

Competence areas for registered nurses and podiatrists in chronic wound care, and their role in wound care practice

Abstract

Aims and objectives

The aim of this study was to identify general competence areas for graduating registered nurses and podiatrists providing chronic wound care.

Background

The provision of care for chronic wounds involves a team of multiple professionals, and registered nurses and podiatrists play an important role. However, previous studies have found that registered nurses have limited competence in wound care. In addition, there are no standardised international competence areas for the provision of chronic wound care by registered nurses and podiatrists.

Design

A qualitative design was used in this study.

Methods

The data were collected using six focus-group interviews with the following professionals: (1) registered nurses; (2) authorised wound care nurses; (3) nurse educators; (4) physicians; (5) podiatrists; and (6) podiatry educators (N=23). The data were analysed using inductive and deductive content analysis. COREQ guidelines were followed. See Supplementary File 1.

Results

The competence areas for registered nurses and podiatrists providing care for chronic wounds include knowledge, skills and performance in: anatomy and physiology; aetiology, care and

prevention of chronic wounds; and wound management and assessment. The competence areas also include a set of attitudes and values relating to chronic wound care and patients with chronic wounds.

Conclusions

In nursing and podiatry education and in working life, teaching should focus on these areas of competence in chronic wound care. This would standardise and integrate education on wound care, especially that of chronic wounds.

Relevance to clinical practice

Wound care is an important part of clinical practice in nursing and podiatry. It is suggested that registered nurses and podiatrists need general competence in chronic wound care in order to carry out evidence-based, safe, high-quality and cost-effective care. These results could be used to define registered nurses' and podiatrists' competence areas and roles in evidence-based wound care as independent healthcare professionals.

Keywords: Attitudes, Competence, Education, Evidence-based practice, Graduate nurses, Knowledge, Multidisciplinary, Multiprofessional practice, Nurse roles, Wound care

Impact statement

What does this paper contribute to the wider global clinical community?

- The findings suggest that all registered nurses and podiatrists need general competence in chronic wound care, including knowledge, skills, performance, values and attitudes.

NURSES' & PODIATRISTS' WOUND CARE COMPETENCE

- The general areas of competence in chronic wound care are knowledge, skills and performance in anatomy and physiology, in aetiology, care and prevention, and in wound management and assessment
- Values and attitudes relating to chronic wounds include wound care, wound prevention, evidence-based practice, holistic care, respect and economics.

1 Introduction

Wound care, especially that of chronic wounds, involves multi-professional teamwork in which registered nurses and podiatrists play an important role. However, there is often a lack of standardisation in treatment protocols, multi-professional collaboration and competence areas for healthcare professionals caring for various types of wounds (Gottrup, 2004). In nursing research, the concept of competence is multidimensional (Kajander-Unkuri, Salminen, Saarikoski, Suhonen, & Leino-Kilpi, 2013), and in this study, competence is defined as a combination of knowledge, performance, skills, values and attitudes in accordance with Cowan, Norman, and Coopamah (2005). According to previous studies, competence in wound care is limited among registered nurses (e.g. Ylönen et al., 2017; Welsh, 2018) and graduating student nurses (Kielo, Salminen, & Stolt, 2018).

Wound care should be based on evidence where robust evidence exists (Brölmann et al., 2012), and several guidelines on wound care have been published internationally based on the evidence that is available. For example, in pressure ulcer care, international guidelines for treatment and prevention have been published by the National Pressure Ulcer Advisory Panel (NPUAP), the European Pressure Ulcer Advisory Panel (EPUAP), the Pan Pacific Pressure Injury Alliance (PPPIA) in 2014, the Association for the Advancement of Wound Care (AAWC) in 2010 and the National Institute for Health and Care Excellence (NICE) in 2014. In diabetic foot ulcer care, guidelines on prevention and care have been published by the International Working Group on the Diabetic Foot (IWGDF) in 2015. In leg ulcer care, examples include the AAWC and NICE guidelines in 2010 and 2015 on the care and prevention of venous leg ulcers.

However, the existing wound care guidelines focus on how these wounds should be diagnosed, managed and prevented but they do not give a clear information on what is expected from different healthcare professionals in a multidisciplinary team, how competent those healthcare professionals should be, or what are their roles in evidence-based wound care in order to ensure the best quality care to patients with wounds.

Wounds are usually categorised as either acute or chronic. Typical acute wounds include surgical wounds, traumatic wounds and burn injuries. Chronic wounds, on the other hand, include pressure ulcers and various types of leg ulcers, such as venous leg ulcers, arterial leg ulcers and diabetic foot ulcers. (Fletcher, 2008) All wounds are acute at first, but it is not clear when a wound becomes classed as chronic. One way to define a wound as chronic is to look at the healing time. In the literature, the time limit for wounds that are chronic or “hard to heal” varies between four to six weeks (Gottrup, Apelqvist, & Price, 2010) and three months (Järbrink et al., 2016). Another method is to define as chronic any wounds that fail to heal in an ordered and timely manner with “standard therapy” (Troxler, K. Vowden, & P. Vowden, 2006).

Chronic wounds are a significant concern all over the world, not only for healthcare services but also for individuals and society as a whole. The prevalence of chronic wounds in the general population is estimated to be 2.2 per 1000 (Martinengo et al., 2019) and in developed countries, 1%–2% of the population will suffer from a chronic wound at some point in their life (Järbrink et al., 2016). Moreover, the prevalence of the most common type of chronic wound – leg ulcers – increases with age (Moffat et al., 2004). Therefore, especially in developed countries, the number of patients suffering from chronic wounds will rise in the future.

Wounds have an impact on society and individuals. Wounds in general, and chronic wounds in particular, lead to major costs for health systems and patients. For example, in the UK the average cost to the National Health Service (NHS) for treating one venous leg ulcer is £7,600 per year (Guest, Fuller, & Vowden, 2018) and in Belgium, the cost of caring for pressure ulcers may run into hundreds of euros per day (Demarré et al., 2015). For patients living in Australia, the cost of wound care is estimated to come to 10% of their disposable income (Kapp & Santamaria, 2017). In Finland, patients who receive care at home must pay for their wound care products for the first three months (Ministry of Social Affairs and Health, 2013).

Chronic wounds also have an impact on patients' well-being, and they may reduce their quality of life. For example, patients with venous leg ulcers may have poorer physical health, lower functional capacity, and poorer mental and social health than others not to mention the continuous pain that a wound can cause (e.g. Phillips et al., 2018). There are similar findings in patients with pressure ulcers: they may also have a lower quality of life because of the negative effect of ulcers on their physical, mental and social health and on their self-esteem (e.g. Gorecki, Nixon, Madill, Firth, & Brown, 2012).

