%)				
25 – 35 years	167 (26.2)	124 (29.0)	26 (17.6)	17 (27.4)
36 – 45 years	186 (29.2)	123 (28.1)	45 (30.4)	18 (29.0)
46 – 55 years	170 (26.6)	106 (24.8)	54 (36.5)	10 (16.1)
56 – 65 years	115 (18.0)	75 (17.1)	23 (15.5)	17 (27.4)
Mean (SD)	44.10 (10.34)	43.40 (10.42)	45.93 (9.54)	44.53 (11.21)
Nursing degree, n (%)				
Graduate degree in nursing	65 (10.2)	36 (8.4)	20 (13.7)	9 (14.5)
Bachelor degree in nursing	539 (84.5)[p]	364 (85.0)	125 (84.5)	50 (80.6)
Bachelor degree in midwifery	31 (4.9)	28 (6.5)	2 (1.4)	1 (1.6)
Other	7 (1.1)	1 (0.2)	4 (2.7)	2 (3.2)
Additional degree, n (%)				
Postgraduate[q]	221 (34.6)	217 (50.7)	0 (0.0)	4 (6.5)
Continuous/specialised education[r]	91 (14.3)	0 (0.0)	64 (43.8)	27 (50.0)
Professional qualification[r]	74 (11.6)	0 (0.0)	57 (39.0)	17 (31.5)

[p] Of which five respondents (0.8%) also have a graduate degree in nursing and two respondents (0.3%) have a bachelor degree from France or the UK.

[q] Flemish-oriented education

[r] French-oriented education

	Belgium (n = 638)	Flanders (n = 428)	Wallonia (n = 148)	Brussels (n = 62)
Bachelor	176 (27.6)	108 (25.2)	48 (32.4)	20 (37.0)
Master	140 (22.0)	102 (23.8)	22 (15.1)	16 (25.8)
PhD	7 (1.1)	7 (1.6)	0 (0.0)	0 (0.0)
No additional degree	84 (13.2)	64 (15.0)	15 (10.3)	5 (8.1)
Other	58 (9.1)	37 (8.6)	15 (10.3)	6 (9.7)
Degree of additional postgraduate, n (%)				
Acute mental healthcare	1 (0.2)	1 (0.2)	0 (0.0)	0 (0.0)
Cardiology	8 (1.3)	8 (1.9)	0 (0.0)	0 (0.0)
Diabetes educator	49 (7.7)	48 (11.2)	0 (0.0)	1 (1.6)
Primary care	3 (0.5)	3 (0.7)	0 (0.0)	0 (0.0)
Mental healthcare	2 (0.3)	2 (0.5)	0 (0.0)	0 (0.0)
Geriatrics	9 (1.4)	9 (2.1)	0 (0.0)	0 (0.0)
Neurological care	2 (0.3)	2 (0.5)	0 (0.0)	0 (0.0)
Oncology	40 (6.3)	39 (9.1)	0 (0.0)	1 (1.6)
Palliative care	16 (2.5)	16 (3.7)	0 (0.0)	0 (0.0)
Paediatrics and neonatology	9 (1.4)	9 (2.1)	0 (0.0)	0 (0.0)
Perioperative care	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Pain	7 (1.1)	7 (1.6)	0 (0.0)	0 (0.0)
Radiology	2 (0.3)	2 (0.5)	0 (0.0)	0 (0.0)
Intensive and emergency care	11 (1.7)	10 (2.3)	0 (0.0)	1 (1.6)
Ostomy therapy and/or wound care	63 (9.9)	62 (14.5)	0 (0.0)	1 (1.6)
Nurse in the GP practice	32 (5.0)	32 (7.5)	0 (0.0)	0 (0.0)
Nephrology	4 (0.6)	4 (0.9)	0 (0.0)	0 (0.0)
Heart failure	6 (0.9)	6 (1.4)	0 (0.0)	0 (0.0)
Neurology	1 (0.2)	1 (0.2)	0 (0.0)	0 (0.0)

	Belgium (n = 638)	Flanders (n = 428)	Wallonia (n = 148)	Brussels (n = 62)
Other	28 (4.4)	28 (6.5)	0 (0.0)	0 (0.0)
Continuous/specialised education, n (%)				
Healthcare management	28 (4.4)	0 (0.0)	21 (14.4)	7 (13.0)
Residential care facility management	1 (0.2)	0 (0.0)	1 (0.7)	0 (0.0)
Dementia	4 (0.6)	0 (0.0)	3 (2.1)	1 (1.9)
Endoscopy	2 (0.3)	0 (0.0)	2 (1.4)	0 (0.0)
Diabetes education	18 (2.8)	0 (0.0)	15 (10.3)	3 (5.6)
Cosmetic nursing	3 (0.5)	0 (0.0)	2 (1.4)	1 (1.9)
Sterilisation of medical and surgical equipment	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Other	37 (5.8)	0 (0.0)	16 (11.0)	11 (20.4)
Professional qualification, n (%)				
Pain	13 (2.0)	0 (0.0)	10 (6.8)	3 (5.6)
Diabetes	22 (3.4)	0 (0.0)	20 (13.7)	2 (3.7)
Geriatrics	2 (0.3)	0 (0.0)	2 (1.4)	0 (0.0)
Mental healthcare	1 (0.2)	0 (0.0)	0 (0.0)	1 (1.9)
Wound care	27 (4.2)	0 (0.0)	20 (13.7)	7 (13.0)
Palliative care	11 (1.7)	0 (0.0)	9 (6.2)	2 (3.7)
Ostomy care	12 (1.9)	0 (0.0)	7 (4.8)	5 (9.3)
Other	7 (1.1)	0 (0.0)	7 (4.8)	0 (0.0)
Degree of additional bachelor, n (%)				
Healthcare management	22 (3.4)	22 (5.1)	0 (0.0)	0 (0.0)
Intensive and emergency care	42 (6.6)	30 (7.0)	9 (6.2)	3 (5.6)
Paediatrics and neonatology	19 (3.0)	14 (3.3)	3 (2.1)	2 (3.7)
Geriatrics	9 (1.4)	6 (1.4)	2 (1.4)	1 (1.9)
Oncology	62 (9.2)	27 (6.3)	23 (15.5)	12 (22.2)

