

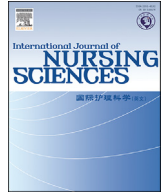
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Original Article

Transformative learning in nursing education: A concept analysis

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ABSTRACT

Objective: There is vast literature on transformative learning, which is an important aspect of nursing education, but its meaning remains unclear. It is therefore important to clarify the meaning of transformative learning, identify its attributes, antecedents and consequences to increase its use in nursing education, practice and research.

Methods: Walker and Avant's method was used, and the process provided a structured way to analyse the concept of 'transformative learning'. Nursing education dictionaries, encyclopaedias, conference papers, research articles, dissertations, theses, journal articles, thesauri and relevant books through the database library and internet searches were reviewed. One hundred and two literature sources were reviewed, and data saturation was reached.

Results: The results of the concept analysis of transformative learning within the context of nursing education identified three categories, namely, 1)Antecedents as cognitive and affective perspective, democratic education principles and inspiration; 2)Process through three phases, namely i) awareness through self-reflection, ii) the meaningful interactive, integrative and democratic construction process, and iii) metacognitive reasoning abilities; and 3)Outcomes. A theoretical definition of transformative learning was formulated. Theoretical validity was ensured.

Conclusion: The results of the concept analysis of transformative learning were used to describe a model to facilitate transformative learning within the context of nursing education.

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What is known?

- Several models on transformative learning have been described, but the models lack clarity in the meaning of the concept 'transformative learning' and how it should be facilitated in nursing education.

What is new?

- A theoretical definition of transformative learning was formulated.
- The results of the concept analysis of transformative learning were used to describe a model to facilitate transformative learning within the context of nursing education.

1. Introduction

Transformative learning is a learner-centred process of learning that actively engages students through critical reflection and discourse. Students are encouraged to question assumptions and expectations in order to achieve deeper understanding and changed perspectives that guide actions [1]. Transformative learning stimulates the development of competence and self-confidence in new roles and relationships that bring about change in the learning and working environments. Transformative learning theory was first introduced by Professor Jack Mezirow from Columbia University; since then, many scholars have substantially enriched the concept and the theory [2–4]. Transformative learning is a learning process that facilitates a transition in nursing education from transmissive learning to a transformative paradigm. Transformative learning stimulates nursing students to learn how to think independently in order to dispose of the knowledge that was acquired as a result of life experience without ever thinking or asking questions. Transformative learning develops nursing education to be in line with the global tendency of the 21st century, which advocates for education for sustainable

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development [5].

Nursing education is a formal and planned educational activity taking place at a university, college or school through which nursing students are facilitated, guided, assisted and given the means to learn the art and science of nursing with the ultimate goal of producing highly competent professional practitioners [6]. Nursing education programmes are perceived as not adequately preparing nursing students for their role in society. There is an appeal for education programmes to be more flexible and socially relevant to address the national priorities, and health and education are two such priorities [7]. Fixed and traditional methods of learning prevent nursing students from gaining applied competence [8], demonstrated by interconnected foundational, practical and reflexive competence which lead to the students developing critical and reflective thinking skills. These competencies help them to provide safe and effective nursing care [9]. Traditional transmissive methods of learning, whereby the facilitator imparts knowledge, result in nursing students being unable to adapt to any unforeseen circumstances and solve problems when they occur. Nursing students thus become dependent learners. To achieve transformative learning in nursing education, both nursing students and educators should be ready to embrace a new way of learning for change. Transformative learning should thus be viewed as a change in the learning culture in nursing education.

Nursing students must be ready to engage in self-directed and reflective learning, and educators should be ready to change traditional teaching practices and strategies to ones that will facilitate transformative change.

