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Nursing students' conceptions of competence and the learning processes that support the development of competence: a phenomenographic study

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Abstract
The development of competence among student nurses is important to nurse educators, nursing regulatory bodies, employers and patients. Several teaching and learning strategies support the development of competence among student nurses, but the level of competence at the point of graduation remains below expected standards. Therefore, more research is needed to find strategies that can enhance the development of competence among students. The study explored students' conceptions of competence and the learning processes that support the development of competence in nursing practice. Gaining an understanding of learning and competence from the student's perspective can improve our current understanding of the development of competence. Utilising a phenomenographic approach, in-depth interviews and focus group discussions were conducted among purposively sampled groups of nursing students. The analysis of data was managed through ATLAS. ti 8.1 and followed the process of familiarisation, condensation, comparison, grouping, articulating labelling and contrasting of excerpts to generate the students' conceptions of learning. Five categories of description emerged and showed that the development of competence involves students increasing their understanding of what competence is, hence changing their learning strategies to meet the level of competence, as they understood it. In order of hierarchy from the lowest, the categories of description were: competence is understood as task completion; competence is understood as passing assessments /satisfying facilitators; competence is understood as applying theory to practice; competence is understood as performance of nursing according to clinical standards/guidelines; and competence is understood as performance that yields positive health outcomes.

Keywords Development of competence · Learning process · Phenomenography · Student–nurse · Conceptions

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Background

Competence is important in nursing education because nursing programmes globally seek to produce competent practitioners at the point of graduation (Blažun et al. 2015; World Health Organisation (WHO) 2013). Subsequently, it is equally significant that nursing education exposes nursing students to learning experiences that will best support the development of competence (Ironside et al. 2014). Existing evidence has explored the structure of competence and learning that supports the development of competence, but this evidence has some gaps that require further exploration. In particular, there is need to study how students conceptualise the link between learning processes and competence, because competence is the desired outcome of learning in nursing education (Stoffels et al. 2019). Understanding how students conceptualise developing competence can help nursing education programmes to graduate competent nurses.

Competence has been defined from three different perspectives: generic, behaviourist and holistic. In the generic approach, competence refers to one's characteristics that enable competent performance while the behaviourists defined competence as the ability to perform required skills (Fukada, 2018). These two definitions conceal some key aspects of competence, which are revealed in the holistic definition. The holistic approach defines competence as an integration of knowledge, skills, values and attributes needed for competent performance of a particular task (Hager et al. 1994; Watson et al. 2002). To date, the consensus is to describe competence from a holistic perspective. The implication for nursing practice is that, holistically, competence encompasses the integration of theoretical and clinical knowledge, attitudes, psychomotor and problem-solving skills in providing safe patient care (Wu et al. 2015). Hence, studies on competence should focus on the holistic perspective of describing competence to enhance our understanding.

Due to the significance of competence, there is an ongoing global drive to transform traditional nursing education to competence-based education. These changes were first observed, in the USA, followed by other parts of the world and lately in Africa with the hope that graduating nurses will become competent, despite insufficient evidence to support this claim (Bvumbwe & Mtshali, 2018; Frank et al. 2010; Gravina, 2017). Considering the shortage of healthcare workers globally, in particular nurses, it is important that nurses are ready for practice upon graduation without the need for enrolling them into graduate transition/ entry to practice programmes (El Haddad et al. 2017; Goode et al. 2009). The need for competent health care professionals is strengthened by evidence showing that competent practice positively influences patient care outcomes (Aiken et al. 2017; Kendall-Gallagher & Blegen, 2009). Despite the need for competent graduates, current evidence shows that in some instances nursing diplomates and graduates are not competent to practice upon graduation (Brown & Crookes, 2016; Liou et al. 2013). Therefore, investigating areas of competence and learning processes that support the development of competence in students are of interest among nursing researchers (Fukada, 2018).

Existing literature demonstrates a link between learning and competence. Reflecting on the past, Cope et al. (2000) established that competence was the ultimate learning outcome of nursing education. Just over a decade later, the literature continued to show that competence is the required outcome for nursing education programmes (Garside & Nhemachena, 2013). Even today the purpose of learning in any nursing education programme is to make graduates competent (Zieber & Sedgewick, 2018; Fukuda, 2018). However, it remains unclear what learning experiences support the development of the required competence among nursing students (Stoffels et al. 2019).

Early studies by the Dreyfus brothers and Benner considered the development of competence in other professions and nursing, respectively. The studies by Dreyfus and Dreyfus (1980) among several professionals revealed that competence develops in stages from being a novice to an advanced beginner, being competent, proficient and finally an expert. Further studies by Benner (1984) which involved professional nurses showed similar results, which gave competence its taxonomy. Benner et al. (2009) further expanded our understanding of competence by showing how nurses used clinical judgement to progress through the stages of competence. Later studies extended our understanding of competence by describing what they called competence structure. Matsutani et al. (2012) in a literature review identified components of competence, which described the abilities of a nurse such as the ability to apply knowledge and the ability to provide nursing care, inter-alia. In another study, Maruyama et al (2011) studied the process of developing competence and created a competence structure made up of thirteen competencies such as basic nursing abilities and evaluation of care among others. Furthermore, Fukada (2018) developed a competence structure, which mimicked that of Matsutani et al (2012) but was limited to four abilities only: the ability to understand needs, the ability to provide care, the ability to collaborate and the ability to support decision-making.