	Belgium (n = 638)	Flanders (n = 428)	Wallonia (n = 148)	Brussels (n = 62)
Mental healthcare	4 (0.6)	2 (0.5)	2 (1.4)	0 (0.0)
Pneumology	3 (0.5)	3 (0.7)	0 (0.0)	0 (0.0)
Community health	7 (1.1)	0 (0.0)	5 (3.4)	2 (3.7)
Perioperative care	3 (0.5)	0 (0.0)	3 (2.1)	0 (0.0)
Ostomy therapy and/or wound care	2 (0.3)	0 (0.0)	1 (0.7)	1 (1.9)
Other	17 (2.7)	14 (3.3)	1 (0.7)	2 (3.7)
Degree of additional master, n (%)				
Health education and promotion	8 (1.3)	8 (1.9)	0 (0.0)	0 (0.0)
Healthcare management and policy	14 (2.2)	7 (1.6)	4 (2.7)	3 (5.6)
Nursing and midwifery	76 (11.9)	71 (16.6)	2 (1.4)	3 (5.6)
Medical-social sciences	11 (1.7)	11 (2.6)	0 (0.0)	0 (0.0)
Health and therapeutic education	3 (0.5)	0 (0.0)	1 (0.7)	2 (3.7)
Tropical medicine and international health	1 (0.2)	0 (0.0)	0 (0.0)	1 (1.9)
Community health, health promotion	5 (0.8)	0 (0.0)	3 (2.1)	2 (3.7)
Public health	16 (2.5)	0 (0.0)	13 (8.9)	3 (5.6)
Other	8 (2.0)	8 (1.9)	2 (1.4)	3 (5.6)
Ongoing additional education, n (%)				
Postgraduate	16 (2.5)	16 (3.7)	0 (0.0)	0 (0.0)
Continuous/specialised education	15 (2.4)	0 (0.0)	10 (6.8)	5 (9.3)
Professional qualification	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Bachelor	3 (0.5)	2 (0.5)	0 (0.0)	0 (0.0)
Master	24 (3.8)	13 (3.0)	4 (2.7)	7 (13.0)
PhD	6 (0.9)	5 (1.2)	0 (0.0)	1 (1.6)
Other	22 (3.4)	14 (3.3)	6 (4.1)	2 (3.7)
Provinces				

	Belgium (n = 638)	Flanders (n = 428)	Wallonia (n = 148)	Brussels (n = 62)
Antwerp	132 (20.7)	132 (30.8)	0 (0.0)	0 (0.0)
Brussels	62 (9.7)	0 (0.0)	0 (0.0)	62 (100.0)
Hainaut	45 (7.1)	0 (0.0)	45 (30.5)	0 (0.0)
Limburg	50 (7.8)	50 (11.7)	0 (0.0)	0 (0.0)
Liège	46 (7.2)	0 (0.0)	46 (31.1)	0 (0.0)
Luxembourg	23 (3.6)	0 (0.0)	23 (15.5)	0 (0.0)
Namur	19 (3.0)	0 (0.0)	19 (12.8)	0 (0.0)
East Flanders	104 (16.3)	104 (24.3)	0 (0.0)	0 (0.0)
Flemish Brabant	79 (12.4)	79 (18.5)	0 (0.0)	0 (0.0)
Walloon Brabant	15 (2.4)	0 (0.0)	15 (10.1)	0 (0.0)
West Flanders	63 (9.9)	63 (14.7)	0 (0.0)	0 (0.0)
Organisation, n (%)				
General hospital	269 (42.2)	170 (39.7)	86 (58.1)	13 (21.0)
University hospital	169 (26.5)	109 (25.5)	21 (14.3)	39 (62.9)
Psychiatric hospital	8 (1.3)	6 (1.4)	2 (1.4)	0 (0.0)
Rehabilitation centre	7 (1.1)	4 (0.9)	3 (2.0)	0 (0.0)
GP practice	51 (8.0)	50 (11.7)	0 (0.0)	1 (1.6)
Community health centre	58 (9.1)	37 (8.6)	14 (9.5)	7 (11.3)
Home care organisation	45 (7.1)	34 (7.9)	11 (7.4)	0 (0.0)
Residential care facility	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Occupational services	23 (3.6)	14 (3.3)	8 (5.4)	1 (1.6)
Other	8 (3.6)	4 (0.9)	11 (1.7)	1 (1.6)
Function title, n (%)				
Advanced practice nurse	107 (16.8)	85 (19.9)	12 (8.1)	10 (16.1)
Nurse consultant	162 (25.4)	133 (31.1)	20 (13.5)	9 (14.5)

	Belgium (n = 638)	Flanders (n = 428)	Wallonia (n = 148)	Brussels (n = 62)
Specialised nurse with professional title	107 (16.8)	36 (8.4)	55 (37.2)	16 (25.8)
Specialised nurse without professional title	73 (11.4)	54 (12.6)	14 (9.5)	5 (8.1)
Nurse	51 (8.0)	38 (8.9)	8 (5.4)	5 (8.1)
Oncology nurse	42 (6.6)	14 (3.3)	18 (12.2)	10 (16.1)
Occupational health nurse	15 (2.4)	10 (2.3)	4 (2.7)	1 (1.6)
Head nurse	8 (1.3)	3 (0.7)	4 (2.7)	1 (1.6)
GP nurse	28 (4.4)	28 (6.5)	0 (0.0)	0 (0.0)
Midwife	8 (1.3)	7 (1.6)	1 (0.7)	0 (0.0)
Other	37 (5.8)	20 (4.7)	12 (8.1)	5 (8.1)
Specialisation domain				
Anaesthesia	11 (1.7)	8 (1.9)	2 (1.4)	1 (1.6)
Burn care	18 (2.8)	16 (3.7)	2 (1.4)	0 (0.0)
Cardiology	44 (6.9)	33 (7.7)	8 (5.4)	3 (4.8)
Cannula care	5 (0.8)	3 (0.7)	2 (1.4)	0 (0.0)
Diabetes	121 (19.0)	75 (17.5)	42 (28.4)	4 (6.5)
Primary care	135 (21.2)	105 (24.5)	21 (14.2)	9 (14.5)
Endocrinology	10 (1.6)	7 (1.6)	3 (2.0)	0 (0.0)
Mental health and addition care	39 (6.1)	26 (6.1)	10 (6.8)	3 (4.8)
Surgery	37 (5.8)	22 (5.1)	7 (4.7)	8 (12.9)
Haematology	27 (4.2)	12 (2.8)	8 (5.4)	7 (11.3)
Intravenous catheter care	13 (2.0)	5 (1.2)	6 (4.1)	2 (3.2)
Infectious diseases	12 (1.9)	6 (1.4)	2 (1.4)	4 (6.5)
Paediatrics	28 (4.4)	18 (4.2)	4 (2.7)	6 (9.7)
Pneumology	40 (6.3)	28 (6.5)	8 (5.4)	4 (6.5)
Nephrology	29 (4.5)	17 (4.0)	9 (6.1)	3 (4.8)
Neonatology	5 (0.8)	3 (0.7)	2 (0.7)	1 (1.6)