The objective of this paper is to explore and clarify the meaning of transformative learning, identify its attributes, antecedents and consequences. The results of the concept analysis provided a conceptual framework that guided the empirical phase of the study to describe a model to facilitate transformative learning in nursing education. Several models on transformative learning have been described, but the models lack clarity in the meaning of the concept ‘transformative learning’ and how it should be facilitated in nursing education [10–13]. Confusion in facilitating transformative learning in nursing education arise due to conceptual problems; this makes concept clarification an important aspect in the intellectual development of knowledge, skills and values of nursing practice. Transformative learning is thus a concept of interest; however, it remains complex and unclear within the context of nursing education. As a result, the concept analysis of transformative learning is necessary. Concept analysis is a deliberate, disciplined, and precise activity of examining the attributes of concepts in order to create a conceptual meaning [14].

2. Methods

Walker and Avant’s concept analysis method was used. The eight-step process provided a structured way to analyse the concept of ‘transformative learning’ [14]. The researcher made use of all the steps, except the invented and illegitimate cases.

2.1. Select a concept

The process of concept analysis begins with the researcher selecting an important concept. Transformative learning is a concept of interest within the context of nursing education, but it remains complex and unclear. The ambiguity of the concept prevents its facilitation within nursing education. Concept analysis is a strategy that allowed an examination of the concept.

2.2. Determine the aims or purposes of analysis

In this study, the purpose of the concept analysis was to clarify the meaning of ‘transformative learning’. The aim was to identify the core attributes and their related connotations so that they could be used in nursing education, practice and research [14]. From the concept analysis, the antecedents, process and outcome of transformative learning were identified. The theoretical definition was developed and it added value to the body of knowledge in nursing education [15].

2.3. Identify all uses of the concept

Different information sources were examined to promote an understanding of the phenomenon being discussed [16]. All use of the term ‘transformative learning’ was identified through an exploration of both primary and secondary sources such as dictionaries, thesauri, books, articles, related conceptual and theoretical frameworks, as well as data drawn from computerised databases. Definitions, uses, characteristics, and the nature of transformative learning were identified using various search engines, namely CINAHL, Medline, ERIC, Index to Dissertations and Theses. The internet, Google, Google Scholar and citations were used as a supplement to the literature search. One hundred and two literature sources were reviewed, and data saturation was reached. Data saturation is when additional sampling of literature sources do not provide new information but only redundancy of previously collected data [15].

2.4. Determine the defining attributes

Defining attributes are the characteristics of the concept that repeatedly appear in the literature and are consistently present when the concept occurs [14]. The procedure that was followed to analyse the concept of ‘transformative learning’ involved creating a table of three columns. One hundred and two definitions and uses of transformative learning were listed in the first column, serving as the database. In determining the defining attributes of the concept, the researcher got immersed with information by repeatedly reading the sources and conducting a through deductive analysis. Similar attributes and related connotations within the context of nursing education were identified and underlined [14].

Common features in the list were examined, and the word ‘change’ was found consistently in all aspects of transformative learning. Fifty-two statements were formulated through deductive analysis and synthesis about transformative learning and listed in column two. The statements in column two were further reduced to derive defining attributes and related connotations under the three categories using the process of concept synthesis and derivation.

2.5. Identify a model case

A model case is a real-life example of the concept that includes all the critical attributes of the concept [14]. A model case places a concept in a situation within a specific context; in this instance, it represents the researcher’s understanding of the concept of transformative learning in the context of nursing education. A model case was identified and described to identify the attributes and their related connotations in order to use transformative learning meaningfully in nursing education. The created model case scenario involved eight fourth-year nursing students from different racial backgrounds from the nursing college, along with their facilitator. Nursing students were assigned to undertake a community project in an informal settlement. Students were

tasked to develop a teaching programme that will promote positive behaviours in the youth infected and affected by HIV/AIDS. In applying transformative learning in nursing education, issues to be considered was that nursing practice is patient-focused and more problem-oriented. Moreover, problem-solving is a critical part of the nurse-patient relationship [13].

2.6. Identify borderline, related and contrary cases

Borderline cases are inconsistent in some ways with one or more of the defining attributes of transformative learning. Identified borderline cases of transformative learning in nursing education include collaborative learning and social learning [17]. Related cases are ones that relate to the concept under study but do not contain the critical attributes [14]. A related case of transformative learning in nursing education includes a shift in viewpoint [18]. Contrary cases reflect the absence of the defining attributes of transformative learning and includes a fixed, traditional educational method and rote learning in nursing education [19].

