4.1 Subjective and objective competence assessment in wound care

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Abstract

Competence assessment in wound care is important to provide safe and accurate care for patients with wounds. There are many kinds of wounds, including acute and chronic wounds, of which care is complex and requires both theoretical and practical competence from health care professionals. Assessing competence in clinical nursing and nursing education is crucial not only for patient safety but also for costs and sustainability. Competence assessment can be either subjective, based on a person's own judgement, or objective, based on predefined criteria or attributes. The Chapter examines subjective and objective competence assessment in the context of wound care from a theoretical perspective. The Chapter provides definitions of subjective and objective competence assessment and describes examples of competence assessment in wound care based on the literature. The subjective competence assessment in wound care research is divided into competence self-assessment of competence and attitude assessment. The objective competence assessment can be divided into theoretical competence, measured by knowledge tests, and practical performance, which includes observation and simulations. Wound care is a main competence area in nursing with a strong need for evidence-based and robust assessment.

Introduction

Assessing the competence of clinical nursing and nursing education is crucial not only for patient safety but also for costs (Robinson et al. 2009). Wound care is a clinical area that includes a variety of care practices. Competence is needed to justify and select appropriate wound care products and procedures that correspond with the patient’s health problem. Therefore, assessing wound care competence is important to benefit the patient, promote patient safety and reduce health care costs. Competence assessment can be either subjective, based on a person's own judgement, or objective, based on predefined criteria or attributes (Watson et al. 2002) (Figure 1).

There are three approaches to assessing competence. First, competence can be related to an activity (Bing-Jonsson et al. 2015), which consists of an individual's behaviour and skills. However, this approach has been criticised for being technical. In the context of wound care, this would focus on health care professional’s practical actions in the wound care process. Second, competence can be understood as being adequate (Eraut 1994) in relation to certain requirements, not perfect. This approach, on the other hand, specifically includes cognitive and affective elements,

as well as psychomotor skills (Cowan et al. 2005). However, criticisms of this approach focus on the nature of competence as an abstract object, often ignoring the qualitative elements associated with different situations and contexts when assessing it (Bing-Jonsson et al. 2015). Adequate competence in the context of wound care could imply a certain cut-off value that demonstrates the minimally acceptable level of competence. Thirdly, the assessment of nursing competence, in particular, has drawn extensively on Benner's (1984) thinking from novice to expert, where assessment is holistic and reflexive and seeks to take into account the motivations driving action and contextual specificity. In this approach, it should be noted that the self-assessor, in particular, may have a misconception of temporality; individuals automatically reach maximum performance over time as experience accumulates.

The Chapter examines the subjective and objective competence assessment in wound care from a theoretical perspective. The Chapter provides definitions of subjective and objective competence assessment and describes examples of competence assessment in wound care based on the literature.