	Belgium (n = 638)	Flanders (n = 428)	Wallonia (n = 148)	Brussels (n = 62)
Neurology	22 (3.4)	11 (2.6)	8 (5.4)	3 (4.8)
Oncology	126 (19.7)	77 (18.0)	29 (19.6)	20 (32.3)
Geriatrics	49 (7.7)	32 (7.5)	14 (9.5)	3 (4.8)
Palliative care	35 (5.5)	20 (4.7)	13 (8.8)	2 (3.2)
Pain	31 (4.9)	19 (4.4)	10 (6.8)	2 (3.2)
Urology	18 (2.8)	11 (2.6)	3 (2.0)	4 (6.5)
Rehabilitation	2 (0.3)	2 (0.5)	0 (0.0)	0 (0.0)
Ostomy care	48 (7.5)	29 (6.8)	11 (7.4)	8 (12.9)
Wound care	136 (21.3)	93 (21.7)	33 (22.3)	10 (16.1)
Multiple sclerosis	3 (0.5)	1 (0.2)	1 (0.7)	1 (1.6)
Sleep and wake disorders	5 (0.8)	0 (0.0)	5 (3.4)	0 (0.0)
Gynaecology and fertility	14 (2.2)	13 (3.0)	0 (0.0)	1 (1.6)
Occupational care	17 (2.7)	11 (2.6)	6 (4.1)	0 (0.0)
Hepato-gastroenterology	21 (3.3)	19 (4.4)	2 (1.4)	0 (0.0)
Orthopaedics	2 (0.3)	2 (0.5)	0 (0.0)	0 (0.0)
Rheumatology	6 (0.9)	6 (1.4)	0 (0.0)	0 (0.0)
Transplant care	7 (1.1)	4 (0.9)	2 (1.4)	1 (1.6)
Other	18 (2.8)	9 (2.1)	4 (2.7)	5 (8.1)
Number of years performing NCs, mean (SD)				
Range	7.90 (7.49)	7.15 (6.96)	9.60 (8.12)	9.03 (8.69)
	0 - 41	0 - 41	0 - 41	1 - 40
Number of years expertise in specialisation domain, mean (SD)	11.59 (9.10)	11.47 (9.30)	11.45 (8.27)	12.82 (9.61)
Range	0 - 41	0 - 41	0 - 39	0 - 39
Employment rate, n (%)				
< 20%	68 (10.7)	44 (10.3)	19 (12.8)	5 (8.1)

	Belgium (n = 638)	Flanders (n = 428)	Wallonia (n = 148)	Brussels (n = 62)
20 – 39%	75 (11.8)	50 (11.7)	17 (11.5)	8 (12.9)
40 – 59%	120 (18.9)	87 (20.4)	24 (16.3)	9 (14.5)
60 – 79%	86 (13.5)	66 (15.5)	10 (6.8)	10 (16.1)
80 – 99%	122 (19.2)	86 (20.1)	25 (17.0)	11 (17.7)
100%	165 (25.9)	94 (22.0)	52 (35.4)	19 (30.6)
Median (SD)	72.50 (31.10)	70.00 (30.08)	80.00 (34.00)	76.50 (30.90)
Functional/daily supervisor, n (%)				
Chief nurse officer (CNO)	65 (10.2)	21 (4.9)	30 (20.3)	14 (22.6)
Care manager/staff	145 (22.7)	98 (22.9)	34 (23.0)	13 (21.0)
Chief physician	37 (5.8)	25 (5.8)	7 (4.7)	5 (8.1)
Physician-specialist	152 (23.8)	105 (24.5)	30 (20.3)	17 (27.4)
GP	62 (9.7)	60 (14.0)	1 (0.7)	1 (1.6)
Advanced practice nurse	32 (5.0)	30 (7.0)	0 (0.0)	2 (3.2)
Chief nurse	175 (27.4)	105 (24.5)	60 (40.5)	10 (16.1)
No functional/daily supervisor	60 (9.4)	40 (9.3)	13 (8.8)	7 (11.3)
Coordinator	19 (3.0)	15 (3.5)	2 (1.4)	2 (3.2)
Don’t know	3 (0.5)	2 (0.5)	0 (0.0)	1 (1.6)
Other	9 (1.4)	7 (1.6)	1 (0.7)	1 (1.6)
IFIC function classification, n (%)				
IFIC 14	97 (15.2)	55 (12.9)	37 (25.2)	5 (8.1)
IFIC 15	133 (20.9)	92 (21.5)	13 (8.8)	28 (45.2)
IFIC 16	157 (24.7)	108 (25.3)	33 (22.4)	16 (25.8)
IFIC 17	41 (6.4)	35 (8.2)	3 (2.0)	3 (4.8)