2.7. Identify antecedents and consequences

Antecedents of transformative learning within the context of nursing education were identified as cognitive and affective perspective, democratic education principles and inspiration.

The consequences or outcomes of transformative learning were identified as an autonomous thinking citizen (practitioner), new insight leading to gaining competitiveness in the global market, perspective transformation, and social justice for all (Table 1).

2.8. Define empirical referents

Empirical referents are categories of the actual phenomena that by their existence or presence demonstrate the occurrence of transformative learning [14]. The following higher-order thinking skills were identified as empirical referents of transformative learning with their measurement tools:

- **Critical reflection:** The critical practitioner displays reflective and reflexive conversation abilities; perceives information in concrete ways and then process it reflectively; thinks analytically and reformulates a meaning perspective; and critically constructs information through questioning, scrutinising, breaking down and interpreting knowledge to get a deeper understanding. Critical Incident Technique (CIT) is the measurement tool to critical reflection [20].
- **Imaginative skills:** The imaginative practitioner creates brainstorming situations and is proactive; and works as a generator of new information and knowledge. The measurement tool for imaginative skills is Kaufman's IQ-oriented standardised testing [21].
- **Creative skills:** The creative practitioner displays broad interests in many areas of work and generates a large number of ideas or solutions to problems and questions, and often offers unusual, unique, new ways of doing things. The measurement tool for creative thinking skills is the Minnesota Tests of Creative Thinking (MTCT) [22].
- **Innovative skills:** The innovative practitioner displays a visionary way of thinking about challenges and shapes new ideas in a committed and self-acting way; and communicates openly over ideas and succeeds in inspiring colleagues. The measurement tool for innovative skill is the Youth Innovation Skills Measurement Tool (YISMT) [23].
- **Inventive skills:** The inventive practitioner consistently uses basic principles or rules in new situations and produces ideas that are original, elaborated and unique. The tool used to measure inventive skill is Systematic Inventive Thinking (SIT) [24].

3. Results

The findings on the concept analysis of transformative learning revealed three categories, namely antecedents, the process and the outcomes. The results of the literature review revealed the following antecedents as necessary prior to the transformative learning process of nursing students; cognitive and affective perspective, democratic education principles, and inspiration. The process of transformative learning comprises three interrelated

Table 1
Results of the concept analysis of transformative learning in nursing education.

| Category [14] | Defining attributes and related connotations |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Antecedents | Cognitive and affective perspectives Democratic education principles Inspiration |
| Process/Procedure | Triggered by - Uncomfortable situation - Experiencing a disorientating dilemma - Events that challenge one's worldview Phase 1: Expanded awareness through: Self-reflection Phase 2: A highly cognitive and affective deep structural mental shift that involves a meaningful interactive, integrative and democratic construction process to arrive at new insight and changed perspective. Facilitated by: Investigative learning activities (discovery, evidential and research-based) Collaborative learning activities (communication, relating, connectedness) Interactive learning activities (critical discourse, argumentation and dialogue) Higher-order thinking activities (critical reflection, imaginative, creative, innovative and inventive) Guiding philosophies and theories Phase 3: Metacognition Authenticity Democratic vision Self-directedness Self-actualisation |
| Outcome | Autonomous thinking citizen Transformation of perspective Competitiveness in the global market Social justice for all |

phases that will be described in accordance with Table 1. The outcome of transformative learning is an autonomous thinking citizen (practitioner), perspective transformation (psychological, convictional, behavioural, social and emotional), competitiveness in the global market, and social justice for all. Concept analysis further revealed that transformative learning is cyclic in nature; when the goal has not been reached, the process should be repeated. The theoretical definition of transformative learning was formulated using the identified attributes.

4. Discussion

The results of transformative learning will be discussed as they appear in Table 1.