2 Background

A literature review was conducted in September 2018 to identify the general areas of competence in chronic wound care required of registered nurses and podiatrists upon graduation and beginning their careers as healthcare professionals. The literature review was conducted using four scientific databases: PubMed, CINAHL, Embase and Web of Science. The following search terms were used: *wound care, wound management, competence, knowledge, skill, performance, value, attitudes, requirements, expectations, qualification, demand, claim, level,*

area, minimum, minimum data set, nurse and podiatrist, with their Boolean combinations. Languages of publication were limited to English and Finnish. The number of years since publication was limited to 10 because wound care has developed quickly over the past decade and most guidelines on wound care have been updated within the last ten years. In total, 1,794 titles were screened, of which 64 were chosen by title and 17 by abstract. Most of these studies assessed nurses' knowledge of wound care without providing a wider explanation of the related competence areas or requirements, or they focused on specialist wound care nurses, so they were excluded. Five full texts were chosen of which three were research articles (Cowman et al., 2012; Redmond, Davies, Cornally, Fegan, & O'Toole, 2015; Coleman et al., 2017) and the remaining two full texts were document papers (Pokorná, Holloway, Strohal, & Verheyen-Cronau, 2017; Van Acker, Garoufalidis & Wilson, 2018).

The research articles focused on chronic wound care from different perspectives and all of the studies used wound care experts as informants. Two studies (Cowman et al., 2012; Redmond et al., 2016) assessed education in wound care. An e-Delphi study from 24 countries and 360 experts by Cowman et al. (2012) listed the top educational priorities in wound care, which were as follows: pain management; pressure ulcer prevention; wound-bed assessment; dressing selection; standardisation of educational courses; education of all healthcare professionals (undergraduate and postgraduate); patient and carer management; infection control measures; and skills development in debridement. Also, a discursive study with wound care experts by Redmond et al. (2016) presented an educational package in wound care for undergraduate nurses. Finally, a consensus study of 17 experts by Coleman et al. (2017) focused on the development of a generic wound care assessment minimum data set for clinical practice but did not specify the areas of competence or requirements for registered nurses or podiatrists in wound care.

Two document papers were also found through the literature search of which the document by Van Acker et al. (2018) addressed podiatrists' clinical competence in diabetic foot care and included bullet points of their competence requirements in diabetic foot ulcer care, such as assessing the wound and infection control of the wound, but not any other types of wounds. A document by Pokorná et al. (2017) instead addressed a wound curriculum for nurses but did not specify any wound care requirements of competence areas. The systematic search was able to find some evidence of registered nurses' wound care education and some evidence of podiatrists' diabetic foot ulcer care requirements. However, the studies did not describe specific or general competence areas or requirements relating to registered nurses and podiatrists providing chronic wound care after graduation.

The literature was also searched manually using the reference lists of the whole-text articles and using Google searches on competence areas and requirements for nurses and podiatrists providing wound care. A UK guideline (TRIEPoD-UK, 2012) on the requirements for podiatrists providing diabetic foot care was found, which also included the requirements for diabetic foot ulcer care and its prevention. According to that guideline, a qualified podiatrist should be able to, for example, carry out risk assessments for foot ulcers, identify vascular insufficiency, understand the basics of the wound healing process, perform wound debridement, recognise a wound infection and have a broad knowledge of wound products. Diabetic foot ulcers are the most common ulcers that podiatrists work on; however, care requirements for other types of wounds were lacking. As a conclusion to the literature review, standardised and international minimum areas of competence or requirements for registered nurses and podiatrists at the graduation stage and immediately afterwards are very limited in wound care.

NURSES' & PODIATRISTS' WOUND CARE COMPETENCE

In Finland, registered nurses' and podiatrists' work includes general wound care, such as wound assessment, dressing changes and patient education. Registered nurses take care of all types of wounds, but podiatrists' duties focus more on chronic wound care, especially on diabetic foot ulcer care. There are also nurses or podiatrists specialised in wound care in Finland. Still, general registered nurses and podiatrists are in a central role in wound care and wound prevention. Registered nurses' competence in Finland is based on the European Union Directive on the recognition of professional qualifications (2013/55/EU), and podiatrists' competence is based on the Finnish law recognising professional qualifications (1384/2015). However, neither the directive nor the law gives any statement of healthcare professionals' wound care competence areas or requirements.

Registered nurses and podiatrists were included in this study because both professions play a role in the provision of wound care, especially that of chronic wounds. This care is provided by multiple professionals working in a team. For example, in Finland, the extent of the education in both programmes is equal, and the programmes are provided at the bachelor level. The main reasons for limiting this study to chronic wounds were the multi-professional nature of care and the increasing number of patients developing chronic wounds. Chronic wound care is also more demanding than acute wound care for student nurses who are at the graduation stage (Kielo, Salminen, Suhonen, Puukka, & Stolt, 2019). This study focused on the most common types of chronic wounds: leg ulcers (including venous and arterial leg ulcers in addition to diabetic foot ulcers) and pressure ulcers. Rarer types of chronic wounds, such as vasculitic ulcers and pyoderma gangrenosum, are rarer in general nursing and podiatry practice.

The aim of this study was to identify general areas of competence for registered nurses and podiatrists providing chronic wound care during their transition from a student to a graduate healthcare professional. The research question was as follows: what are the required general areas of competence for registered nurses and podiatrists providing chronic wound care?

2 Methods

2.1 Design

A qualitative design was used in this study. Healthcare professionals were interviewed in focus groups (Jayasekara, 2012) about the general areas of competence expected or required of registered nurses and podiatrists providing chronic wound care. Consolidated criteria for reporting qualitative research (COREQ) (Tong, Sainsbury, & Craig, 2007) was followed in this study. See Supplementary File 1.

2.2 Data collection

The data were collected using semi-structured focus-group interviews (Jayasekara, 2012). Six focus groups were held, and the participants were recruited using purposeful sampling from various organisations representing wound care specialists within their own profession. The corresponding author was in contact with the persons in charge, for example, head nurses or principal lecturers of each organisation and named for potential participants to the interviews. The corresponding author was in contact by e-mail with the potential participants to recruit them and to schedule the interview. Separate focus groups were held for each of the following groups of professionals: (1) registered nurses; (2) authorised wound care nurses; (3) nurse educators; (4) physicians; (5) podiatrists; and (6) podiatry educators. The total number of participants was 23. According to Jayasekara (2012), the size of the group should be large

enough to create discussion but not too large, usually from 4 to 12. However, small groups can be effective, especially for complex topics. The aim was to recruit five people to each focus group. However, the number of podiatrists and podiatry educators is usually less than five in the organisations meaning that some groups had to be smaller than an optimal focus group. The first four groups discussed the competence requirements for registered nurses to provide wound care, and the final two groups discussed the same requirements in relation to podiatrists.

The group of registered nurses (n=5) consisted of registered general nurses who were working in hospital wards and whose duties included wound care. The group of authorised wound care nurses (n=7) had received authorisation from the Finnish Wound Care Society and are comparable to tissue viability nurses in the UK. The group of nurse educators (n=3) were teaching wound care as part of nursing education at the bachelor level. The physicians (n=3) who participated were treating patients with wounds and working with registered nurses. The podiatrists (n=2) were working with patients with wounds, and the podiatry educators (n=3) were teaching student podiatrists at the bachelor level. The participants were interviewed in separate groups according to their profession; this allowed the discussion to focus on their role and their perception of the general competence requirements through their professional experience.