	Belgium (n = 638)	Flanders (n = 428)	Wallonia (n = 148)	Brussels (n = 62)
IFIC 18	2 (0.3)[s]	2 (0.5)	0 (0.0)	0 (0.0)
Combination of IFIC function classifications	7 (1.1)	1 (0.2)	6 (4.1)	0 (0.0)
Did not joint IFIC function classification	88 (13.8)	63 (14.7)	20 (13.6)	5 (8.1)
Don't know	82 (12.9)	48 (11.2)	29 (19.7)	5 (8.1)
Not applicable	16 (2.5)	12 (2.8)	4 (2.7)	0 (0.0)
Other	13 (2.0)	11 (2.6)	2 (1.4)	0 (0.0)
Level of wage if answered 'don't know' or "did not join IFIC classification", n (%)				
Nurse	120 (3.1)	82 (19.2)	34 (23.0)	4 (6.5)
Chief nurse	18 (2.8)	8 (1.9)	6 (4.1)	4 (6.5)
Care manager/staff	6 (0.9)	2 (0.5)	4 (2.7)	0 (0.0)
Don't know	6 (0.9)	3 (0.7)	2 (1.4)	1 (1.6)
Other	20 (3.1)	16 (3.7)	3 (2.0)	1 (1.6)
Origin of financing, n (%)				
Hospital	360 (56.4)	323 (54.2)	84 (56.8)	44 (71.0)
GP practice	47 (7.4)	45 (10.5)	1 (0.7)	1 (1.6)
Community health centre	58 (9.1)	37 (8.6)	14 (9.5)	7 (11.3)
Home care organisation	46 (7.2)	35 (8.2)	11 (7.4)	0 (0.0)
Residential care facility	2 (0.3)	2 (0.5)	0 (0.0)	0 (0.0)
Research or project funding	23 (3.6)	16 (3.7)	4 (2.7)	3 (4.8)
Chief physician or physician-specialist(s)	42 (6.6)	38 (8.9)	4 (2.7)	0 (0.0)
Convention	50 (7.8)	13 (3.0)	30 (20.3)	7 (11.3)
Cancer foundation	8 (1.3)	6 (1.4)	1 (0.7)	1 (1.6)
Don't know	26 (4.1)	18 (4.2)	7 (4.7)	1 (1.6)

[s] These are two advanced practice nurses working in a rehabilitation center.

	Belgium (n = 638)	Flanders (n = 428)	Wallonia (n = 148)	Brussels (n = 62)
Other	42 (6.6)	29 (6.8)	12 (8.1)	1 (1.6)
Billing of NC activities, n (%)				
Yes	204 (32.0)	148 (34.6)	35 (23.6)	21 (33.9)
No	367 (57.5)	227 (53.0)	101 (68.2)	39 (62.9)
Don’t know	67 (10.5)	53 (12.4)	12 (8.1)	2 (3.2)
If yes, method of billing, n (%)				
Directly to the patient	31 (4.9)	12 (2.8)	10 (6.8)	9 (14.5)
Third-party payment	70 (11.0)	52 (12.1)	12 (8.1)	6 (9.7)
Convention	8 (1.3)	5 (1.2)	2 (1.4)	1 (1.6)
NIHDI number of the physician	55 (8.6)	48 (11.2)	2 (1.4)	5 (8.1)
Don't know	18 (2.8)	13 (3.0)	3 (2.0)	2 (3.2)
Third-party payment without co-payment for patient	20 (3.1)	18 (4.2)	2 (1.4)	0 (0.0)
Own NIDHI number	6 (0.9)	5 (1.2)	0 (0.0)	1 (1.6)
Other	19 (3.0)	14 (3.3)	5 (3.4)	0 (0.0)
Use of nomenclature codes for billing, n (%)				
Yes	116 (18.2)	88 (20.6)	17 (11.5)	11 (17.7)
No	47 (7.4)	34 (7.9)	9 (6.1)	4 (6.5)
Don’t know	41 (6.4)	26 (6.1)	9 (6.1)	6 (9.7)

Appendix 3.2. Context of nursing consultations

	Belgium (n = 638)	Flanders (n = 428)	Wallonia (n = 148)	Brussels (n = 62)
Method of referral, n (%)				
Physician within my organisation	519 (81.3)	354 (82.7)	113 (76.4)	52 (83.9)
Nurses within my organisation	353 (55.3)	272 (63.6)	56 (37.8)	25 (40.3)
Other healthcare providers within my organisation	319 (50.0)	242 (56.5)	55 (37.2)	22 (35.5)
Multidisciplinary meeting	307 (48.1)	226 (52.8)	49 (33.1)	32 (51.6)
GP	285 (44.7)	219 (51.2)	50 (33.8)	16 (25.8)
Home care nurses	184 (28.8)	155 (36.2)	21 (14.2)	8 (12.9)
Other healthcare provider in primary care	145 (22.7)	114 (26.6)	20 (13.5)	11 (17.7)
Patient	453 (71.0)	334 (78.0)	82 (55.4)	37 (59.7)
Social service	140 (21.9)	127 (29.7)	9 (6.1)	4 (6.5)
Care path	269 (42.2)	162 (37.9)	75 (50.7)	32 (51.6)
No referrals	17 (2.7)	14 (3.3)	1 (0.7)	2 (3.2)
Don't know	1 (0.2)	0 (0.0)	1 (0.7)	0 (0.0)
Number of days NCs per week, n (%)				
< 1 day per week	60 (9.4)	32 (7.5)	22 (14.9)	6 (9.7)
1 day per week	92 (14.4)	63 (14.7)	20 (13.5)	9 (14.5)
2 days per week	94 (14.7)	79 (18.5)	11 (7.4)	4 (6.5)
3 days per week	89 (13.9)	59 (13.8)	23 (15.5)	7 (11.3)
4 days per week	68 (10.7)	42 (9.8)	14 (9.5)	12 (19.4)
5 days per week	228 (35.7)	147 (34.3)	57 (38.5)	24 (38.7)
> 5 days per week	7 (1.1)	6 (1.4)	1 (0.7)	0 (0.0)
Link between NC and medical consultation, n (%)				
Usually not linked	207 (32.4)	150 (35.0)	41 (27.7)	16 (25.8)