Studies on the structure and taxonomy of competence did not explain the learning processes that lead to the development of competence. According to Fukada (2018), existing learning theories and styles are either inadequate or have not been applied appropriately to promote the development of competence. Anema and McCoy (2010) called for the need to find learning approaches that can help students become functional at the second stage of Benner's Novice to Expert model upon graduation. This lack of understanding of key learning processes that support the development of competence among nursing students can compromise the success of the ongoing competence-based education drive (Russell, 2006). It is therefore logical to seek more evidence that can expand our understanding of competence and competence development.

Recent studies on the development of competence explored how nursing students learn. Garneau and Pepin (2015) researched the processes involved in the development of cultural competence among nursing students and identified three learning dimensions: building a relationship with others, working outside the usual practice framework and reinventing practice in action. Others studied medication competence and emotional competence with a focus on the strategies used to facilitate the development of competence (Sulosaari et al., 2012; Fero et al 2009; Horton-Deutsch and Sherwood, 2008). Besides these studies, there is more evidence on the development of competence from the clinical competence approach. A study by Raij (2000) investigated students learning in the clinical area and identified students' learning processes in the clinical area. These processes were collecting knowledge for knowing; participating in nursing (doing); reflecting, interpreting (understanding); problem solving, investigation and self-directed learning. Another study of clinical learning among students showed that students' learning in clinical practice focused on task completion (Ironside et al. 2014). Stoffels et al (2019) further expanded our understanding by identifying processes that led to students learning in the clinical area. These processes included working as a nurse, interacting with ward staff, interacting with peers, interacting with patients and processing information.

The studies by Benner (1984), Fukada (2018) and others have enhanced our understanding of the structure of competence while studies by Stoffels et al. (2019), Raji (2000) and others expanded our knowledge on how students learn in clinical practice by giving us a snapshot into how students develop competence. However, there are some limitations levelled against this evidence. Firstly, studies on the structure of

competence were conducted among professional nurses only; nursing students may not necessarily understand competence in the same way. In nursing education, students are at the centre of the development of competence so it is important to examine competence from their own view. Secondly, research on clinical learning neglected classroom learning which should be integrated with clinical learning to form the basis of developing competence. Thirdly, evidence focusing on the development of competence in culture and medication administration investigated competence in parts therefore cannot be applied to the development competence from a holistic perspective. Lastly, no studies have looked at the learning processes in relation to the desired learning outcomes (Stofells et al. 2019). Resultantly, our study explored the nursing students' conceptions of competence and the learning processes that support the development of competence to build on the existing literature.

The purpose of this study was to expand our understanding of competence and the associated learning processes. To achieve the purpose of this study, three key aspects regarding competence were applied. Focus was drawn from professional nurses' understanding of competence to nursing students' understanding of competence. The study looked at competence in a holistic manner rather than as isolated sets of knowledge, skills or attitudes that students possess. More importantly, students' conceptions of competence (learning outcome) were explored in relation to the learning process that support the development of competence using a unique approach.

To fulfil the purpose of this study, a phenomenographic approach was used to study the conceptions of the nursing students. Conceptions are the thoughts and perceptions or knowledge a person holds about something; they are the meaning people give to a particular phenomenon or how they understand the phenomenon (Marton, 1981; Svensson, 1997). Studies by Dall'Alba and Sandberg (2006) and Yu (2019) signal a different trend to understanding competence and its development. For example, Dall'Alba (2002: 175) stated, "Developing a practical understanding of what being a doctor involves is arguably the most fundamental outcome of a medical program". If this is applied to nursing, then understanding of what being a competent nurse involves is an important outcome of nursing education. Sandberg (2000) urged that the way professionals understand their work directly affects how they go about developing competence. In the context of the available evidence on competence in nursing, focusing on how students conceptualise competence and the learning processes that support competence development is a new and necessary dimension to expand current knowledge.

Methods

Study setting and context

This study explored the nursing students' conceptions of competence and the learning processes that support the development of competence at a nursing college in Namibia. The nursing college was supported by the government to educate nurses who were expected to become part of the workforce upon completion of the programme. Given the prevailing shortages of professional nurses at the time of inception of the programme, it was important that the education programme produced practice ready nurses.