4.1. Antecedents

The literature review showed that antecedents are essential prior to the transformative learning process. Antecedents are described as necessary skills and events that should be present prior to the occurrence of the event or phenomenon [14]. Antecedents are the requirements for transformative learning.

The results of concept analysis indicated that during the transformative learning process, the nursing students need to possess cognitive perspective aspects, such as knowledge, understanding, analysis, interpretation, reflective thoughts, evaluation and prediction [25]. Cognition includes the processes of intelligent adaptation to interpersonal and practical problems. Nursing students should be able to organise information with thorough comprehension, and they should remember the information and retrieve such information during evaluations. Nursing students should be able to reason and apply strategic thinking to academic problems that arise during learning. The cognitive perspective [26] is fundamental in education; as a result, it is a prerequisite to nursing students prior to the transformative learning process. Cognitive theorists describe learning as a change in knowledge which is stored in memory and not just a change in behaviour [26].

Cognitive theorists place considerable emphasis on what the students already know as being the primary determiner of what to learn next. For Ausubel, learning is bringing something new into the student's cognitive structure and attaching it to existing knowledge; this is how students make connections to increase understanding [27]. Reflective thoughts are cognitive activities which involve critical thinking [28] that allows the transformative nursing student to function as a knowledgeable practitioner. Cognitive perspectives as antecedents provide a good foundation for effective transformative learning.

Concept analysis revealed that transformative learning is a dynamic and interactive learning process that requires the affective perspective as antecedents of the nursing students. Affective perspective represents the emotional (subjective) aspect of behaviour in learning. The identified affective perspectives include respect for values, attitudes, feelings, openness, empathy, commitment, engagement and appreciation [29,30].

According to Simm et al. [31], value refers to attaching worth to a phenomenon, object or activity. Values influence how one understands and interprets the phenomenon and have an emotional component. The clinical placement areas where nursing students are placed for practice have pitiful situations that are emotion-inducing for practitioners. It is further stated that nursing students should possess values that embrace sincerity, compassion and being empathetic [31]. Values remain an important prerequisite for learning to change.

Attitudes are described as positive or negative feelings about certain things or occurrences and consist of both cognitive and

affective aspects [25]. Attitudes have a powerful influence on transformative learning and behaviour because they prompt nursing students to act in a particular way towards stimuli. During the learning process, nursing students should display professional attitudes in communication and teamwork with others. Koehler et al. stated that transformative nursing students must be trusted to perform delegated work, take appropriate responsibility and accept constructive criticism with a view of having a changed perspective [32]. Students' commitment and engagement are part of the affective perspective antecedents, which represent their willingness to engage in the learning process [32]. During the process of learning, committed students display an attitude of openness and receptiveness to new knowledge. They are eager and interested to learn.

Democratic education principles as antecedents of transformative learning lead to liberated learning. Dewey describes democratic education as the learning process that view students as active co-creators of their own learning and not as passive recipients of knowledge [33]. The aim of democratic education is that nursing students gain knowledge useful for real-life professional functioning. The moral character of the students is built and they grow in all aspects; that is, intellectually, personally, socially and professionally. Waghid stated that the students should have democratic value antecedents which include self-determination, respect, justice and trust when engaging in the learning experience [34]. Concept analysis also revealed that the process of transformative learning requires the students' state of independence, self-directedness, freedom and emancipation [35]. Independent and self-directed nursing students accept responsibility for their learning experience and are able to review and evaluate effectiveness in learning. However, students' active participation does not mean that the facilitators should become redundant and abdicate their participation in the learning process.

The findings also showed inspiration as another antecedent of transformative learning. Inspiration refers to the process of being mentally stimulated to do something creative, it is an influence that encourages nursing students [36]. Observable change in learning is achieved when nursing students are inspired and receptive to alternative expressions of knowledge [37]. Inspiration is shown by enthusiasm, interest, willingness, readiness, self-motivation and discipline, confidence, goal-directedness, commitment and eagerness. Inspired nursing students experience learning as a process that allows them to emerge as open-minded and confident individuals.