	Belgium (n = 638)	Flanders (n = 428)	Wallonia (n = 148)	Brussels (n = 62)
NC is usually before medical consultation	153 (24.0)	97 (22.7)	45 (30.4)	11 (17.7)
NC is usually after medical consultation	154 (24.1)	90 (21.0)	37 (25.0)	27 (43.5)
Combination	66 (10.3)	49 (11.4)	14 (9.5)	3 (4.8)
NC is usually during medical consultation	8 (1.3)	6 (1.4)	0 (0.0)	2 (3.2)
Other	50 (7.8)	36 (8.4)	11 (1.7)	3 (4.8)
Number of patients/week, median (SD)[t]				
	24.50 (96.74)	15.00 (29.96)	3.85 (2.27)	2.88 (2.05)
Number of consultations/patient, median (SD)[t]				
	10.00 (61.71)	4.00 (42.81)	2.88 (1.01)	2.88 (1.05)
Time per consultation (excluding administration and reporting), n (%)				
≤ 10 minutes	15 (2.4)	8 (1.3)	6 (0.9)	1 (0.2)
11 – 20 minutes	151 (23.7)	106 (16.6)	35 (5.5)	10 (1.6)
21 – 30 minutes	169 (26.5)	115 (18.0)	40 (6.3)	14 (2.2)
31 – 45 minutes	158 (24.8)	92 (14.4)	41 (6.4)	25 (3.9)
46 – 60 minutes	98 (15.4)	74 (11.6)	19 (3.0)	5 (0.8)
> 60 minutes	20 (3.1)	12 (1.9)	5 (0.8)	3 (0.5)
Other	27 (4.2)	21 (3.3)	2 (0.3)	4 (0.6)
How or by whom is the content of NC determined, n (%)				
Autonomously	356 (55.8)	237 (55.4)	81 (54.7)	38 (61.3)
Guideline	273 (42.8)	178 (41.6)	67 (45.3)	28 (45.2)
Care pathway	217 (34.0)	138 (32.2)	50 (33.8)	29 (46.8)
Standing order	91 (14.3)	62 (14.5)	24 (16.2)	5 (8.1)

[t] In the French survey, respondents were asked about this variable on an annual basis.

	Belgium (n = 638)	Flanders (n = 428)	Wallonia (n = 148)	Brussels (n = 62)
Medical prescription	126 (19.7)	70 (16.4)	42 (28.4)	14 (22.6)
Oral instructions from physician	346 (54.2)	243 (56.8)	76 (51.4)	27 (43.5)
Telephone instructions from physician	192 (30.1)	148 (34.6)	33 (22.3)	11 (17.7)
Multidisciplinary consultation	10 (1.6)	9 (2.1)	0 (0.0)	1 (1.6)
Combination	2 (0.3)	2 (0.5)	0 (0.0)	0 (0.0)
Don't know	2 (0.3)	1 (0.2)	1 (0.7)	0 (0.0)
Other	15 (2.4)	9 (2.1)	4 (2.7)	2 (3.2)
Level of autonomy, mean (SD)	7.59 (1.62)	7.52 (1.59)	7.67 (1.64)	7.90 (1.73)
Frequency of multidisciplinary structural patient meeting, n (%)				
Never	102 (16.0)	76 (17.8)	17 (11.5)	9 (14.5)
Daily	43 (6.7)	27 (6.3)	13 (8.8)	3 (4.8)
Multiple times/week	117 (18.3)	69 (16.1)	28 (18.9)	20 (32.3)
Weekly	203 (31.8)	141 (32.9)	41 (27.7)	21 (33.9)
Monthly	118 (18.5)	79 (18.5)	34 (23.0)	5 (8.1)
Multiple times/month	55 (8.6)	36 (8.4)	15 (10.1)	4 (6.5)
Accessibility between consultations, n (%)				
Telephone	586 (91.8)	393 (91.8)	133 (89.9)	60 (96.8)
E-correspondence (e.g., e-mail, WhatsApp, Siilo Messenger[u])	500 (78.4)	349 (81.5)	101 (68.2)	50 (80.6)
Tele- or video consultation	83 (13.0)	64 (15.0)	9 (6.1)	10 (16.1)
Walk-in	26 (4.1)	15 (3.5)	9 (6.1)	2 (3.2)
On-call service	7 (1.1)	1 (0.2)	6 (4.1)	0 (0.0)

[u] Siilo messenger is a free and secure messaging app for healthcare professionals. It allows them to communicate with each other, coordinate patient care, and discuss challenging cases.

	Belgium (n = 638)	Flanders (n = 428)	Wallonia (n = 148)	Brussels (n = 62)
Not accessible between consultations	26 (4.1)	16 (3.7)	8 (5.4)	2 (3.2)
Other	10 (1.6)	3 (0.7)	6 (4.1)	1 (1.6)
Follow-up after nursing consultation, n (%)				
One-time consultation, no follow-up	49 (7.7)	30 (7.0)	13 (8.8)	6 (9.7)
Medical follow-up, referred back when necessary	297 (46.6)	215 (50.2)	63 (42.6)	19 (30.6)
Care path or trajectory including multiple NC	336 (52.7)	236 (55.1)	69 (46.6)	31 (50.0)
Follow-up by another healthcare provider, referred back when necessary	151 (23.7)	110 (25.7)	31 (20.9)	10 (16.1)
I decide if I follow-up the patient	312 (48.9)	213 (49.8)	68 (45.9)	31 (50.0)
Follow-up via telemonitoring	88 (13.8)	59 (13.8)	25 (16.9)	4 (6.5)
If necessary or at the patient's request	25 (3.9)	15 (3.5)	9 (6.1)	1 (1.6)
Telephone or e-correspondence	14 (2.2)	10 (2.3)	4 (2.7)	0 (0.0)
Don’t know	6 (0.9)	1 (0.2)	4 (2.7)	1 (1.6)
Other	5 (0.8)	5 (1.2)	0 (0.0)	0 (0.0)

Appendix 3.3. Activities and roles during nursing consultations

	Belgium (n = 638)	Flanders (n = 428)	Wallonia (n = 148)	Brussels (n = 62)
Clinical activities, n (%)				
- Clinical examination of the patient	255 (40.0)	188 (43.9)	45 (30.4)	22 (35.5)
- Monitoring of the patient	463 (72.6)	299 (69.9)	116 (78.4)	48 (77.4)
- Perform technical acts	382 (59.9)	272 (63.6)	71 (48.0)	39 (62.9)
- Improve symptom management	368 (57.7)	252 (58.9)	81 (54.7)	35 (56.5)
- Request additional tests independently	107 (16.8)	68 (15.9)	21 (14.2)	18 (29.0)
- Request additional tests under supervision/or in consultation with physician	320 (50.2)	226 (52.8)	60 (40.5)	34 (54.8)
- Interpretation of test results	229 (35.9)	164 (38.3)	44 (29.7)	21 (33.9)
- Prescription of medication under supervision/via standing order	103 (16.1)	68 (15.9)	18 (12.2)	17 (27.4)
- Prescription of treatment under supervision/via standing order	109 (17.1)	69 (16.1)	25 (16.9)	15 (24.2)
- Home visits or visits to the patient's living environment	147 (23.0)	114 (26.6)	32 (14.2)	12 (19.4)
- Adjustment of care and/or treatment plan	347 (54.4)	234 (54.7)	82 (55.4)	31 (50.0)
Support activities, n (%)				
- Psychosocial anamnesis in preparation of medical consultation	265 (41.5)	163 (38.1)	75 (50.7)	27 (43.5)
- Psychosocial support	456 (71.5)	312 (72.9)	100 (67.6)	44 (71.0)
- Discuss medical/clinical information with patient/family	489 (76.6)	317 (74.1)	122 (82.4)	50 (80.6)
- Counselling of the patient/family to make treatment choices (shared decision making)	385 (60.3)	272 (63.6)	79 (53.4)	34 (54.8)
- Information provision as (decision-)support	532 (83.4)	364 (85.0)	118 (79.7)	50 (80.6)
Educational activities or counseling, n (%)				
- Providing information and advice to patients	624 (97.8)	419 (97.9)	144 (97.3)	61 (98.4)