The data from the focus-group interviews were collected between May 2018 and September 2018 at participants' workplace or a meeting place. The corresponding author conducted all the interviews and no one else was present during the interviews than the corresponding author and the participants. The corresponding author was in contact with the participants before the interviews and gave them information about the interviews and the interview structure, but the participants did not have to prepare for the interview in any way. The focus groups took place

face to face and each group was held separately. The focus-group interviews were recorded. A semi-structured interview frame was used. The questions covered five main areas of wound care competence in accordance with Cowan et al. (2005): knowledge, performance, skills, values and attitudes. These five main questions contained prompts related to different types of wounds and wound care identified in the literature and guidelines; for example, ethics, pain management and nutrition. (Table 1) The interviewer asked the five main questions and led the discussion to the presented prompts if needed. The interviewer also asked if there was any other topic or issue that the participants would like to discuss before moving to the next main question. For example, patient education was a common topic that the participants discussed, even though it was not visible in the interview frame. Before the data collection, the semi-structured interview frame was evaluated by the co-authors of the study and PhD candidates studying nursing science. Each focus-group interview lasted for approximately one hour. Field notes were not made during the interviews. Only one recruited participant was not able to attend. All the recordings were transcribed by a professional transcriber.

(Table 1 here)

2.3 Analysis

The focus-group interviews were analysed by the corresponding author based on a two-step content analysis, including inductive and deductive analyses. The first step in the analysis process was the inductive content analysis, which was conducted in line with Elo and Kyngäs (2008): (1) open coding; (2) creating categories; and (3) abstraction. Each interview was first analysed separately. Next, the findings of each analysis were combined and the general competence areas and their main and sub-categories were created. The second step was to use

a deductive approach to categorise the general competence areas into the definition of competence in accordance with Cowan et al. (2005). (Figure 1)

The data were analysed using NVivo 12.0.0 (QSR International Pty Ltd) software for qualitative content analysis. First, the open coding of the data was conducted, by which similarities in respondents' answers were gathered to create specific categories. Some of the responses and opinions were coded by more than one category, depending on the content of responses or opinions. Then, the created categories were examined to identify any relationships between them. Finally, the categories were abstracted and organised by competence area (Figure 2) and each area's main categories and sub-subcategories (Figures 3–5) (Leech & Onwuegbuzie, 2011). According to the deductive analysis, knowledge, skills and performance formed a collective competence. This is because these competence areas and categories are strongly related to both theoretical and practical competence in wound care: one must have the theoretical knowledge in order to develop the skills needed to perform good wound care. Attitudes and values also formed a collective competence, as these are also strongly related (Figure 1). There was a consensus within the groups of the competence areas. However, some groups highlighted some categories more than the others did.

(Figure 1 here)

(Figure 2 here)

2.4 Ethical considerations

This study followed the guidelines for responsible conduct of research published by the Finnish Advisory on Research Integrity, by appointment of the Ministry of Education and Culture

(TENK, 2012). Ethical approval was obtained from the University (code: 4/2018). Before the data collection took place, research permissions were sought and received from the organisations representing the participants. Participation in the study was voluntary, and the participants signed an informed consent form. The participants were free to leave the study at any point during the interview without giving a reason for doing so. The participants represented their own experiences, opinions and thoughts, not those of their employers. The participants remained anonymous.

3 Results

Registered nurses' and podiatrists' chronic wound care competence was divided into knowledge, skills and performance of chronic wounds and wound care as well as into values and attitudes towards wounds and wound care according to the analysis (Figure 2). The main areas within the general competence of knowledge, skills and performance were as follows: (1) anatomy and physiology; (2) aetiology, care and prevention; and (3) wound management and assessment (Figure 2), meaning that a registered nurse or a podiatrist should to be competent in these areas. The competence area of anatomy and physiology was divided into the following main categories: skin and tissue viability; circulation; and the wound healing process. The competence area of aetiology, care and prevention was divided into main categories that represented the most common types of chronic wounds. For wound management and assessment, the competence area was divided into the following main categories: asepsis and environment; open wound and wound bed; infections; cleansing and debridement; wound products; nutrition; pain management; documentation; patient education; and co-operation. These main categories were divided into more detailed sub-categories (Figures 3–5). The following main competence areas were organised under the competence of values and attitudes:

wound care; wound prevention; evidence-based practice; holistic care; respect; and economics (Figure 2) meaning that a registered nurse or a podiatrist has to have right attitudes and values towards these perspectives of care. Competence areas in values and attitudes were not divided into smaller categories in the analysis. The results of the analysis were similar for nurses and podiatrists, but there were some differences between the two groups in how the respondents highlighted the competence areas related to knowledge, skills and performance in the context of caring for chronic wounds (Figures 3–5). For example, some respondents answered that for podiatrists, it is sufficient to have theoretical knowledge of nutrition and its relation to wound healing, but they did not highlight skills and performance in assessing nutrition. On the other hand, skills and performance in offloading were more frequently highlighted as a competence for podiatrists than for registered nurses.

3.1 Knowledge, skills and performance

3.1.1 Anatomy and physiology

The authorised wound care nurses argued that it is essential to have basic knowledge of the physiology and anatomy of the skin and its layers in order to understand the healing process, and the healing stages and how to distinguish between different types of wounds and methods of managing them. The nurse educators also emphasised that it is crucial for nurses to understand the anatomy and physiology of the body, especially circulation and the healing process, in order to recognise various wounds and monitor the healing or worsening of the wound. The physicians, registered nurses, podiatrists and podiatry educators also stated that having an understanding of the circulation and healing process is important. (Figure 3)

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Acute wounds usually heal optimally, but the healing process for chronic wounds is delayed for some reason, and the reason for the delayed healing process should be known, or it should be found out. – Nurse educator (1)

Palpation of the ATP [arteria tibialis posterior] and ADP [arteria dorsalis pedis] with fingers is not rocket science. Nurses can palpate the pulses and if they don't feel them, they should consult a physician. Then it is the physician's duty to perform possible further procedures. – Physician (1)

(Figure 3 here)

3.1.2 Aetiology, care and prevention

All the groups discussed the importance of the aetiology of the wound. The registered nurses highlighted the fact that wound care starts with recognising a wound and the reason behind it. The importance of understanding the aetiology of the wound was also emphasised by the authorised wound care nurses. Rather than focusing narrowly on types of wound care products, it is important to identify the cause of the wound and take action if it is not healing as it should. The nurse educators and physicians also emphasised that nurses should be able to recognise different types of chronic wounds and understand the aetiology of each wound. The physicians said that nurses should understand that there is always a reason behind a wound and be aware of that, rather than merely changing the dressings. They also emphasised that nurses are responsible for the prevention of pressure ulcers. The registered nurses mentioned that nurses should be able to understand the differences between arterial and venous leg ulcers and their treatment. The ability to perform compression therapy as part of venous leg ulcer care was highlighted by registered nurses, authorised wound care nurses and nurse educators. The

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authorised wound care nurses also highlighted wound prevention, especially in pressure ulcer care. (Figure 4)

Nurses should understand the aetiology behind the wound, and also recognise the reasons that influence the risk of getting a wound and also its healing. They should also know the typical characteristics of different types of wounds, such as venous and arterial leg ulcers [...]. – Authorised wound care nurse (1)