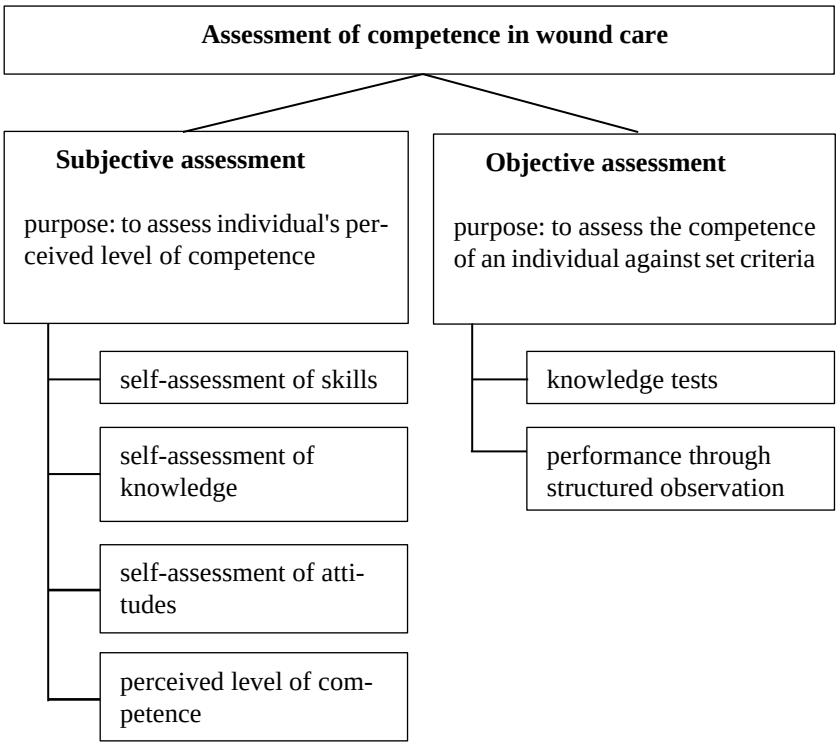

Figure 1. Methodological starting points for competence assessment in wound care research.

Subjective assessment

Subjective competence assessment is based on a person's own assessment of their competence (Watson et al. 2002). Self-assessment of competence is important to identify professional development and educational needs to improve wound care. Self-assessment is subjective in nature and provides a perception of one's cognitive and performance-related capabilities in wound care. Self-assessment enables a health care professional to assess a wide range of skills that may be unobservable by other methods and by other people (Humburg et al. 2015), and it facilitates deep insight into non-technical skills in clinical practice (Osborne et al. 2014). Self-assessment, in general, is beneficial for developing lifelong learning abilities and a suitable method to assess an individual's daily decisions and actions in patient care. From a competence assessment point of view, the common areas of self-assessment are knowledge, skills, attitudes and overall perceptions of competence in wound care.

Self-assessment enables individuals to be aware of their competencies and the content of the competencies required. However, a prerequisite for reliable self-assessment is the ability to reflect (Cowan et al. 2008), especially in assessing clinical competence and activities whose justification cannot be objectively observed. Therefore, the individual's reflection and development are seen as a benefit of self-assessment.

In the context of wound care, subjective assessment, or self-assessment, has been studied using both quantitative and qualitative methods. Some instruments have been developed for the self-assessment of nurses' competence in wound care. However, these instruments have been developed mainly for individual studies, and no validated instruments for self-assessment of competence in the context of wound care have been found (Kielo-Viljamaa 2021.) Self-assessment of wound care competence has been used in particular to investigate nurses' and students' competence in pressure ulcers and their prevention (e.g. Nuru et al. 2015, Szymański et al. 2020), but also to assess wound care competence in general (Ousey et al. 2013, Stephen-Haynes 2013).

However, as with other structured assessment methods, there are certain methodological challenges to the reliability of self-assessment: Is the instrument used reliable manner in terms of *content (*Almanasreh et al. 2019) and *structure/construct*, and is it valid and consistent (DeVon et al. 2007; Mokkink et al. 2010), *accurate* and *precise*, or does the instrument produce arbitrary results and results on non-competence? However, the reproducibility or *stability* of an instrument for self-assessment of competence does not make sense from the outset because of the time-varying nature of the item, i.e. the development of competence. The changing and evolving nature of competence means that a self-assessment instrument must be particularly discriminating, sensitive and target-specific to discriminate competence truly. In addition to self-assessment, there should also be the possibility of objective assessment or various combinations, as required by holistic assessment.

Self-assessment of skills

Skill means “the learned ability to act with determined results with good execution often within a given amount of time, energy, or both” (Oxford Dictionary 2023). Skills can often be divided into general and specific skills. In wound care, general wound care skills can relate, for example, to the aetiology of the wound, healing process and infection control. Specific skills instead focus on, for example, caring for acute or chronic wounds or local wound management skills.

Self-assessment of skills may be performed through self-reflection, reflecting on personal strengths and weaknesses of wound care. In addition, some generic skill-related questionnaires could also be used. In self-assessment, it is crucial to have some criteria or guidelines to reflect one’s own skills. This would help to identify any gaps in one’s own skills.

Self-assessment of knowledge

Knowledge can be divided into two dimensions: declarative knowledge and procedural knowledge (Sternberg 2017). Declarative knowledge consists of facts, concepts, principles, laws and regulations. This can be seen from a competence perspective as “knowing that”. In contrast, procedural knowledge consists of procedures and strategies. This instead means “knowing how” (Sternberg 2017).