4.2. The process of transformative learning

The process is the series of actions through which transformative learning is attained [38]. The three phases of the process are influenced by antecedents.

Phase one of the process of transformative learning starts with expanded awareness through self-reflection. The phase is triggered in an uncomfortable situation when the nursing students experience a disorientating dilemma or are faced with events that challenge their worldview. The trigger makes the nursing students more curious, thereby stimulating awareness and the process of transformative learning [40]. When the nursing students develop expanded awareness they become less narrow-minded, more understanding, and connect with the world beyond their own. Students realise that there is too much to learn and thus feel overwhelmed. Engaging in self-reflection gives nursing students an understanding of themselves and they begin to identify and know personal strengths and weaknesses in the learning process. In the quest of understanding one's self better, nursing students step back and ponder on individual beliefs about learning [37]. Self-reflection

develops out of situations of doubt, hesitation, perplexity and mental difficulty that propels the students to inquire about ways to resolve their doubts. Self-reflection is a process that demands both the cognitive and affective domains of reasoning, and helps the nursing students to free their minds of negative attachments; they attain a peaceful state when engaging positively in learning activities. New knowledge is thereby brought to the reflector [39].

Phase two involves a meaningful interactive, integrative and democratic construction process of learning. The phase answered the question of how transformative learning can be facilitated in nursing education. The process is characterised by nursing students' active involvement during the construction of meaningful knowledge, enabling skills and a positive attitude. A meaningful learning process is facilitated through investigative, collaborative, interactive and higher-order thinking learning activities. Meaningful learning is described as learning with the purpose of constructing knowledge out of students' experiences, feelings and interactions with other students [41]. Facilitators embrace new roles as learning coaches, facilitators and managers rather than teachers.

Concept analysis further revealed that transformative learning is an interactive process of knowledge construction. Interactive learning is a dynamic, real-world approach to learning which actively engages the students to participate in their learning [42]. Lectures evolve into discussions, students and facilitators become partners in the journey of knowledge construction. Dewey theorised that learning is an active, contextualised process of knowledge construction rather than acquisition [42]. Mutual participation and interaction among nursing students and facilitators around academic tasks thus creates growth in knowledge [43].

Transformative learning was also revealed to involve an integrative process of learning to construct knowledge. Integrative learning refers to the process of making connections among concepts and experiences so that information and skills can be applied to new and multifaceted issues or challenges [44]. The importance of integrative learning in nursing education is teaching students multidisciplinary team approaches in patient care. The approach enables nursing students to understand complex associations and influences within the learning process. The integrative learning process focusses on developing nursing graduates who are integrative thinkers, critical, reflective and analytical problem solvers [45].

As a democratic construction process of learning, transformative learning helps to develop emancipated and responsible attitudes in nursing students. Students make decisions, choices and take responsibility for their learning process. Democracy in learning promotes active student participation and co-responsibility [33,46]. The democratic construction process of learning also enables nursing students to articulate their own opinions rather than passively receiving and repeating the opinion of the facilitator.

Concept analysis results further indicated that the process of transformative learning is facilitated through investigative, collaborative, higher-order thinking (creative, innovative and inventive) and interactive learning activities (Table 1). These activities constitute the educational process that should be followed in developing the envisaged programme. Investigative learning is an innovative method of learning that transforms and develops nursing students' skills through the use of credible, relevant and current resources and skills of knowledge acquisition [47].

According to Sota and Peltzer, investigative learning is a multi-faceted concept referring to a variety of learning and teaching strategies that link research and teaching [48]. Research-based activities allow nursing students to discover information on their own, as they tend to learn more when they are actively involved in developing their knowledge. The facilitator engages the students

actively in learning and continuously searches for new knowledge by active analysis, synthesis, interpretation and evaluation when creating new knowledge. Nursing students learn to critique literature sources by examining their credibility in light of the evidence of existing research. It is important to teach nursing students research in order to maximise evidence-based practice and the value of the relevance, authority and utility of nursing research. Research and investigative learning should thus be embedded in both academic and practice-based settings to improve patient care [48].