Design

This study adopted a phenomenographic study design due to its inclination to research questions of an educational nature. Phenomenography is defined as "an empirically based approach that aims to identify qualitatively different ways in which different people experience, conceptualise, perceive and understand various kinds of phenomena" (Marton, 1988:53). Phenomenography was originally developed from studies exploring differences in student learning outcomes, ways in which students learn their perceptions of knowledge and learning in general (Marton & Booth, 1997). The phenomenographic approach has been used to explore students' approaches to learning and students understanding of certain concepts (Barry et al. 2017). Consequently, this study, which explored nursing students' conceptions of competence and the learning processes that support the development of competence, is in line with how phenomenography has been applied in other studies.

The findings of a phenomenographic study seek to show the different ways of experiencing the phenomenon, i.e. the conceptions (Bruce, 1999) and to scrutinise how these ways of understanding are structurally related to one another (Stenfors-Hayes et al. 2013). According to Yu (2019), phenomenography is useful in education because of its focus on the structure, which provides an explanation of what is required to progress from a less sophisticated to a more sophisticated understanding of a phenomenon. These features of phenomenography are presented in the findings as categories of description and an outcome space (Yates et al. 2012). Marton and Booth (1997) make the distinction between conceptions and categories of description clear by stating that conceptions or ways of experiencing refer to an individual while categories of description refer to the group level. They further propose three key features of a category of description. Firstly, each category must show something unique about a way of experiencing a phenomenon known as the dimensions of variation. Secondly, there should be a coherent link between categories. Lastly, the categories of description should be limited in number and determined by the degree of distinction between the categories.

Sampling

Purposive sampling was used to select (Patton, 2002) 41 students from the students studying towards the Diploma in Nursing and Midwifery Science. Since variation is the essence of phenomenography, students from different years of study were invited to participate in the study. The sample included 21-s year, 10 third year and 10 fourth year students. At the time of this study there were no first year students enrolled in the programme. The inclusion criteria were all nursing students enrolled in the programme taking into consideration a balance in terms of year of study, gender and level of performance.

Data collection process for the students

Data were collected between April and August 2017. Semi-structured in-depth interviews were held with the third and fourth year students, while focus group discussions were conducted with the second year students. (Each group consisted of seven students.) Focus groups were used as a way of empowering participants who expressed unease

in taking part in individual interviews. Rands and Gansemer-Topf (2016) stated that synergetic focus group discussions can be used to collect data in phenomenographic studies. By applying this method, it allowed data to be collected in a non-threatening environment.

The following questions were used to initiate and follow up the discussions:

1. What do you understand by competence?
2. What do you do in your learning to become competent?
3. How was your approach to learning related to your understanding of competence?

Follow-up questions:

1. How has your understanding of competence changed as you progressed in your studies?
2. How do you go about learning to become competent?

Data analysis

As this was a phenomenographic study, the anatomy of awareness was used as the framework for data analysis to yield an outcome space. A brief summary of the framework as applied to learning is given below (Fig. 1).

The aim of this study was to explore nursing students' conceptions of competence and the learning processes that support the development of competence. In general, this was the nursing students' experiences of learning in the nursing programme. According to Marton and Booth (1997) any experience has a "what" or referential aspect and a "how" or the structural aspect. The referential aspect is the meaning given to what people are experiencing, and in this study, this was represented by the question "what students understood by competence". The "how" part or structural aspect has two components, "indirect object" and the "act of learning". The indirect object is the learning outcome students were aiming to achieve and the act of learning is the learning activities or approach required to attain the learning outcomes. The "how" component was obtained by asking students to share their experiences of how they went about their learning and what they wanted to achieve in their learning. The direct

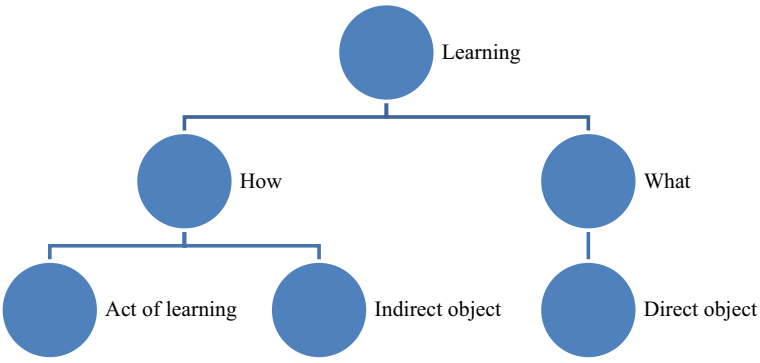

Fig. 1 Learning in phenomenography (adapted from Marton & Booth, 1997:85)

object, indirect object and act of learning form what is known as the internal horizon, which defines the student's focus of learning during the development of competence.

Data analysis took place concurrently with data collection. The process of data analysis as outlined by Sjöström and Dahlgren (2002) together with the anatomy of awareness was applied as a guideline. According to Marton (1986) and Marton and Booth (1997), there are two goals of phenomenographic research which a researcher should focus on in analysing data. First, the researcher should seek for the qualitatively different conceptions (meanings) people give to the phenomenon under study and second, the researcher should seek and describe structural relationships between the different conceptions identified. Pang (2003:147) further highlighted two key questions that should be answered in analysing data in phenomenography: "What are the different ways of experiencing a phenomenon? How are these different ways related to each other?" In this study, the researchers focused on these key aspects in the data analysis process, which played a key role in the shaping of the categories of description. While the data contain the conceptions, the researcher should discover the conceptions and construct categories in terms of referential and structural aspects (Bruce, 1999).