The most important thing is that nurses should understand the aetiology behind the wound and ask a physician for help with that. Nurses should not just change the dressings. Even if a nurse doesn't know much about wounds, a bell should ring if the wound does not heal, and they should know that there is always a reason for that. – Physician (1)

To know how to prevent pressure ulcers in a certain patient is an extremely important thing. – Nurse educator (2)

The podiatrists emphasised that most of their wound work focuses on diabetic foot ulcers. However, they also said that podiatrists need to understand other types of wounds and the factors that are related to vascular ulcers and ulcers caused by pressure. They said that the offloading and prevention of diabetic foot ulcers is one of the main competences in podiatrists' work because most of their clients or patients who have wounds have diabetes. The podiatry educators also highlighted podiatrists' competence in the care of diabetic foot ulcers. They said that the majority of podiatrists' wound patients have diabetes, so podiatrists must be highly competent in the area of diabetes and its care in order to understand its complications and how

it affects the body. However, they also emphasised that podiatrists need to be able to recognise other wounds, such as vascular ulcers and pressure ulcers. They argued that it is crucial to distinguish between wounds caused by circulatory insufficiency and wounds that are neuropathic. Offloading in the care and prevention of diabetic foot ulcers was highlighted as an element of podiatrists' wound care competence. (Figure 4)

Even though the care of venous leg ulcers doesn't usually fall under podiatrists' duties, we should be able to understand the problem. We cannot just close our eyes and say that this is not our responsibility. – Podiatrist (2)

Offloading, of course, should be part of every podiatrist's competence. – Podiatrist (2)

They [podiatrists] have to have an understanding of why diabetes causes wounds in the first place. – Podiatry educator (2)

(Figure 4 here)

3.1.3 Wound management and assessment

In wound management, all groups stated the importance of an aseptic technique and a clean environment. Nurse educators also emphasised the aseptic order and the correct procedures for preparation. According to authorised wound care nurses, it is important to recognise the tissue type and colour and, if the patient has an open wound, to keep the wound bed moist and warm. All the groups argued that the ability to recognise the signs of an infection and take a bacteria sample is a basic part of wound care competence. They also all stated that cleansing and

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debridement should be included in general wound care competence. The registered nurses further highlighted the importance of correct debridement and of knowing when to perform mechanical debridement. In addition, the authorised wound care nurses and the physicians expected that nurses would have more courage to perform correct debridement. (Figure 5)

It is essential to understand that a wound should be cleaned, recognise the tissue and understand what type of tissue should be removed and also have the courage to do that with the right instruments. Debridement is something that all nurses should be capable of, at least at some level [...]. – Authorised wound care nurse (5)

Wound debridement is something that every podiatrist should be capable of, because it's one of the main tasks in our work. – Podiatrist (1)

All the groups stated the importance of having a basic understanding of wound care products and the ability to choose the most suitable ones. The registered nurses stated that nurses should learn the generic names (rather than the brand names) of the various wound products and understand their basic functions. The wound care specialist nurses stated that understanding different wound care products and their functions is essential. For example, it is important to know what type of product to choose for an infected or highly exudative wound. The physicians stated that nurses are more familiar with wound care products than physicians are, and that they should be able to choose a suitable product. The registered nurses, nurse educators, authorised wound care nurses and physicians all emphasised the importance of nutrition and assessing the patient's nutrition status. The physicians also mentioned the need for a basic understanding of nutrients and their relation to wound healing. The podiatrists and podiatry educators did not

highlight nutrition, but they argued that it is essential to consult other healthcare professionals if problems with a patient's nutrition are suspected. The assessment and appropriate management of pain was also discussed by the registered nurses, nurse educators, authorised wound care nurses and physicians. Furthermore, the registered nurses stated that nurses should listen to patients and consider their experiences when choosing an appropriate method of pain relief. Pain management was also discussed in the podiatrists' and podiatry educators' groups, but this was not emphasised because diabetic foot ulcers, which podiatrists deal with most often, are not usually painful. All the groups mentioned the importance of appropriate documentation. The authorised wound care nurses highlighted the importance of describing the wound and wound management. (Figure 5)

No wound should be managed before proper pain management. – Authorised wound care nurse (3)

I think that listening to the patient and their experiences should be taken into account when planning the pain management. – Registered nurse (4)

The registered nurses, nurse educators, podiatrists and podiatry educators highlighted the importance of patient education and motivation. The podiatry educators stated that patient education is essential, especially for patients with chronic wounds, to motivate patients to perform self-care. In addition, all the groups stressed the importance of co-operating with other healthcare professionals. An example provided by the registered nurses is that wounds should have a diagnosis; however, in Finland, nurses are not allowed to make the diagnosis so they need to ask a physician to provide one. The nurse's task is to ensure that the patient gets the diagnosis from the physician as quickly as possible. The physicians also mentioned the

importance of consultation, especially if they suspect any problems with the patient's circulation. The nurse educators agreed that co-operation was important, not only with other healthcare professionals (such as physicians) but also with patients. The podiatrists and podiatry educators said that because their work focuses on such a narrow area, they need to be able to consult other healthcare professionals easily and guide the patient to the right professional. (Figure 5)

Chronic wound care is such a multidimensional thing in which multi-professional care and care pathways are fundamental so that the patient can be guided to the right unit. Podiatrists are responsible for their field, and they are important actors in wound care, but there are also other professionals involved, such as physicians and others. – Podiatry educator (1)

(Figure 5 here)

3.2 Values and attitudes

The registered nurses stated that nurses should create a peaceful and safe environment for wound care and explain to the patient what is happening and why. They also wished for nurses providing wound care to have courage and perseverance. The nurse educators and authorised wound care nurses expected to see good attitudes towards wound care in the profession and stressed that wound care should be part of every registered nurse's competence. The podiatry educators also mentioned that good attitudes towards wound care are important: wound care is already an important field in podiatrists' work and with predictions that the number of people with diabetes will rise in developed countries, they are likely to treat more patients with chronic

wounds. The authorised wound care nurses said that wound care should be based on evidence-based practice, so nurses should be willing and able to follow the latest guidelines. (Figure 2)

When caring for a wound, a nurse should know what to do, creating a peaceful environment and situation so that the patient really feels safe. – Registered nurse

(3)

Holistic care was mentioned by all the focus groups, especially for patients with hard-to-heal wounds. The registered nurses emphasised that a human being is a psycho-physiological combination, and the nurse educators highlighted the factors that are related to the wound and to the patient with the wound. They stated that nurses should remember to listen to patients and respect their needs and wishes, because chronic wounds can have a major impact on patients' lives; for example, creating feelings of shame, isolation and pain. In addition, the authorised wound care nurses mentioned palliative wound care. They and the podiatry educators also highlighted the need to respect patients' right to autonomy. However, patients also have a right to access information about their care and situation in order to make decisions considering their care. The physicians stated the importance of respecting patients' privacy. Last but not least, economics was also discussed in the focus groups with the registered nurses and nurse educators. According to the registered nurses, cost is a criterion when choosing suitable products, especially if the patient has to pay for their products themselves. The nurse educators also discussed the economic aspects from the perspectives of patients and society. (Figure 2)

Nurses should never just care for the wound but for the human who has the wound. – Authorised wound care specialist nurse (5)

4 Discussion

4.1 Results

The aim of this study was to identify the general areas of competence required for graduating registered nurses and podiatrists providing care for patients with chronic wounds. According to the focus-group interviews, three main competence areas were found under knowledge, skills and performance: anatomy and physiology, aetiology, care and prevention, and wound management and assessment, which were divided into more specific (main and sub) categories. Six competence areas were found under values and attitudes: wound care, wound prevention, evidence-based practice, holistic care, respect, and economics using inductive content analysis. The competence areas found through the inductive analysis were consistent with the previous literature used in the interview frame. However, some competence areas, especially under values and attitudes were discussed in the groups outside the interview frame, indicating that these topics are not that widely discussed in the basic wound care literature.

