



Review

Graduating student nurses' and student podiatrists' wound care competence – An integrative literature review



Emilia Kielo^{a,*}, Leena Salminen^a, Minna Stolt^{a,b}

^a University of Turku, Department of Nursing Science, 20014 Turku, Finland

^b Turku University Hospital, PO Box 52, 20521 Turku, Finland

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ABSTRACT

The objective of this literature review is to describe graduating student nurses' and student podiatrists' wound care competence. This integrative literature review has been conducted with a systematic search process. Original studies were analysed by qualitative content analysis with the following stages: open coding, creating categories and abstraction. The literature search was conducted on May 2016 and reconducted on October 2016 using the Medline/Pubmed, CINAHL, Cochrane Library, Web of Science, Scopus and National Medic databases and 12 original studies were found.

All the studies addressed graduating student nurses' wound care competence. According to original studies, graduating student nurses' wound care competence was inadequate. However, the students showed a positive attitude towards wound care. Subthemes of this literature review were: 1) *Wound care knowledge*, 2) *Attitudes towards wound care*, 3) *Wound care preparedness* and 4) *Wound care education* which created the main theme *Graduating nurses' wound care competence*. No studies were found about graduating student podiatrists' wound care competence.

Graduating student nurses' wound care knowledge was deficient. Wound care education seemed to have a positive relation to students' wound care competence. The findings indicate that more information about graduating student nurses', and especially graduating podiatrists', wound care competence is needed.

1. Introduction

Wounds are an increasing problem worldwide. In the industrialized world, almost 1–1.5% of the population will have a chronic wound during their lifetime (Gottrup et al., 2010). Especially non-healing wounds in an aging population are a significant problem for health care systems around the world. Wounds can decrease patients' quality of life and they also incur huge costs to health care systems. It has been estimated that the total costs of wound care are 2–4% of the whole health care budgets in European countries (Gottrup et al., 2010; Ousey et al., 2013).

Wound care, especially chronic wound care, is multidisciplinary work (Gottrup, 2004) and health care professionals should be aware of the expertise of other professions (Burford et al., 2014). Nurses in general work with all possible kinds of wounds depending on the clinical placement. However, podiatrists often focus only on the care of foot ulcers especially in patients with diabetes (Quinton et al., 2015). According to TRIEPoD-UK (Podiatry Integrated Career and Competency Framework for Diabetes Foot Care) (2012), a qualified podiatrist should

understand the wound healing process, be able to classify and manage foot ulcers, and know how to prevent foot ulcerations. Previous studies addressing graduated registered nurses have shown that young and less experienced nurses' wound care competences are deficient (e.g. Ayello et al., 2005). Also, nurses working at hospitals are less competent in wound care than nurses working in home care (Zarchi et al., 2014).

In general, *competence* can be defined as 'the ability to do something successfully or efficiently'. *Knowledge* can be defined as 'facts, information and skills acquired through experience or education' or 'theoretical or practical understanding of a subject' (Oxford Dictionaries, 2016). In nursing, Benner (1982, p. 304) has defined competence as 'the ability to perform the task with desirable outcomes under the varied circumstances of the real world'.

However, in practical nursing, the concept of *competence* is multi-dimensional (Kajander-Unkuri et al., 2013). For example, Cowan et al. (2005, p. 355) define nursing competence as 'the application of complex combinations of knowledge, performance, skills, values and attitude', which was also used as a definition of competence in this review. A graduating student nurse and a graduating student podiatrist were

* Corresponding author.

E-mail addresses: emilia.a.kielo@utu.fi (E. Kielo), leesalmi@utu.fi (L. Salminen), minna.stolt@utu.fi (M. Stolt).

defined as final-stage bachelor's level students studying in their third or fourth year (because these programmes last from three to four years) and includes 180–210 ECTS (depending on the requirements of different countries). For example, in Finland the extension of these both programmes is 210 ECTS (3.5 years) but the curriculum background in both programmes are separate. Student podiatrists were included to this review because podiatrists play a central part in wound care and wound care is multidisciplinary work (Gottrup, 2004).

The objective of this literature review is to describe graduating student nurses' and student podiatrists' wound care competence. The research question was: *How competent are graduating student nurses and student podiatrists in wound care?*

2. Method

This literature review is an integrative literature review. The literature search was conducted systematically on May 2016 using the Medline/Pubmed, CINAHL, Cochrane Library, Web of Science, Scopus and National Medic databases. The following search terms were used (with their Boolean combinations): *nursing student, podiatrist student, student nurse, student podiatrist, podiatric medical student, undergraduate nurse, undergraduate podiatrist, graduating nurse, graduating podiatrist, competence, skill, knowledge, attitude, value, performance, wound, ulcer, decubitus, wound care, wound management, wound assessment and tissue viability*. No time limits were set. In Pubmed/Medline, MeSH-terms were also used and in CINAHL, Cinahl-Headings were used. Studies were also searched for manually from the reference lists of original studies but none were found manually. In total 188 titles were screened by one researcher: 67 articles were screened by abstract. After 37 duplicates were removed, 20 whole texts were read and finally 12 original studies were included in the literature review. Systematic literature searches were reconducted in October 2016 using the same databases in order to check for recently published studies. One new study was found. A flow chart of the selection process is shown in Fig. 1.