Data were managed using ATLAS t.i 8.4.10. In the initial stage, researchers focused on extracting the meaning the different groups of participants ascribed to the phenomenon of competence and grouped the excerpts. After further examination, researchers applied labels to the excerpts. The identification of the meaning of competence addressed the "what" or the direct object of this study, while the categorisation of the competence into levels addressed the indirect object of this study. In the second stage, the transcripts were read to identify the students' conceptions of learning and the associated learning outcomes they sought to attain. In the third stage, the transcripts were examined to identify how the students' conceptions of competence were related to each other. The conceptions were then categorised hierarchically from the simple to the complex through the interpretations of the researchers. Similarly, the researchers explored the conceptions of learning to find the links and categorise them from simple to complex. In the final stage, researchers linked the students' conceptions of competence to the conceptions of learning producing five categories of description. The researchers were involved in every step of the analysis providing critique, validation and alternative interpretations.

Data trustworthiness

Alignment of a study's theoretical underpinnings and the methods applied therein is a key aspect in ensuring its trustworthiness (Roulston & Shelton, 2015). The approach used by the researchers, phenomenography, is a well-accepted methodology in health professions education that is well aligned with the research question studied. The researchers who conducted this study are health educationalists, and one of them was a clinical facilitator at the college where this study took place. Their beliefs about learning and the development of competence necessarily influenced the research process at every stage of the study from design to data analysis; thus, the outcome of this study mirrors the voices of participants as retrieved, moulded and translated by the two researchers (Varpio et al. 2020), both of whom were involved in the analytic process.

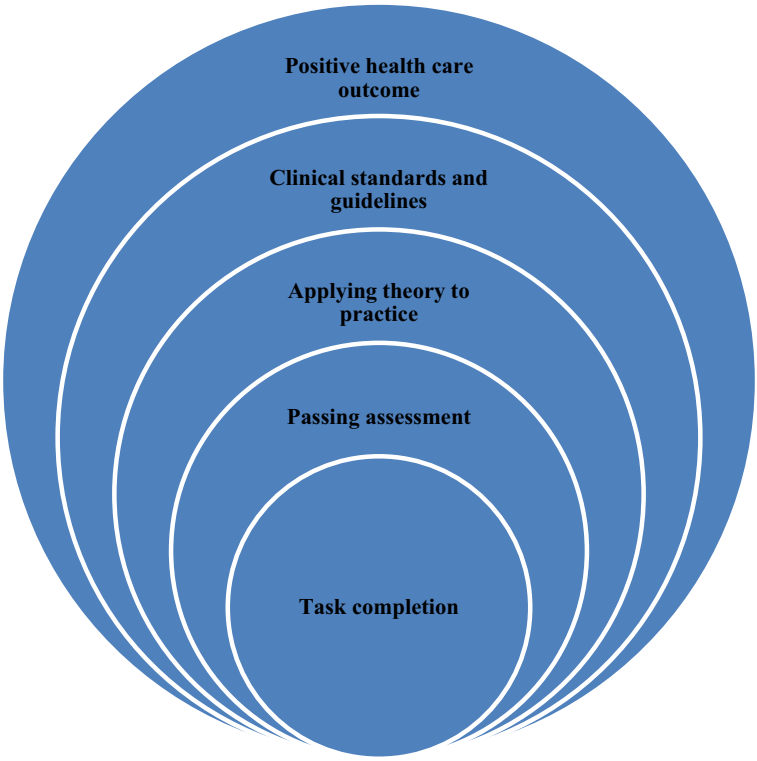

Fig. 2 Diagrammatic representation of the hierarchical association of the categories of the students' conception of competence (Increasing complexity and inclusivity)

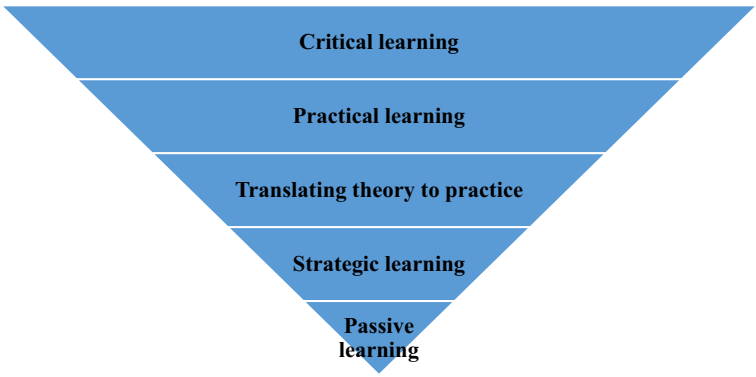

Fig. 3 Diagrammatic representation of the hierarchical association of the categories of the students' conception of the learning process that support development of competence