According to the deductive analysis, knowledge, skills and performance formed one main competence. This is because, according to Cowan et al. (2005), nursing practice requires the application of complex combinations of theoretical and practical components, which can also be standardised in wound care practice. Therefore, strong theoretical knowledge of wound care is required in order to develop the skills and ability to perform that care. For example, a person must have not only the theoretical knowledge of why a debridement should be performed but also the skills to perform it successfully.

In the anatomy and physiology competence area, the participants emphasised circulation and the healing process. They argued that being aware of the difference between arterial and venous

circulation is important in order to understand the role of circulation in wound care. The ability to recognise insufficient arterial circulation was also highlighted: if poor perfusion goes unnoticed, in the worst case it may lead to a lower limb amputation (Dogra & Sarangal, 2014). The healing process was also discussed because the healing stage indicates whether the wound is healing.

In the competence areas of aetiology, care and prevention, all the groups highlighted the importance of the aetiology of a chronic wound. The focus-group participants argued that in order to manage chronic wounds, one must understand the causes. Wound care should not be limited to changing dressings: it is crucial to understand the different aetiologies because one needs to consider the main cause of the wound in order to treat it. For example, when providing venous leg ulcer care, it is important to understand the aetiology (venous insufficiency) and its consequences (oedema) and the purpose of compression therapy in wound healing (O'Donnell et al., 2014). Wound prevention was also discussed extensively within the groups, especially the prevention of pressure ulcers. According to pressure ulcer guidelines, most of these chronic wounds are avoidable (e.g. NICE, 2014).

Regarding the competence area of wound management and assessment, the participants highlighted wound debridement and its importance in healing and managing wounds, and when to perform the debridement versus when not to. According to the European Wound Management Association EWMA (2013) guideline, debridement is central to wound healing. Moreover, registered nurses and podiatrists were expected to be able to recognise the signs of a wound infection and take a bacteria sample if needed, because infections may impede healing and can even lead to death (WHO, n.d). Co-operation with other healthcare professionals was also widely discussed as an aspect of wound management because multiple professionals are

involved in wound care, especially that of chronic wounds. The podiatrists and podiatry educators mentioned that co-operating with and consulting other healthcare professionals is important because their profession focuses on a narrow area. According to the EWMA (2014), a team approach is important in wound care, especially in chronic wound care.

Values and attitudes also formed a collective competence, as they are strongly related. The inductive content analysis identified the following competence areas: wound care; wound prevention; evidence-based practice; holistic care; respect; and economics. These areas of competence were not divided into more specific categories as part of the inductive analysis because the groups did not provide that much discussion around these matters even though values and attitudes were discovered extremely important in wound care. All the focus groups highlighted the importance of holistic care, especially for patients with chronic wounds. They argued that healthcare professionals should not limit their care to the wound but see the patient as a whole and the effects of the wound on the patient's life. Holistic wound care is also highlighted in the literature (e.g. Brown, 2015). In addition, all the groups mentioned that positive attitudes towards wound care and prevention are essential because this is an important field in clinical nursing and podiatry. The authorised wound care nurses also stated that the use of evidence-based wound care is fundamental. Healthcare professionals are expected to follow the latest studies and guidelines on wound care so they can provide up-to-date care.

The required attitudes may be considered obvious, implying that good attitudes should be required of all registered nurses and podiatrists in every clinical setting. However, previous studies have shown that nurses may have controversial attitudes towards wound prevention. Some studies among nurses have shown positive attitudes towards the prevention of pressure ulcers (e.g. Florin, Bååth, Gunningberg, & Mårtensson, 2016) but others have revealed negative

ones (Etafa, Argaw, Gemechu, & Melese, 2018). Attitudes towards evidence-based practice have also been researched, and these were mostly positive (Mehrdad, S. Joolae, A. Joolae, & Bahrani, 2012; Stokke, Olsen, Espehaug, & Nortvedt, 2014). However, nurses' knowledge of evidence-based practice has been found to be limited (Mehrdad et al., 2012), and there are many challenges relating to its implementation (Warren et al., 2016). Therefore, to identify possible educational needs, attitudes should be considered and researched further.

According to the literature review, there is a lack of standardised requirements for general areas of competence in wound care among registered nurses and podiatrists. Although various care guidelines exist, the roles of the different healthcare professionals in wound care are unclear. In other words, it is not clear which tasks and roles in chronic wound care registered nurses and podiatrists should have, because the guidelines are often written for a multi-professional community. The results of this study could be used to identify and define these professional roles in order to clarify the duties of registered nurses and podiatrists in chronic wound care. This could be also implemented in education on wound care.

In order to improve competence in wound care among registered nurses and podiatrists, consistent, standardised curriculums in wound care should be developed for basic and further education. The results of this study indicate general desired areas of wound care competence for registered nurses and podiatrists that could be implemented in nursing and podiatry education. The results of the study could be used as a basis for the teaching content. In addition, teaching could be provided to nurses and podiatrists together, as the results of this study revealed similar areas of competence for both professions with some minor differences in the sub-categories.

According to the European Union Directive (2013/55/EU) Article 31, student nurses should receive education in organising, dispensing and evaluating care as part of a team. Nursing education should also guarantee that graduating nurses have comprehensive knowledge, including “sufficient understanding of the structure, physiological functions and behaviour of healthy and sick persons, and of the relationship between the state of health and the physical and social environment of the human being”. The results of this study support the Directive: in order to perform wound care, a professional has to understand the phenomena and be able to put their knowledge into practice and see the human being as psycho-physical combination.

Furthermore, a previous literature review has shown that nurses and graduating student nurses have limited competence in wound care (Kielo et al., 2018). Those studies in the review have mostly focused on knowledge of, and attitudes towards, wound care. Skill and performance both have practical components, so they should be studied through observation. Values have not been studied in depth from the perspective of wound care. There are ethical codes to guide the practice of registered nurses and podiatrists (e.g. IOCP, 2006; ICN, 2012), but these guidelines are general and can be applied to all kinds of practice. In this study, we aimed to identify the required values that guide ethical practice in the care of wounds and patients with chronic wounds. A previous study has found that nurses are not always familiar with existing ethical codes and guidelines and do not always adhere to them (Momennasab, Koshkaki, Torabizadeh, & Tabei, 2016). This may be because the guidelines do not specify tasks but act as reminders, as ethical decision-making is dependent on context (Eriksson, Höglund, & Helgesson, 2008). Therefore, ethics and values could be considered and taught in a way that is more specific to certain fields in healthcare education.