	Belgium (n = 638)	Flanders (n = 428)	Wallonia (n = 148)	Brussels (n = 62)
- Providing information and advice to family and informal care providers	552 (86.5)	370 (86.4)	126 (85.1)	56 (90.3)
- Providing information and advice to other healthcare providers involved in the patient's care	419 (65.7)	290 (67.8)	90 (60.8)	39 (62.9)
- Encourage patients to make behavioural changes	522 (81.8)	358 (83.6)	122 (82.4)	42 (67.7)
- Teaching patients how to cope with the consequences of illness and/or treatment	508 (79.6)	330 (77.1)	127 (85.8)	51 (82.3)
- Teaching certain techniques	389 (61.0)	256 (59.8)	91 (61.5)	42 (67.7)
- Promotion of therapy adherence	508 (79.6)	346 (80.8)	155 (77.7)	47 (75.8)
Coordination activities, n (%)				
- Referral of patients to other healthcare providers	537 (84.2)	358 (83.6)	122 (82.4)	57 (91.9)
- Triage of patients in a specific care process	184 (28.8)	134 (31.3)	27 (18.2)	23 (37.1)
- Integration of patient information in medical record	538 (84.3)	373 (87.1)	113 (76.4)	52 (83.9)
- Reporting on treatment and care to other healthcare providers	508 (79.6)	351 (82.0)	112 (75.7)	45 (72.6)
- Establishing indicators to measure the outcomes of the nursing consultation	138 (21.6)	92 (21.5)	31 (20.9)	15 (24.2)
- Evaluation of the care and/or treatment plan	382 (59.9)	263 (61.4)	88 (59.5)	31 (50.0)
- Coordinating the evaluation of the nursing consultation	196 (30.7)	150 (35.0)	28 (18.9)	18 (29.0)
- Coordinating healthcare services around the patient	359 (56.3)	235 (54.9)	77 (52.0)	47 (75.8)
- Coordinating patient discharge management	184 (28.8)	104 (24.3)	54 (36.5)	26 (41.9)

Appendix 3.4. Percentage of respondents performing clinical activities, stratified by setting and job title

		Clinical examination	Patient monitoring	Technical acts	Symptom management	Request additional tests independently	Request additional tests under supervision/or in consultation with physician	Interpretation of test results	Prescription of medication under supervision standing order	Prescription of treatment under supervision standing order	Home visits	Adjustment of care and/or treatment plan
Belgium	General hospital	37.6%	42.1%	35.3%	43.8%	34.6%	49.7%	42.8%	33.0%	46.8%	10.9%	39.2%
	University hospital	22.7%	27.2%	24.1%	32.6%	37.4%	28.1%	27.6%	28.2%	27.5%	9.5%	27.1%
	Primary care	34.1%	24.6%	34.8%	19.3%	21.5%	19.4%	23.6%	36.9%	21.1%	72.1%	29.7%
	Other	5.5%	6.0%	5.8%	4.3%	6.5%	2.8%	5.7%	1.9%	4.6%	7.5%	4.0%
	APN	18.4%	16.8%	15.4%	17.9%	26.2%	19.1%	24.5%	21.4%	22.0%	9.5%	19.0%
	Nurse consultant	25.1%	22.5%	25.4%	27.4%	19.6%	23.1%	18.3%	18.4%	23.9%	19.7%	24.5%
	Specialised nurse	31.0%	38.7%	33.8%	41.0%	28.0%	35.3%	36.2%	30.1%	38.5%	32.7%	36.3%
	Other	25.5%	22.0%	25.4%	13.6%	26.2%	22.5%	21.0%	30.1%	15.6%	38.1%	20.2%
Flanders	General hospital	36.2%	37.1%	32.4%	40.9%	33.8%	46.0%	40.9%	35.3%	40.6%	7.9%	35.5%
	University hospital	20.7%	26.4%	21.3%	31.7%	30.9%	25.7%	23.8%	17.6%	26.1%	9.6%	26.1%
	Primary care	38.3%	31.1%	20.4%	23.8%	29.4%	25.7%	29.3%	47.1%	29.0%	77.2%	35.0%
	Other	4.8%	5.4%	5.5%	3.6%	5.9%	2.7%	6.1%	0.0%	4.3%	5.3%	3.4%
	APN	20.7%	20.1%	16.9%	21.8%	32.4%	22.1%	27.4%	23.5%	27.5%	9.6%	23.5%
	Nurse consultant	30.3%	30.4%	30.1%	35.7%	23.5%	30.5%	22.0%	22.1%	31.9%	21.9%	30.8%
	Specialised nurse	24.5%	25.1%	25.4%	27.8%	14.7%	21.2%	26.8%	17.6%	20.3%	29.8%	25.6%
	Other	24.5%	24.4%	27.6%	14.7%	29.4%	26.1%	23.8%	36.8%	20.3%	38.6%	20.1%
Wallonia	General hospital	51.1%	62.9%	52.1%	63.0%	47.6%	76.7%	61.4%	38.9%	80.0%	28.6%	59.8%
	University hospital	15.6%	15.5%	18.3%	19.8%	28.6%	15.0%	22.7%	27.8%	4.0%	4.8%	15.9%
	Primary care	22.2%	12.9%	21.1%	11.1%	9.5%	3.3%	9.1%	22.2%	8.0%	47.6%	18.3%
	Other	11.1%	8.6%	8.5%	6.2%	14.3%	5.0%	6.8%	11.1%	8.0%	19.0%	6.1%
	APN	11.1%	8.6%	5.6%	4.9%	9.5%	8.3%	11.4%	16.7%	8.0%	4.8%	4.9%
	Nurse consultant	11.1%	7.8%	15.5%	11.1%	14.3%	3.3%	6.8%	11.1%	8.0%	9.5%	9.8%
	Specialised nurse	46.7%	67.2%	59.2%	75.3%	57.1%	76.7%	70.5%	55.6%	76.0%	52.4%	67.1%
	Other	31.1%	16.4%	19.7%	8.6%	19.0%	11.7%	11.4%	16.7%	8.0%	33.3%	18.3%
Bru[illegible]	General hospital	22.7%	22.9%	25.6%	20.0%	22.2%	26.5%	19.0%	17.6%	20.0%	8.3%	12.9%
	University hospital	54.5%	60.4%	53.8%	68.6%	72.2%	67.6%	71.4%	70.6%	73.3%	16.7%	64.5%