Table 1 Students' conceptions of the relationship between level of competence and learning process

Learning process → / Competence levels ↓	Passive learning	Strategic learning	Translating theory to practice	Practical learning	Critical learning
Competence as task completion	*				
Competence for assessment /to satisfy facilitators	*	*			
Competence as applying theory to practice	*	*	*		
Competence as per clinical standards/ guidelines	*	*	*	*	
Competence as positive outcome	*	*	*	*	*

Results

The aim of the study was to explore the nursing students' conceptions of competence and the learning processes that support the development of competence. Findings of this study represent how students experienced the development of competence in a nursing programme. Specifically, the findings show the categories of description of how students understood competence (Fig. 2) and how they experienced learning to achieve competence (Fig. 3). Table 1 shows how the linkage between the conceptions of competence and the conceptions of the learning process in a hierarchical manner from simple to complex.

Students' conceptions of competence and the learning processes

- Category 1: Competence as task completion—Passive learning
- Category 2: Competence for assessment /to satisfy facilitators—Strategic learning
- Category 3: Competence as applying theory to practice—Translating theory to practice
- Category 4: Competence as per clinical standards/guidelines—Practical learning
- Category 5: Competence as positive outcome—Critical learning

The table above shows that there is a pattern linking conceptions of competence and the conceptions of the learning processes with less sophisticated conceptions of competence being associated with the less complex conceptions of the learning processes.

Category 1: Competence as task completion-passive learning

The lowest level of conception in which students understood competence was the ability to imitate a procedure with the aim of completing a given task. Task completion was in the students' focus of awareness or the internal horizon. One student stated that imitating the nurse without reflecting in action was good enough.

> *…in practice, because I see the nurse doing it, so all I have to do is copy what the nurse is doing, I don't think there is anything to think about. (Third year student 8)*

This suggests that the students will adopt a learning approach that makes it possible to be able to complete a given task. Learning is characterised by familiarisation through passive

observation, listening and reading. The excerpt below further illustrates the learning approach applied in this category.

> *I just read through to familiarise myself what is being taught …Just for me to capture the thing for now, that's what I do. (Second year 2: FGD 1)*

At this stage of development, assessment requirements, demonstration of understanding, meeting practice standards and patient outcomes are in the external horizon and are not within the student's focus of awareness. Also in the external horizon is the role of facilitators. Students considered educators as sources of information and instruments for delivering the information. Viewing educators in this way complemented the understanding of competence and the learning approaches students applied.

> *By teaching, I mean when the lecturers come and present to us, giving information on the procedure and when they demonstrate in simulation. (Third year student 4)*

Category 2: Competence for assessment-strategic learning

In category 2, the students' focus of awareness (internal horizon) expanded to understanding competence as passing assessments or pleasing the educator. Students sought to understand the requirements of the examination or educator regardless of whether they were up to standard or not. This was explained by a fourth year student as follows:

> *I would say yes, if you fail an assessment that means you don't know anything because you cannot fail something that you have been practicing. (Fourth year student 6)*

The act of learning in preparation for an examination took a surface learning approach, suggesting that this approach was sufficient for examination purposes. However, the students recognised the limitations of surface learning and the need to apply a deep approach to learning for better understanding beyond passing the assessment. The two excerpts below best illustrate this by stating that:

> *Basically, there is studying for knowing and studying for the exam. (Second year student 3: FGD 2)*
> *I just read through to familiarise myself what is being taught in the chapter until later that's when I come and read intensively. (Second year student 2: FGD 3)*

In the external horizon lie aspects related to demonstration of understanding, meeting practice standards and patient outcomes. In addition, the role of the facilitators influenced the internal horizon; students saw examinations and pleasing the facilitators as measures of the standard of competence. The students believed that they had to follow examples given by their educators to pass the examinations or to please the facilitator as revealed in the quotation below.

> *I think it's important for me to follow what I was taught, so if I do that then my supervisor is happy because they expect it that way. (Fourth year student 7)*

Category 3: Competence as applying theory to practice-translating theory to practice

As the students' focus of awareness expanded they realised that knowledge should be operationalised and not just be used for passing assessments. This required an understanding of

the theory and transforming the theory into practice. Competence was understood as application of theory to practice.