In the self-assessment of knowledge, an individual gains an understanding of knowledge levels and areas of development. Self-assessment can be conducted personally through self-reflection, by peer mentoring or by completing self-assessment questionnaires.

Self-assessment of attitudes

Assessing attitudes is also self-assessment. Several studies have examined nurses' attitudes towards pressure ulcer prevention (Avsar et al. 2019). These studies are often combined with assessing theoretical knowledge of pressure ulcer prevention, i.e. a knowledge test. Although no validated instruments assessing attitudes towards wound care, in general, have been found, attitude assessment could also be included as part of a broader knowledge assessment. For example, the attitudes of nursing staff and students towards chronic wound care have been studied in combination with theoretical and practical knowledge of wound care (Kielo-Viljamaa et al. 2021).

Attitudes are abstract and latent and cannot be assessed directly (Reid 2015). Attitudes are also individual and can change, for example, as a person develops skills and gains work experience or life experience. Attitudes can be divided into three components: knowledge, emotion and action (Hovland et al. 1953). The knowledge component focuses on the knowledge and beliefs related to the object of the attitude. The feeling component describes the person's attitude towards the target, and the action component describes the person's behaviour and action, including both the individual's readiness and willingness to act towards the target of the

attitude. The components can be seen as a single entity or as separate parts that interact with each other. The abstract nature of an attitude and its breakdown into components poses challenges for assessing attitudes. These challenges relate to operationalisation, response scale selection, question-wording, targeting, clarity and consistency.

Self-assessment is always subject to reliability constraints, and assessing attitudes in absolute terms is impossible. One factor that undermines reliability is the so-called socially desirable way of responding (Bergen & Labonté 2020, Meisters et al. 2020). It is related to evaluation bias, where respondents evaluate their attitudes as different from reality. Reasons for this may be that the respondent wants to answer the way they should (e.g. in their position) or because they want to give a good impression of themselves (Bergen & Labonté 2020). The Hawthorne effect may also be present in wound care attitudes research (Nguyen et al. 2018). The Hawthorne effect occurs especially when a person knows they are being evaluated and thus changes their behaviour in the direction they perceive as socially desirable. This can be reflected in both attitudinal and behavioural evaluation in wound care.

Perceived level of competence

Perceived competence can be defined as self-evaluation of one's effectiveness or capability in a specific context (Elliot 2005). It covers one's awareness, beliefs, expectancy, or understanding of abilities, skills, or capacities to effectively interact with the environment (Boekaerts, 1991). It consists of self-assessment of knowledge, skills and attitudes in wound care. In wound care, perceived competence can be synonymous with the notion of "I can". This is determined by the degree to which individuals believe that their abilities and skills meet the demands of wound care.

Since perceived competence integrates an individual's beliefs, perceptions, and expectations, self-assessment plays a fundamental role. Perceived competence can be seen in two levels: mastery goals and performance goals (Elliot 2005). Mastery goals mean that an individual strives to develop competence to attain task mastery (Elliot 2005). In wound care, it would mean comprehensive mastery of the wound care process from prevention to care. Performance goals instead mean striving to attain or demonstrate competence relative to others (Elliot 2005). For example, in wound care, this would mean comparing individual knowledge and skills with a colleague.

Perceptions of competence are based on subjective inferences about one's history of experiences with similar skills and abilities in wound care. Because feedback from prior experiences can be ambiguous or inconsistent, perceived competence may not accurately represent actual competence (Elliot 2005). Commonly, and also in wound care, perceived competence is evaluated based on normative comparisons (e.g., the performance of others), absolute standard comparisons (e.g., task requirements), or intrapersonal standard comparisons (e.g., prior performance) (Elliot, 2005).

Objective assessment

Objective assessment is commonly used to evaluate individuals' current level of actual knowledge and performance. In wound care, objective assessment is the summative gathering of evidence of a health care professional's knowledge and skills to perform wound care. Objective assessment can be conducted using structured tests, for example, generic or specific knowledge tests, and performance-based structured observations with objective criteria in simulated or in a real clinical environment.