Primary care	22.7%	12.5%	17.9%	5.7%	5.6%	5.9%	9.5%	11.8%	6.7%	66.7%	19.4%
Other	0.0%	4.2%	2.6%	5.7%	0.0%	0.0%	0.0%	0.0%	0.0%	8.3%	3.2%
APN	13.6%	16.7%	23.1%	20.0%	22.2%	17.6%	28.6%	17.6%	20.0%	16.7%	22.6%
Nurse consultant	9.1%	8.3%	10.3%	5.7%	11.1%	8.8%	14.6%	11.8%	13.3%	16.7%	16.1%
Specialised nurse	54.5%	54.2%	46.2%	57.1%	44.4%	55.9%	38.1%	52.9%	60.0%	25.0%	35.5%
Other	22.7%	20.8%	20.5%	17.1%	22.2%	17.6%	19.0%	17.6%	6.7%	41.7%	25.8%

Appendix 3.5. Percentage of respondents performing support activities, stratified by setting and job title

		Psychosocial anamnesis	Psychosocial support	Discuss medical/clinical information	Shared decision making	Information provision
Belgium	General hospital	44.9%	40.4%	45.2%	43.6%	44.4%
	University hospital	29.8%	29.6%	27.8%	31.2%	26.9%
	Primary care	18.9%	23.0%	21.3%	20.5%	22.2%
	Other	6.4%	7.0%	5.7%	4.7%	6.6%
	APN	15.8%	16.4%	18.4%	20.0%	16.7%
	Nurse consultant	23.8%	25.0%	24.3%	26.2%	25.2%
	Specialised nurse	33.2%	35.7%	37.0%	34.8%	36.3%
	Other	27.2%	22.8%	20.2%	19.0%	21.8%
Flanders	General hospital	38.0%	36.5%	42.0%	41.9%	42.3%
	University hospital	31.3%	29.2%	26.8%	29.8%	25.5%
	Primary care	25.8%	27.9%	25.6%	23.9%	25.3%
	Other	4.9%	6.4%	5.7%	4.4%	6.9%
	APN	20.9%	19.9%	22.7%	23.9%	20.1%
	Nurse consultant	33.1%	32.1%	31.2%	32.7%	31.6%
	Specialised nurse	15.3%	22.4%	24.9%	25.7%	25.5%
	Other	30.7%	25.6%	21.1%	17.6%	22.8%
Wallonia	General hospital	64.0%	61.0%	61.5%	57.0%	62.7%
	University hospital	17.3%	16.0%	16.4%	20.3%	15.3%
	Primary care	8.0%	13.0%	13.9%	15.2%	15.3%
	Other	10.7%	10.0%	8.2%	7.6%	6.8%

	APN	4.0%	5.0%	7.4%	6.3%	6.8%
	Nurse consultant	9.3%	9.0%	13.1%	10.1%	11.0%
	Specialised nurse	62.7%	70.0%	61.5%	58.2%	63.6%
	Other	24.0%	16.0%	18.0%	25.3%	18.6%
Brussels	General hospital	33.3%	20.5%	26.0%	26.5%	16.0%
	University hospital	55.6%	63.6%	62.0%	67.6%	64.0%
	Primary care	7.4%	11.4%	12.0%	5.9%	16.0%
	Other	3.7%	4.5%	0.0%	0.0%	4.0%
	APN	18.5%	18.2%	18.0%	20.6%	16.0%
	Nurse consultant	7.4%	11.4%	8.0%	11.8%	12.0%
	Specialised nurse	59.3%	52.3%	54.0%	52.9%	50.0%
	Other	14.8%	18.2%	20.0%	14.7%	22.0%

Appendix 3.6. Percentage of respondents who performed educational activities or counselling, stratified by setting and job title

		Information and advice to patients	Information and advice to family and informal care providers	Information and advice to other HC providers	Encourage patients to make behavioural changes	Teach patients to cope with consequences of illness/treatment	Teach certain techniques	Therapy adherence promotion
Belgium	General hospital	42.9%	44.7%	46.3%	41.4%	44.9%	40.6%	43.5%
	University hospital	26.3%	28.4%	27.9%	25.7%	28.3%	24.7%	26.4%
	Primary care	23.7%	22.6%	22.2%	26.4%	22.4%	31.4%	26.0%
	Other	7.1%	4.2%	3.6%	6.5%	4.3%	3.3%	4.1%
	APN	16.7%	17.4%	19.1%	17.8%	18.5%	17.5%	17.5%
	Nurse consultant	25.0%	25.7%	24.1%	24.1%	23.2%	22.9%	25.0%
	Specialised nurse	35.4%	37.1%	40.6%	35.1%	38.2%	37.3%	36.8%
	Other	22.9%	19.7%	16.2%	23.0%	20.1%	22.4%	20.7%
Flanders	General hospital	40.6%	41.9%	41.4%	37.2%	41.5%	35.2%	39.0%
	University hospital	25.3%	27.6%	26.6%	25.1%	27.6%	22.7%	24.9%
	Primary care	27.9%	27.0%	29.0%	31.8%	28.2%	39.8%	32.7%
	Other	6.2%	3.5%	3.1%	5.9%	2.7%	2.3%	3.5%
	APN	20.0%	21.4%	22.4%	20.9%	22.7%	21.1%	20.8%