> *What I mean is that, after understanding theoretically, you need to be able to put it into practice. For example, I learnt how to give an injection, about the site, the angles and the equipment. But when you get to the clinical (area), you need to actually do it. And when I was doing it, now I was injecting actual medication to an actual patient, so I had to know more about the medication, why I am giving it and at the same time, I had to be able to hold the needle at the required angle. So to me I was learning, because now I was doing it in real practice. (Third year student 5)*

There is evidence of deep learning to support the development of competence for application of theory to practice in this category. Students sought to understand and took time studying, analysing information and asking for clarifications. A second and a third year student illustrated the importance of questioning, respectively:

> *..learning is a process so you cannot just focus on knowledge. You have to understand when you come to practical. I usually used to ask why are we are doing this. We must ask questions. (Second year 7: FGD 3)*
> *Also sometimes in first year, you focus on cramming rather than understanding, so it doesn't take much time, unlike when you study to understand. Now you have to carefully analyse everything and also question things so you can better understand (Third year student 7).*

Practice standards or requirements and positive health outcomes were in the external horizon of the students. Students initially struggled with the transfer of knowledge to practice, as they possessed limited practical skills and believed that having knowledge was adequate to enable them to practice competently. As a result, they thought the theory they were taught in class was correct and formed the basis for practice. However, as students progressed, they realised that the professional nurses' approach to nursing care was more practical, as opposed to the students' theoretical approach.

> *For example I can know the signs and symptoms of TB(tuberculosis), but if I see the patient I may not recognise the signs, so I ask the (clinical)nurses and they show me those things, then it begins to make sense to me. (Third year student 9)*

Category 4: Competence as per clinical standards/guidelines-practical learning

In category 4, the ability to perform according to actual practice standards and clinical guidelines becomes the focus of awareness. Students now understand competence in the context of not only completing a task, passing an assessment, applying theory to practice but also being able to do so while meeting practice standards.

> *For example, in the clinical area when we are doing procedures with the nurses, they don't use any tool, but they just see if you are doing the procedure as it's supposed to be done in the hospital. In some cases, there are guidelines, and if you follow them, then you know you are competent. (Second year 3)*

During the learning process, students select what is important for clinical practice and focus on that. Practical learning through practice in the clinical area and understanding what is required to practice in the clinical area is given priority. Differences noted among

theory, simulation and practice are subject to questioning with the aim of ensuring that practice adheres to clinical standards.

> *The activities that I do are not much, but I am allocated at a certain part of hospital. I make sure that I ask all the questions that I need to, to make sure that I know all the standard protocols, in case something happens. And whenever senior sisters are doing a procedure, I look at how she is doing it so that I can do the same thing. (Fourth year 5)*

However, the students failed to recognise that merely adhering to standards without positive patient outcomes was inadequate.

Category 5: Competence as positive outcome-critical learning

Category 5 represents the highest level of awareness of the students where competence was understood as the ability to perform with positive outcomes for the patients. A third year student explained it this way:

> *Yes, let me say I do something, then the results come out positive and there is an improvement, which means I was competent because the results of what I did were very positive. (Third year student 10).*

Students pay attention to detail and think about what they are doing with a view to discovering a better way of practice and producing better outcomes. The students display self-directed learning and the ability to select critical learning material based on their understanding of nursing.

> *But now I have a full understanding of nursing, so I really know what to learn and what not, I don't just follow, I question things. (Fourth year student 5)*

Other aspects that can improve patient outcomes lie in the external horizon. The students viewed the role of the educator as that of helping them to expand their understanding of competence and what they needed to do to reach competence. The students looked at educators as partners to engage during the learning process.

> *In particular, we know that nursing is all about caring for the patients to get better. Moreover, we want to find ways of doing things better that can actually improve patient's health. So when engaging the lecturers and the sisters (clinical nurses) for more information it can actually help. (Third year student 7)*

Discussion

The aim of this study was to explore nursing students' conceptions of competence and the learning processes that support the development of competence. Students' conceptions of competence revealed that students understood competence as a taxonomy from task completion to positive care outcome. The students' conceptions of the learning process showed that learning approaches depended on the level of competence they wished to achieve, from the less complex passive type of learning to complex critical learning. Consequently, this study showed that students' conceptions of competence are related

to the learning processes that support the development of competence in a hierarchical manner from the simple to complex.

Competence is extensively discussed in the literature starting from the ground breaking studies of Dreyfus and Dreyfus (1980) that established the taxonomy of competence to more recent studies focusing on learning that support the development of competence. In nursing, the flagship studies of Benner (1984) confirmed that the development of competence in professional nurses followed the taxonomy as found in Dreyfus and Dreyfus studies. These studies reported a novice as one who focuses on to do lists (students), an advanced beginner whose practice is based on rules and guidelines (new graduate), a competent nurse who can operate beyond rules (2–3-year experience). These first three stages draw some similarities and differences to the taxonomy of competence established in this study. Category one of the findings resembles a novice who is focused on task completion, while category four corresponds to advanced beginner in focusing on practice standards and guidelines. Nevertheless, there are differences, a novice in the Benner (1984) model refers to almost every student starting nursing, while in this study it refers to those students who could be in their early years of studying nursing. Further evidence supports this by stating that the goal of nursing students at the beginning of the course is being able to complete psychomotor skills such as administration of medications and basic care activities (Donnelly, 2014; Ironside et al., 2014). Scully (2011: 95) refers to such practice as "merely doing a task and not learning to do it". The advanced beginner in this study is a student who may not have reached the point of graduation, in contrast to the advanced beginner in Benner's model who is a new graduate.