Collaborative learning is another strategy for facilitating transformative learning. Keevy [49] described collaborative learning as a structured form of small group work which is based on positive interdependence, individual accountability, appropriate team formation, group processing, and social skills. According to Milliken [50], lack of collaboration is a potential source of poor practice among members of the multidisciplinary healthcare team. Transformative learning encourages multidisciplinary or interdisciplinary learning as a comprehensive strategy that includes an idea, topic or text by integrating multiple knowledge domains. Multidisciplinary learning aims to foster interprofessional relationships, interdependence and collaboration while enhancing the contribution of each discipline in the learning environment.

Active and meaningful engagement with the multidisciplinary team members on real-life activities assist nursing students in learning about the comprehensive clinical management of patients. Nursing students learn to collaborate with healthcare groups and solve problems relating to patient care. Students also learn diverse multidisciplinary approaches [51]. Transformative collaboration is facilitated through the establishment of clear rules of engagement to guide the discussion and dialogue in the groups. Multidisciplinary team commitment is shown by shared ownership of the process of learning, openness to exploring mutual gains, and jointly recognising the interconnectedness. Multidisciplinary team interdependence is important in transformative learning because disciplines should form networks, alliances and consortia to promote interprofessional education and break professional isolation [52]. Nursing students remain individually and personally accountable and responsible for their learning activities.

Transformative learning is interactive because it provides opportunities for nursing students to engage actively with the learning experience. Concept analysis revealed that interactive learning is facilitated by engaging nursing students in critical discourse, argumentation and dialogue. According to Fahrutdinova et al. [53], interactive learning is the process of learning that fosters mutual relationships among students or individuals seeking knowledge. Facilitating transformative learning using interactive activities requires the nursing students' active participation in the construction of knowledge, skills, and attitudes through discourse to exchange ideas and thoughts. The facilitator should engage nursing students in meaningful interactions that allow reasoning and opinion sharing like discussions, debates and professional arguments [53].

Meaningful participation in critical discourse requires nursing students to be open-minded, learn to listen empathetically, reserve premature judgment and seek common understanding [54]. The nursing students should be emotionally intelligent to participate fully and freely in critical discourse and be able to handle alternative beliefs. Active and meaningful engagement among nursing students in interactive learning activities develops their critical and creative thinking [55].

From the concept analysis, transformative learning should also be facilitated using higher-order thinking activities in nursing education. Krathwohl et al. [56] described higher-order cognitive processes as skills such as analysing, constructing, predicting and

evaluating. According to the critical cross-field outcomes in the National Qualification Framework (NQF), students should be able to identify and solve problems using critical and creative thinking skills [57]. Higher-order thinking activities should therefore involve critical reflection, imaginative, creative, innovative and inventive skills [58]. The facilitator is responsible for creating a learning environment that is conducive for nursing students to construct their own knowledge, skills and values through interaction. Higher-order thinking skills (critical reflection, imaginative, creative, innovative and inventive) are activated when students encounter confusing and challenging learning situations. The importance of engaging nursing students in higher-order thinking activities is to develop critical thinking, problem-solving abilities and integrate theory to practice. Moreover, Lui [59] stated that critical reflection is demonstrated by the ability and willingness to step outside one's own experiences and interpretations to explore new ways of thinking about educational issues and practices. Critical thinking and problem-solving skills are necessary to prepare nursing students for future roles in professional practice.

Metacognition constitutes phase three of the process of transformative learning. This process relates to self-communication in which nursing students engage before, during and after performing a task [51,60]. It is an active process of monitoring own thinking. Concept analysis revealed that the attributes displayed by the transformative learning students who have reached the metacognition phase are authenticity, democratic vision, self-actualisation and self-directedness (Table 1). Nursing students who have attained metacognition can monitor their own learning progress towards achieving a goal. They are also better equipped to make decisions on how to manage available learning resources. Additionally, authenticity motivates students to persevere despite initial disorientation and frustration with the learning experience.