The results of this study confirm the findings in the existing literature on the competence requirements for podiatrists performing diabetic foot ulcer care, in addition to the priorities in nursing education. However, this study focused on general competence requirements that every registered nurse and podiatrist should have after graduation, including values and attitudes related to wound care and patients with chronic wounds. After graduation, some professionals do more work with these patients than their colleagues do, so their competence will increase and that of their colleagues will decrease. Nevertheless, the results of this study have provided new information about the competence requirements for all nurses and podiatrists upon graduation in order to begin a career as a qualified healthcare professional.

4.2 Strengths, limitations and trustworthiness

This study has limitations due to its design, methods and analysis. The trustworthiness of this study was assessed by its transferability, creditability, confirmability and dependability, according to Holloway and Wheeler (2010). A qualitative design was used; therefore, the results cannot be directly transferred to other contexts. However, although this study focused on chronic wound care only and acute wounds have other aetiologies, the management of chronic and acute wounds does not differ very much. Therefore, the results of this study could also be transferred to acute wound care, at least with regard to the anatomy and physiology competence area and the wound management and assessment competence area.

Some differences in requirements for healthcare professionals may exist in different countries, so it means that the results of this study are relevant in Finland and may not be possible to transfer internationally. However, Finnish nurse education is based on the European Union Directive (2013/55/EC) mentioned previously, so the results of this study considering registered nurses' competence could be transferred to other EU countries on some levels. As mentioned

in the background, registered nurses' and podiatrists' work in Finland includes general wound care, such as wound assessment, dressing changes and patient education without diagnosing the patient, meaning that the results could be transferred also to other countries where registered nurses and podiatrists have similar responsibilities in wound care.

In addition, this study represented statements from only 23 experts in wound care, and the participants represented a select study population (Jayasekara, 2012). Also, the size of some of the focus groups was small, two to three participants only, due to a small number of wound care experts in the organisations. However, the groups generated valuable and substantial discussion of requested competence areas. Purposeful sampling was used; although this is common in qualitative research design, it may weaken the creditability of the study. However, the experts represented the roles in a multi-professional team, and they were experienced in chronic wound care, which gave in-depth information about chronic wound care. The analysis of the interviews was done by a single researcher, who is also experienced in wound care, which may affect the confirmability of the study. There were no contradictions between experts' statements in the interviews, but some groups focused more on specific topics (such as wound management and holistic care), which may indicate limitations in the interview frame that was used and decrease the dependability of the study. However, all focus groups highlighted the importance of understanding wound aetiology and knowing the basic procedures for care and prevention, indicating that the findings were centred around knowledge, skills and performance in wound care.

The trustworthiness in this study was addressed by using member checking, negative case searching, peer review and reflexivity (Holloway & Wheeler, 2010). Member checking was used during the interviews to avoid misunderstanding and to find out if the reality of the

participants was presented in the interviews, and to allow participants to challenge the ideas of the researcher by discussing topic outside the interview frame increasing the transferability of the study. The interviewer, for example, asked if the participants wanted to add something that was not yet discussed. However, member checking was not used in the analysing phase of the study, which may decrease the confirmability of the study. Negative case searching was used in the analysis phase of the study in which the corresponding author found out that not all the findings from the analysis fit easily to the developed pattern. Formulated competence areas under knowledge, skills and performance were consistent and logical, increasing the dependability of the study. However, the competence areas under values and attitudes were found to be more demanding and complex because they were discussed throughout the interviews, not just when discussing the values and attitudes theme according to the interview frame, meaning that the findings could have been interpreted in a different way by another researcher decreasing the dependability of the study in this part. Peer review discussion with the co-authors of this study was used in order to detect possible bias or to find out possible alternative explanations in the analysis and reporting phase, which may increase the credibility of the study. Finally, the corresponding author used reflexivity to critically reflect their preconceptions and actions in order to avoid bias and to increase the confirmability of the study.

5 Conclusions

This study demonstrates that for registered nurses and podiatrists, competence in chronic wound care involves a combination of competence (knowledge, skills and performance) in anatomy and physiology, aetiology, wound care and prevention, and wound management and assessment. Each of these competence areas contains more specific competence requirements. Competence also requires appropriate values and attitudes in relation to wound care and wound

prevention, holistic care, evidence-based practice, respect and economics. Therefore, education and teaching on wound care – not only in basic nursing and podiatry but also in continuing professional development – should focus on these competence areas in order to standardise wound care education and ensure the required competences exist in clinical wound care, especially chronic wound care. Further research could focus on levels of wound care competence among nurses and podiatrists in the areas of competence identified in this study. Research could also be done to identify what level of competence is sufficient in wound care and what educational interventions are needed.

6 Relevance to clinical practice

Wound care is an important part of clinical practice in both nursing and podiatry. Registered nurses and podiatrists need basic competence (including knowledge, skills, performance, values and attitudes) in chronic wound care to be able to carry out evidence-based, safe, high-quality and cost-effective care. The numbers of chronic wounds and patients suffering from those wounds are predicted to rise, because the population is ageing and diabetes is becoming more prevalent all over the world. Wound care, especially for chronic wounds, involves multi-professional teamwork, and registered nurses and podiatrists play a fundamental role in clinical care from the perspective of society and patients. The results of this study indicate that wound care is about more than changing dressings; rather, it is a combination of multiple complex tasks and activities. Therefore, specific knowledge, skills and performance, and appropriate attitudes and values, are required in order to ensure quality wound care is provided. The results of this study can be used when planning or delivering wound care education and when developing the quality of chronic wound care.

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Table and figure legends

Table 1: Semi-structured interview frame

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Figure 2: Competence areas in chronic wound care for registered nurses and podiatrists, according to the two-step analysis of focus-group interviews

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Figure 4: Main categories and sub-categories of the “aetiology, care and prevention” competence area, showing similarities between requirements for registered nurses and podiatrists

Figure 5: Main categories and sub-categories of the “wound management and assessment” competence area, showing similarities between requirements for registered nurses and podiatrists

NURSES' & PODIATRISTS' WOUND CARE COMPETENCE

Table 1: Semi-structured interview frame

1	What should registered nurses/podiatrists know about wounds in general? (knowledge)
	<ul style="list-style-type: none"> a) Chronic leg ulcers (venous, arterial, diabetic foot ulcers) b) Pressure ulcers c) Wound healing process
2	What should registered nurses/podiatrists know about wound management? (performance)
	<ul style="list-style-type: none"> a) Wound care products b) Asepsis and environment c) Cleansing and debridement d) Pain management
3	How should registered nurses/podiatrists care for wounds? (skills)
	<ul style="list-style-type: none"> a) Open wounds b) Documentation c) Infections d) Circulation e) Nutrition
4	How should registered nurses/podiatrists act when caring wounds? (values)
	<ul style="list-style-type: none"> a) Ethics in wound care b) Holistic care
5	How should registered nurses/podiatrists deal with wounds and patients with wounds? (attitudes)
	<ul style="list-style-type: none"> a) Attitudes towards wound care and prevention