Later studies on competence brought another dimension to the structure of competence by identifying specific abilities nurses should develop. Matsutani et al. (2012) described abilities such as the ability to apply knowledge and the ability to provide nursing care. Maruyama et al (2011) created a competence structure made up of thirteen competencies such as basic nursing abilities and evaluation of care. Fukada (2018) developed a competence structure with four abilities only; ability to understand needs, ability to provide care, ability to collaborate and ability to support decision-making. These studies described what nurses should do without giving a taxonomy, but their findings relate to findings in this study. Basic care abilities, ability to apply knowledge are congruent with category one (task completion) and category three (applying theory to practice), respectively. Evaluation care and ability to support decision-making draw some similarities with category five (positive outcome). However, the major difference between these studies and the findings is that abilities in this study are categorised to fall under the competence taxonomy.

Studies on learning in nursing and related subjects have shown some common features. Some demonstrated a taxonomy of learning from simple to complex learning while some described learning processes without categorising them. According to Raij (2000) nursing students learning in the clinical area falls into six categories from simple to complex; collecting knowledge for knowing; participating in nursing (doing); reflecting, interpreting (understanding); problem solving, investigation and self-.directed learning. Similarly, categories of learning by Marton et al. (1993); showed a hierarchy of five categories; learning as quantitative increase in knowledge, learning as acquiring information, learning as acquiring facts, skills and methods that can be retained and used as necessary", learning as making sense and learning as seeing something differently. Meanwhile, Stofells et al. (2019) described clinical learning as;: working as a nurse, interacting with ward staff, interacting with peers, interacting with patients and processing information without showing any taxonomy.

This learning described in the literature has similar elements with the findings of our study. The findings show a hierarchy in the learning as revealed in the Raij (2000), Marton and Säljö (1976) studies. Category one—passive learning corresponds to acquiring information (Raij, 2000) and learning as a quantitative increase in knowledge and learning as acquiring information (Marton & Säljö, 1976; Marton et al. 1993). Category two—strategic learning draws comparisons with learning as acquiring facts, skills and methods that can be retained and used as necessary (Marton & Säljö, 1976; Marton et al. 1993; Trigwell & Prosser, 1991). In category three—applying theory to practice mimics, participating in nursing (doing) and dealing with information by Raij (2000). Marton and Säljö (1976) named it "learning as making sense". Zakari et al. (2014) also described this as the 'what and the why' of learning; where students wanted to understand how things operate in real life. Category four in our study—"practical learning" has been described as students focusing on the clinical environment more than theory (Stofells et al. 2019).

Category five of our study reflects learning as described by Raij (2000) as problem solving, investigation and self-directed learning while Marton and Säljö (1976) described it as seeing something differently. This learning resembles transformative learning, a learning process that results in a fundamental change in the way one thinks, understands and views the world (Mezirow, 2000). Students no longer viewed themselves as students but professionals with a responsibility to improve nursing care in what Stofells et al. (2019) called working as a nurse. Similarly, such an approach to learning was described as the most critical learning by Benner, et al. (2010: 98) when they stated that; "It's what they learn after they know it all that counts".

Implications for practice

The findings of this study are significant for nursing education and health professions education. With the findings showing a close relationship between students' conceptions of learning processes and competence, educators need to help students focus on the higher end of the taxonomy of competence where students begin to approach learning meaningfully. As students understand competence differently from professionals, nursing education programmes should facilitate the development of students into professionals, before they can develop as professionals.

Limitations

The study was conducted on nursing students in a diploma programme so the findings may therefore not apply to students in degree programmes. In addition, first year students did not participate in this study. The conceptions of learning in first year were obtained from senior students through reflection on their learning in the first year of study. The participation of first year students may have revealed more profound conceptions of learning at the beginning of the nursing programme. Further studies should focus on understanding if the conceptions of students in this study are consistent with students in nursing degree programmes and other nursing programmes. In addition, we recognise that using focus group discussions in a phenomenographic study was unconventional, as focus groups are more often used to focus on the phenomenon under discussion rather than focusing on the relationship between the participant and the phenomenon (Bruce, 1999).

Conclusion

The findings of this study have expanded our understanding of the structure of competence by exploring students' conceptualisations of the links between learning processes and competence. Our results present a taxonomy of competence as conceptualised by the students and link this to learning. This knowledge can help shape approaches to nursing education, particularly given the current emphasis on the development of competence. It also has implications for future research, since if actual learning is likely to be influenced by students' conceptions of learning, there may be situations in which it is problematic to study actual learning without actually attending to these conceptions.

Appendix

Consent form

Study title: Nursing students' conceptions of competence and the learning processes that support the development of competence: a phenomenographic study

Reference Number: M160780

Principal Researcher: Takaedza Munangatire

Introduction

Good day,

My name is Takaedza Munangatire and I am doing research on the development of competence in nursing students. Research is a process of seeking answers or learning more about a particular problem or issue. In my study, I want to explore the learning processes used in the development of competence so that nursing education programmes can be strengthened to improve learning.