	Nurse consultant	30.8%	31.9%	31.7%	30.4%	30.9%	28.5%	31.8%
	Specialised nurse	24.6%	25.7%	28.3%	23.5%	25.8%	25.8%	25.1%
	Other	24.6%	21.1%	17.6%	25.1%	20.6%	24.6%	22.3%
Wallonia	General hospital	59.0%	63.5%	71.1%	60.7%	63.0%	63.7%	66.1%
	University hospital	13.9%	15.9%	17.8%	16.4%	15.7%	15.4%	15.7%
	Primary care	16.0%	13.5%	5.6%	13.9%	12.6%	14.3%	11.3%
	Other	11.1%	7.1%	5.6%	9.0%	8.7%	6.6%	7.0%
Brussels	APN	6.9%	5.6%	6.7%	7.4%	7.9%	6.6%	7.0%
	Nurse consultant	12.5%	12.7%	7.8%	10.7%	9.4%	9.9%	9.6%
	Specialised nurse	60.4%	63.5%	74.4%	63.9%	64.6%	64.8%	66.1%
	Other	20.1%	18.3%	11.1%	18.0%	18.1%	18.7%	17.4%
	General hospital	21.3%	21.4%	25.6%	21.4%	21.6%	23.8%	21.3%
	University hospital	62.3%	62.5%	61.5%	57.1%	64.7%	57.1%	63.8%
	Primary care	13.1%	14.3%	10.3%	16.7%	9.8%	16.0%	12.8%
	Other	3.3%	1.8%	2.6%	4.8%	3.9%	2.4%	2.1%
	APN	16.4%	17.9%	23.1%	21.4%	17.6%	19.0%	19.1%
	Nurse consultant	14.8%	14.3%	5.1%	9.5%	7.8%	16.7%	12.8%
	Specialised nurse	50.8%	53.6%	53.8%	50.0%	52.9%	47.6%	51.1%
	Other	18.0%	14.3%	17.9%	19.0%	21.6%	16.7%	17.0%

Appendix 3.7. Percentage of respondents performing coordination activities, stratified by setting and job title

		Patient referral to other HC providers	Patient triage in care process	Integration patient information in medical record	Report treatment and care to other HC providers	Establish indicators to measure NC outcomes	Evaluation care and/or treatment plan	NC evaluation coordination	Coordination HC services around patient	Coordination patient discharge management
Belgium	General hospital	42.3%	29.9%	42.8%	44.1%	34.8%	41.6%	36.7%	43.2%	51.6%
	University hospital	28.3%	28.3%	26.6%	26.6%	31.2%	27.7%	32.1%	29.2%	35.9%
	Primary care	22.9%	38.6%	23.8%	23.8%	31.2%	27.2%	27.6%	24.5%	9.8%
	Other	6.5%	3.3%	6.9%	5.5%	2.9%	3.4%	3.6%	3.1%	2.7%
	APN	17.1%	19.6%	16.7%	17.9%	22.5%	18.8%	23.0%	19.2%	21.2%
	Nurse consultant	25.0%	16.8%	26.6%	26.2%	19.6%	25.7%	28.1%	22.0%	23.4%
	Specialised nurse	36.5%	38.6%	32.0%	35.0%	31.2%	36.4%	26.0%	39.3%	42.4%
	Other	21.4%	25.0%	24.7%	20.9%	26.8%	19.1%	23.0%	19.5%	13.0%
Flanders	General hospital	39.7%	23.9%	41.0%	39.3%	28.3%	35.4%	36.0%	38.7%	44.2%
	University hospital	26.5%	25.4%	25.2%	25.9%	27.2%	27.0%	30.7%	28.1%	26.5%
	Primary care	27.9%	48.5%	27.3%	29.3%	42.4%	33.8%	30.7%	30.2%	16.3%
	Other	5.9%	2.2%	6.4%	5.4%	2.2%	3.8%	2.7%	3.0%	2.9%
	APN	20.9%	22.4%	19.8%	21.1%	26.1%	22.8%	24.0%	23.8%	30.8%
	Nurse consultant	31.6%	21.6%	32.2%	32.8%	23.9%	32.7%	33.3%	30.2%	38.5%
	Specialised nurse	24.3%	29.1%	21.7%	23.6%	21.7%	24.0%	19.3%	25.1%	16.3%
	Other	23.2%	26.9%	26.3%	22.5%	28.3%	20.5%	23.3%	20.9%	14.4%
Wallonia	General hospital	60.7%	66.7%	58.4%	66.1%	67.7%	65.9%	53.6%	71.4%	79.6%
	University hospital	17.2%	18.5%	14.2%	15.2%	19.4%	18.2%	17.9%	13.0%	14.8%
	Primary care	12.3%	7.4%	16.8%	10.7%	6.5%	13.6%	17.9%	13.0%	1.9%
	Other	9.6%	7.4%	10.6%	8.0%	6.5%	2.3%	10.7%	2.6%	3.7%
	APN	6.6%	11.1%	8.0%	6.3%	6.5%	6.8%	10.7%	6.5%	1.9%
	Nurse consultant	12.3%	3.7%	12.4%	13.4%	16.1%	9.1%	14.3%	5.2%	3.7%
	Specialised nurse	63.9%	66.7%	57.5%	63.4%	51.6%	69.3%	50.0%	74.0%	81.5%
	Other	17.2%	18.5%	22.1%	17.0%	25.8%	14.8%	25.0%	14.3%	13.0%
Brussels	General hospital	19.3%	21.7%	21.2%	26.7%	6.7%	25.8%	16.7%	19.1%	23.1%
	University hospital	63.2%	56.5%	63.5%	60.0%	80.0%	61.3%	66.7%	61.7%	76.9%
	Primary care	14.0%	17.4%	13.5%	13.3%	13.0%	9.7%	16.7%	14.9%	0.0%

Other	3.5%	4.3%	1.9%	0.0%	0.0%	3.2%	0.0%	4.3%	0.0%
APN	15.8%	13.0%	13.5%	22.2%	33.3%	19.4%	33.3%	17.0%	23.1%
Nurse consultant	10.5%	4.3%	17.3%	6.7%	0.0%	12.9%	5.6%	8.5%	3.8%
Specialised nurse	54.4%	60.9%	50.0%	53.3%	46.7%	48.4%	44.4%	53.2%	65%
Other	19.3%	21.7%	19.2%	17.8%	20.0%	19.4%	16.7%	21.3%	8%