NURSES' & PODIATRISTS' WOUND CARE COMPETENCE

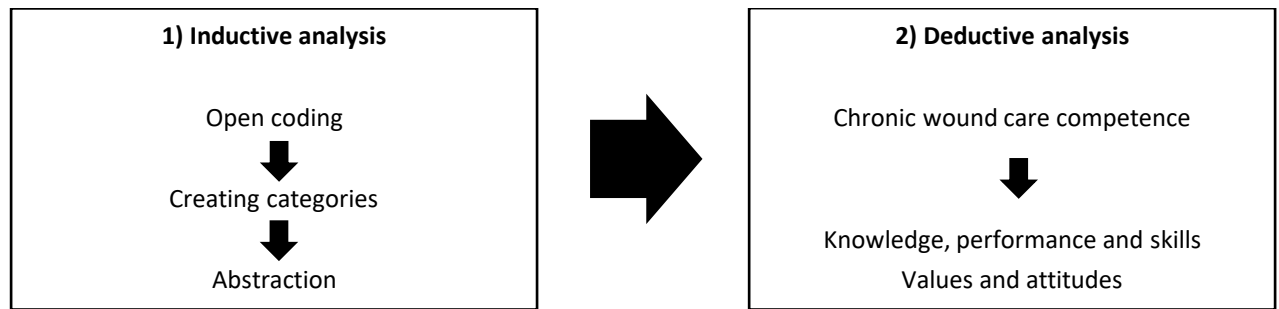


Figure 1: Process of analysis for focus-group interviews

NURSES' & PODIATRISTS' WOUND CARE COMPETENCE

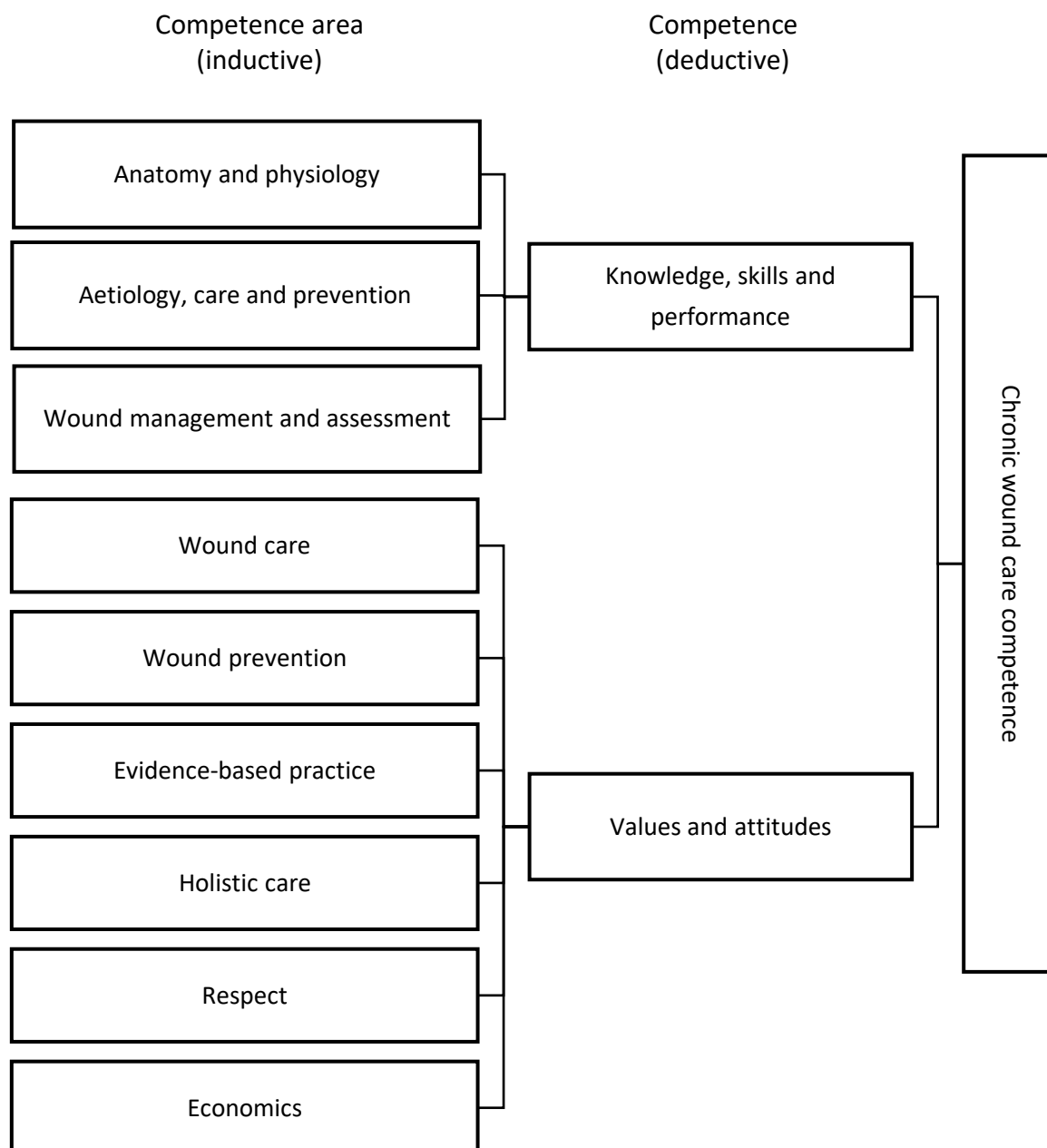
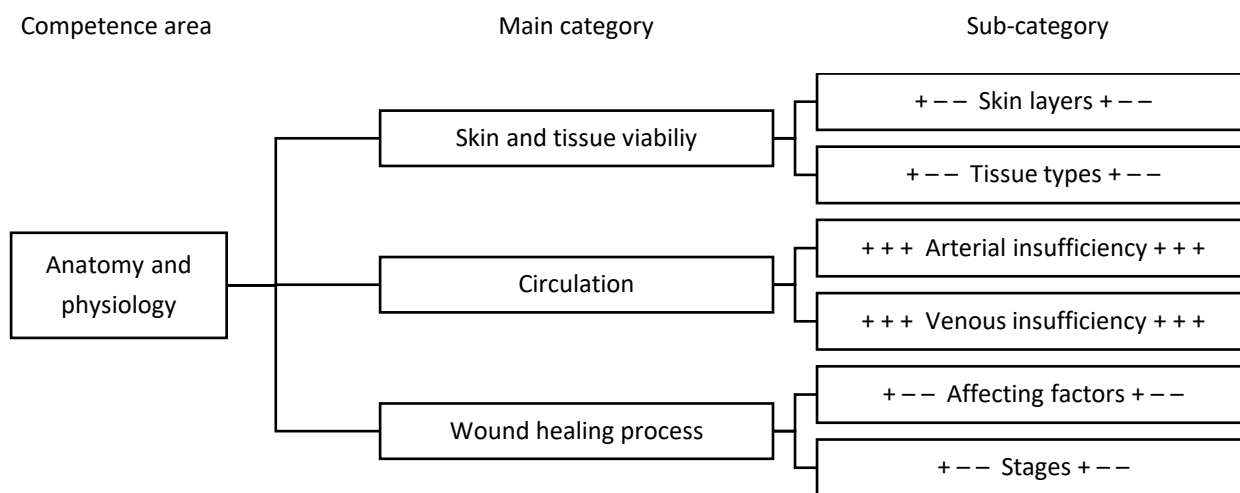