Invitation to participate.

I am inviting you to participate in a focus group discussion where you will share your knowledge and experiences of learning as you develop competence in the diploma in nursing programme in your college.

Participation is voluntary and you are free to decline to participate. If you say no, this will not affect you negatively in any way whatsoever. You are also free to withdraw from the study at any point, even if you do agree to take part, without any penalty or loss of benefits to which you may be entitled.

What is involved in the study?

If you agree to participate, this qualitative study will take place between December 2016 and December 2017 and you are asked to participate in a focus group discussion with other students from your college. The focus group discussion will take place at a venue in your school as provided by the school authorities and will take approximately 45–90 min.

During the focus group discussion, you are asked to fully participate and express your views without necessarily having to agree or disagree with any other participant. During the session, no names will be used; instead, numbers will be used to identify the participants. It is expected that eight people will be part of the focus group discussions, which will be audio, recorded. If you are willing to participate in this study and have the discussion audio recorded, please read and sign the attached Declarations of Consent for participation and audio recording.

Risks and benefits

There are no anticipated risks for participating in this study and there is also no direct benefit, but it is expected that the results of this study will help improve learning in nursing programmes. If you would like to receive feedback on this study, I will send you the results of the study when it is completed.

Reimbursements for "out of pocket" expenses.

I will provide refreshments and there are no anticipated costs that you will incur.

Who to contact if you have been harmed or have any concerns.

This study has been approved by the Human Research Ethics Committee (HREC) at University of Witwatersrand as well as the Biomedical Research Ethics Committee (BREC) and Research Management Committee (RMC) of Namibia and will be conducted according to accepted and applicable national and international ethical guidelines and principles, including those of the International Declaration of Helsinki (October 2008). If you have any complaints about ethical aspects of the research or feel that you have been harmed in any way by participating in this study, please contact my supervisor Prof Trish Mclnerney at Patricia.Mclnerney@wits.ac.za, PV Tobias Building: 2nd Floor, Office 206 University of the Witwatersrand or Prof P Cleaton-Jones – Chairperson of the HREC in Steve Biko Centre for Bioethics, PV Tobias Building (0,117,172,301- or Peter.Cleaton-Jones@wits.ac.za or Ms Hilma Nangombe—Chairperson of BREC and RMC at Ministry of Health and Social Services, Harvey Street, Windhoek Namibia at (hnangombe@mhss.gov.na) or + 264 61 272 286).

Confidentiality

I will take all the necessary measures to keep all personal information confidential, although absolute confidentiality may not be guaranteed in a focus group discussion. I cannot guarantee that other participants will not talk about the focus group afterwards. Furthermore, in case the results are published, it may lead to some form of identification, which may not necessarily be individual records. All personal details regarding sex, age, signature and opinions will be anonymously processed into the research report.

If you are willing to participate in this study and have it, audio recorded please read and sign the attached Declarations of Consent for participation and audio recording.

Declaration by participant for participating in the study

By signing below, I ……..……. agree to take part in the research study entitled: The learning processes that best support the development of competence among student nurses in Namibia.

I declare that:

I have read the attached information leaflet and it is written in a language with which I am fluent and comfortable.

I have had a chance to ask questions and all my questions have been adequately answered.

I understand that taking part in this study is voluntary and I have not been pressurised to take part.

I may choose to leave the study at any time and will not be penalised or prejudiced in any way.

Signed at (place) ……..……..…….. On (date) …….…….. 2017.

Signature of participant.

Declaration by participant for consent to audio recording

By signing below, I ……..……. agree to take have, my participation proceedings audio recorded in the research study entitled: The learning processes that best support the development of competence among student nurses in Namibia.

I declare that:

I understand that my participation in the focus group discussion is going to be audio recorded, records which will then be transcribed into written material for analysis purposes.

I also understand that the recordings are going to be solely used for the purpose of this research and agreeing to have the recording done is voluntary just like participation in this study.

I understand that taking part in this study is voluntary and I have not been pressurised to take part.

I may request certain parts not to be recorded and will not be penalised or prejudiced in any way.

The handling of the recorded information and subsequent written one has been explained to me and I understand that it will be kept in confidence.

Signed at (place) ……..……..…….. On (date) …….…….. 2017.

Signature of participant.

Focus group/ interview guide for students

Principal Researcher and Facilitator: Mr.Takaedza Munangatire

Questions for students (The probing / follow-up questions are examples and were not all need to be asked. After the opening question, the interview/focus discussion was guided by the views of the participants and probing questions were be used).

1. What do you understand by competence?
2. What do you do in your learning to become competent?
3. How was your approach to learning related to your understanding of competence?

Follow-up questions.

1. How has your understanding of competence changed as you progress in your studies?
2. How do you go about learning to become competent?

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