Studies were included if they 1) were original empirical studies addressing final-stage (third- or fourth-year students or pre-registration students) student nurses' and student podiatrists' wound care competence, skills, knowledge, attitudes or values, 2) had an abstract and 3) were written in English or in Finnish. Studies were excluded if they focused on overall clinical competences or educational intervention studies unless they included competence evaluation, either by knowledge tests or students' perceived knowledge.

3. Analysis

The data were analysed with qualitative content analysis (Whittemore, 2005; Elo and Kyngäs, 2008). The analysis process includes three stages according to Elo and Kyngäs (2008): 1) open coding, 2) creating categories and 3) abstraction. At the open coding stage, notes and headings were written in the text while reading it. After the open coding, the lists of categories were grouped under higher order headings, and at the abstraction stage, categories were named and organised into subthemes and a main theme. The themes are presented in Fig. 2.

4. Quality assessment

All original studies were evaluated by using a critical appraising tool by Hawker et al. (2002), which is developed for the evaluation of both quantitative and qualitative study assessments. The tool of Hawker et al. (2002) includes nine four-point scale items: *abstract and title, introduction and aims, method and data, sampling, data analysis, ethics and bias, results, transferability or generalizability, and implications and usefulness*. Every item is rated either 1 (very poor), 2 (poor), 3 (fair) or 4 (good) points which means that the minimum score of the tool is 9 and the maximum score is 36. The calculated summary score will be reported as *very poor, poor, fair or good*.

The average score of all studies in this review was 25 out of 36, which means that the average quality of the studies was fair. Scores varied between 16 and 29, which means that the studies varied as their quality ranged from poor to fair. The *abstract and title* and *method and data* items had the highest average scores (3.5/4) and the worst average scores were for the *ethics and bias* item (2.1/4). The average scores of other items were: *introduction and aims* (3.3), *sampling* (2.8), *data analysis* (2.6), *results* (3.4), *transferability or generalizability* (3.1) and *implications and usefulness* (3.2). The studies' total scores and scores in each question are presented in Table 1.

5. Findings

5.1. A description of the studies

Twelve original studies met the inclusion criteria, of which all assessed student nurses' wound care competence in their final stage of the studies. Eleven of the studies had a quantitative design and one study had a qualitative design (Carvalho Moura and Larcher Caliri, 2013). The studies were carried out between 2003 and 2016. Most of the studies were conducted in Europe (Table 2).

All quantitative studies used a questionnaire as a data collection method. One of the quantitative studies was an intervention study (Beeckman et al., 2008) and the others were observational. In two studies, both nurses and undergraduate nurses were compared (Beeckman et al., 2008; Gunningberg et al., 2013). The qualitative study used focus group discussions. Sample sizes varied between 29 and 217.

Six studies used valid knowledge tests (Larcher Caliri et al., 2003; Beeckman et al., 2008; Cullen Gill and Moore, 2013; Gunningberg et al., 2013; Rafiei et al., 2015; Simonetti et al., 2015) and the other three studies used the authors' own self-evaluation forms for student nurses (Snarska et al., 2005; Ousey et al., 2013; Stephen-Haynes, 2013). Two studies were either instrument development studies (Beeckman et al., 2010a) or validation studies (Florin et al., 2016) with the baseline data of student nurses' wound care competence. The studies are presented in Table 2.

5.2. Wound care competence

Graduating student nurses' wound care competence consists of four subthemes: *wound care knowledge, attitudes towards wound care, wound care preparedness* and *wound care education* (Fig. 2). These themes addressed only graduating student nurses' wound care competence because no studies were found focusing on student podiatrists' wound care competence.

5.3. Wound care knowledge

The wound care knowledge of graduating student nurses was assessed to be at an inadequate level (Larcher Caliri et al., 2003; Snarska et al., 2005; Beeckman et al., 2008, 2010a; Cullen Gill and Moore, 2013; Gunningberg et al., 2013; Rafiei et al., 2015; Simonetti et al., 2015) in the literature which addressed undergraduate student nurses' pressure ulcer prevention and/or treatment knowledge.

Similar pressure ulcer knowledge questionnaires were used in some of the other studies. Two of the studies (Larcher Caliri et al., 2003; Rafiei et al., 2015) used Pieper and Mott (1995) Pressure ulcer knowledge test (PUKT), where the participants are expected to give correct answers to 90% or more of the items in order to be considered competent. In these studies, student nurses' average scores were almost the same: 67.7% (Larcher Caliri et al., 2003) and 67% (Rafiei et al., 2015). However, in the study of Rafiei et al. (2015), the students' rate of correct answers in the pressure ulcer evaluation category was significantly higher (78%) than the correct answers in the pressure ulcer classification (50%) or in the pressure ulcer prevention categories

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