Figure 2: Competence areas in chronic wound care for registered nurses and podiatrists, according to the two-step analysis of focus-group interviews

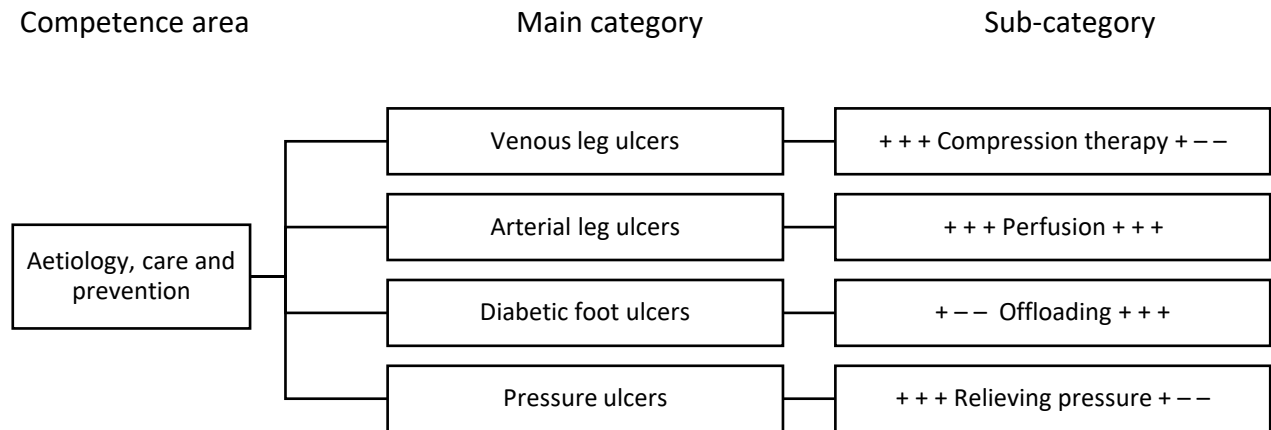
NURSES' & PODIATRISTS' WOUND CARE COMPETENCE



1st +/–: knowledge, 2nd +/–: skills, 3rd +/–: performance. +: required, –: not required
 Left-hand side: nurses, right-hand side: podiatrists.

Figure 3: Main categories and sub-categories of the “anatomy and physiology” competence area, showing similarities between requirements for registered nurses and podiatrists

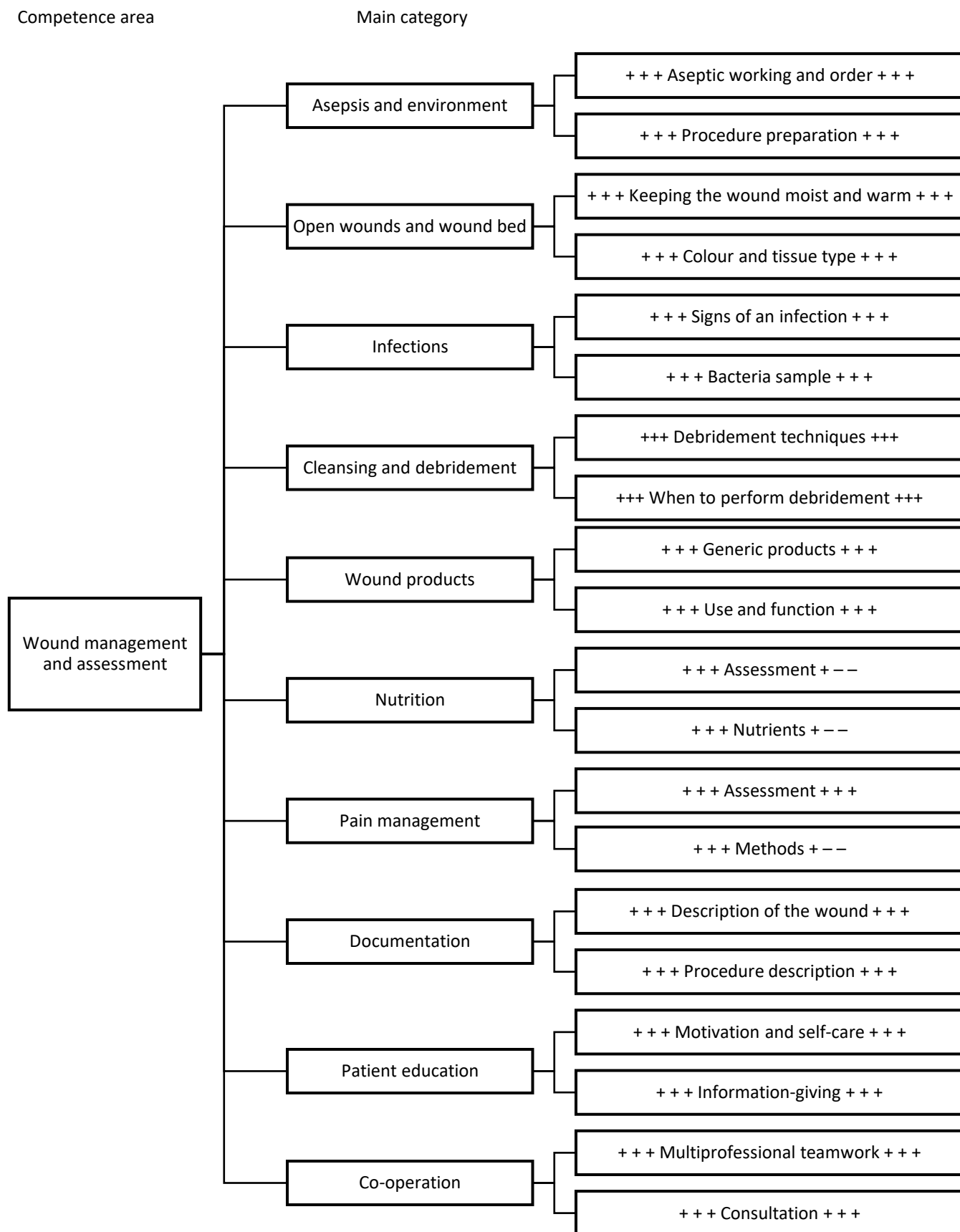
NURSES' & PODIATRISTS' WOUND CARE COMPETENCE



1st +/–: knowledge, 2nd +/–: skills, 3rd +/–: performance. +: required, –: not required
 Left-hand side: nurses, right-hand side: podiatrists.

Figure 4: Main categories and sub-categories of the “aetiology, care and prevention” competence area, showing similarities between requirements for registered nurses and podiatrists

NURSES' & PODIATRISTS' WOUND CARE COMPETENCE



1st +/-: knowledge, 2nd +/-: skills, 3rd +/-: performance. +: required, -: not required
 Left-hand side: nurses, right-hand side: podiatrists.

Figure 5: Main categories and sub-categories of the “wound management and assessment” competence area, showing similarities between requirements for registered nurses and podiatrists

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