Knowledge tests

The knowledge test makes it possible to objectively assess nurses' knowledge of wound care, for example, to assess the need for further training. It can also be used to assess the impact of continuing education by measuring knowledge before and after training. Knowledge tests also help nurses to self-identify their own learning needs (Kielo et al. 2020.) In addition, objective knowledge tests allow nursing managers to have a constant knowledge of nurses' knowledge and skills over time. The knowledge test can be combined with a subjective assessment by nursing staff of their own knowledge, which contributes to identifying learning needs. Nursing staff's self-assessed knowledge of wound care is not always consistent with the outcome of the knowledge test (Ylönen et al. 2019, Ylönen 2020.)

Developing a reliable knowledge test is a multi-stage and systematic process, including expert panels and statistical methods. The development and psychometric properties of the knowledge test must be reported in detail (DeVellis & Thorpe 2022, DeVon 2007.) The literature review (Kielo et al. 2019) found only five studies that used a wound care knowledge test with thoroughly reported psychometric properties and demonstrated the test to be reliable. Four of these studies included a pressure ulcer knowledge test (Pieper & Mott 1995, Pieper & Zulkowski 2014, Beeckman et al. 2010, Manderlier et al. 2017) and one diabetic foot ulcer knowledge test (Kumarasinghe et al. 2018). The emphasis on pressure ulcers in nursing knowledge tests is natural, as pressure ulcers are defined as a nursing-sensitive 'outcome' of care (American Nurses Association 1996). However, nurses encounter patients with wounds other than pressure ulcers in their work. Therefore, more validated knowledge tests on both pressure ulcer management and wound care in general are needed to assess competence in wound care.

Performance

Performance, including the evaluation of practical skills, can be assessed through pragmatic activities and activities that are as close as possible to real situations and as close as possible to real environments. Assessment of performance is strongly related to national and international wound care guidelines that define essential and

mandatory skill sets in wound care. Therefore, performance assessment needs to cover those standards to produce valid results of wound care competence.

Simulation is a commonly used teaching method in nursing education (Aebersold et al. 2016). However, it could also have the potential to evaluate the performance of wound care. In the context of wound care, simulation has only been used to assess competence in two previous studies. The first study used simulation to assess nursing students' knowledge of pressure ulcer risk assessment (Moura & Larcher Caliri 2013). The study found that students could identify gaps in their knowledge in a simulated situation better than if they had been assessed through theory alone. In another study, wound care simulation was used to assess the wound care skills of graduating nursing students (Kielo-Viljamaa et al. 2021). The simulation used in this study was based on a fictional patient case. An artificial wound was used in the simulation, but other instruments and equipment used in the simulation, such as wound dressings, were real. The simulation also made use of thinking aloud. Competences were assessed using the C/WoundComp assessment tool developed in the study, which contained 14 items on practical wound care competencies.

Research shows that simulation can be used to assess competence more widely than, for example, a simple knowledge test (Keddington & Moore 2019). Simulation can also be used to develop students' psychomotor skills (Kim et al. 2016) and deepen their understanding of the subject matter (Herron et al. 2019). However, there are challenges associated with simulation, particularly in relation to resourcing. Simulations are time-consuming to design and implement, and special and expensive instruments may be needed to create the most realistic situation possible. In addition, simulation also requires the skills of the person who implements and supervises the simulation situations (WHO 2018).

Summary

Assessing competence is challenging, and no single approach gives an idea of a person's overall competence. This calls for a multifaceted approach to competence and combining and developing different assessment methods. In addition, in nursing, competence requirements change with evolving care methods, contexts, practices and opportunities, requiring continuous updating of competencies and continuous learning (OECD 2020). In changing contexts, self-reflection, demonstration of competence and self-assessment skills are also emphasised (Cowan et al. 2005).

The assessment of wound care competence focuses on objective assessment, particularly knowledge assessment, through a series of different knowledge tests. However, most of these tests are limited to the care and prevention of pressure ulcers, although there is little difference in the local management of wounds depending on their aetiology. However, aetiology is an essential part of the overall management, and therefore, instruments other than those focused on pressure ulcers are also needed. It should also be noted that only a few of the knowledge tests developed

have been used more than once in a study and have been thoroughly psychometrically tested. As knowledge requirements change, validated instruments must be developed and re-evaluated.

Wound care is an essential area of nursing competence. Therefore, instruments assessing wound care competence need to cover all dimensions of competence to produce an overall understanding of nurses' competence in wound care.

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