Nursing students become self-directed during the meta-cognitive stage. They acquire knowledge and skills by actively and independently working to explore learning tasks [61]. Learning is a process of self-actualisation which never ends in the phases of the learning but expands beyond. The humanistic view of learning is a motivation to develop human potential so that learners can progress towards self-actualisation [51]. Metacognition is strengthened through the possession of democratic vision. The core of democratic vision is that nursing students participate willingly in educational processes, including decision making. Students enjoy equal opportunities for self-development, self-fulfilment and self-determination.

4.3. Outcome

The outcome of transformative learning is discussed as they appear in Table 1. Autonomous thinking makes graduates independent in thoughts and actions with essential knowledge and abilities to meet the healthcare needs of their patients [62]. Graduates recognise their roles as socially responsible citizens who care for the common good of others, the country and the environment [63].

The transformative learning process expedites perspective transformation and ensures that graduates develop knowledge, skills and competence in the cognitive, behavioural and emotional domains. Nursing graduates become transformed practitioners participating in the global job market [64]. The transformative learning process in nursing education prepares graduate nurses to compete with nurses from other countries, collaborate with people around the world and solve global health problems. Graduate nurses exchange ideas with peers and experts from different disciplines, either virtually or personally, and have the skills to enter new communities and spaces online [65].

Social justice is about ensuring the physical and psychological safety and security of humanity. Graduate nurses who are competent in this regard become morally distinguished with social responsibility and care consideration. The practitioners treat people with respect, tolerance, sensitivity and acceptance of diversity.

5. Theoretical definition of the concept 'transformative learning' in nursing education

A theoretical definition of transformative learning was formulated from the categories, the identified defining attributes and their related connotations within the context of nursing education. The formulated definition that adds new information to the body of knowledge in nursing education is as follows:

"Transformative learning is a contextual, cyclic and highly cognitive and affective deep structural mental shift that involves a meaningful interactive, integrative and democratic construction process to arrive at new insight and changed perspective. The process is triggered by uncomfortable challenges in one's worldview, which stimulates expanded awareness and self-reflection. The process advances the development of metacognition and an autonomously thinking citizen with a transformed perspective, who is socially just and globally competitive."

6. Theoretical validity

Theoretical validity is described as the degree to which theoretical explanations that were developed from the concept analysis fit or conform to the theoretical definition. Theoretical validity was ensured using four principles of philosophical perspectives, namely epistemological, pragmatic, linguistic and logical philosophies [66]. The exploration and description of definitions and uses of transformative learning from literature ensured theoretical validity.

7. Limitation

Concept analysis of transformative learning focused only on theoretical analysis without empirical verification from the nurse educators; this indicates the limitation of the study. Verification of the concept from the nurse educators could have helped the researcher in obtaining additional data to further expand or clarify the concept.

8. Conclusion

An overview of Walker and Avant's eight-step method of concept analysis was used to explore and describe the meaning of transformative learning within the context of nursing education. The results identified three categories (antecedents, process and outcome) and their related connotations as reflected in Table 1. The results add new knowledge in nursing education and will be used for research and educational activities. The results were also used in the development and description of a model to facilitate transformative learning.

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Ethical considerations

Permission requested and approval obtained from the Faculty of Health Sciences' Research Ethics Committee (REC 01-143-2015) and

Higher Degrees Committees of the University of Johannesburg (HDC 01-104-2015) as well as the Research Operational Committee of the Health Care Institution (GP_2016RP28-693).

Declaration of competing interest

The authors declare no potential conflicts of interest in respect to the research, authorship and/or publication of this article.

CRedit authorship contribution statement

Tebogo A Tsimane: Methodology, Data curation, Investigation, Validation, Writing - original draft, Writing - review & editing, Conceptualization. **Charlene Downing:** Conceptualization, Methodology, Validation, Supervision, Writing - review & editing.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ijnss.2019.12.006>.

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