

A model to facilitate the teaching of caring to diagnostic radiography students: Original research

Kathleen Naidoo^{a,*}, Heather Lawrence^b, Christopher Stein^b

^a Cape Peninsula University of Technology, South Africa

^b University of Johannesburg, South Africa

ABSTRACT

Background: Healthcare has moved towards a patient-centred caring environment. Radiography students have described feeling unprepared for daily patient interactions therefore, it is essential for educators to facilitate the development of caring attributes in students.

Objective: The objective of this article is to describe the process that was followed in order to develop a model to facilitate the teaching of caring to diagnostic radiography students.

Method: A qualitative, theory-generating, exploratory and descriptive research design was used. Phase one was a descriptive, exploratory study that utilized focus group interviews to explore and describe the concept of caring from the perspective of first year diagnostic radiography students. Phase two, the focus of this article, was the theory generation phase of the study which began with identifying a central concept from the focus group interview results. The central concepts were then defined according to dictionary and literature sources and relationships between the identified concepts were created. Thereafter, the model was developed.

Results: The central concept was identified as the “facilitation of a culture of caring”. This concept was then defined, classified and described.

Conclusion: This model as a framework of reference could assist diagnostic radiography educators in facilitating the teaching of caring among student radiographers.

1. Introduction

Many philosophers believe that caring is a virtue of being a human and it affects the way in which we think, feel and act (Bolderston et al., 2010: 199; Flynn, 2016:29). Caring is further described as having ontological components of being and begins as a value or manner that develops into an intention which then manifests into a tangible act (Ranheim et al., 2012:79). Attributes of caring include acts or displays of kindness, empathy, sincere concern and understanding (Paulson, 2004:359; Flynn, 2016:29). Boykin and Schoenhofer (2013:1) allude to the principle that caring is a process that occurs moment to moment. Grounded on this notion, even though an individual may at times display acts of a non-caring nature, philosophers believe that they are still considered caring by virtue of their humanity.

Caring is a fundamental aspect of diagnostic radiography (Beyer and Diedericks, 2010:22). A study conducted in the UK provides evidence that diagnostic radiographers are becoming disillusioned with caring due to workload pressures and as a result end up focussing on patient throughput (Hayre et al., 2016:248). In order to overcome workload challenges, some diagnostic radiographers have started to develop a robotic mentality of pushing throughput and in the process, they are slowly losing touch with the human aspect of caring (Hayre et al., 2016:245). Another study conducted in the UK revealed that some

radiographers categorise their patients by body part in order to make quick decisions and to work strategically (Strudwick, 2016:51). This is based on the fact that diagnostic radiography, images many trauma patients who are experiencing a lot of pain and, time is crucial (Reeves & Decker, 2012:80; Strudwick, 2016:51).

The greatest fear is that radiographers are becoming driven by these workload pressures and are perceived as robots in a factory, pushing through the production line and adopting the “in and out” culture (Hayre et al., 2016:248). However, there is increasing literature that indicates that caring, empathy and compassion are all aspects that can be taught (Richardson et al., 2015; Costello and Haggart, n.d.; Shea et al., 2016). Psychology researchers have demonstrated that compassion can be taught to adults and results in increased altruistic behaviour (Rowe, 2013; Cherry, 2019). In this particular study compassion meditation was used as a tool to learn compassion (Rowe, 2013; Cherry, 2019). Studies on teaching caring within the nursing curriculum date back to the 1990s (Dillion and Stines, 1996; Beck, 2001). Blum et al. (2010:41) articulated that teaching caring to nursing students is an essential part of nursing education. Simulation based teaching was identified by these authors as a method that could enhance a student's caring ability (Blum et al., 2010:42). Based on these studies it is evident that caring is a concept that can be taught to and learned by students.

* Corresponding author.

E-mail addresses: naidooka@cput.ac.za (K. Naidoo), cstein@uj.ac.za (C. Stein).

2. Problem statement

Students in the healthcare profession tend to have an idealistic expectation and understanding of their interactions with patients. This is supported by the idea of them wanting to help and care for others and subsequently expecting the patient to accept this help with full gratitude. The reality, however, is very different as there are patients with varying degrees of illnesses and abilities. Literature illustrates that a lack of training on or teaching of caring can lead to students being demoralised by the reality of a clinical situation (Clouder, 2005:506). As a result, this makes a student question their understanding of caring and at times even their choice of profession. It is therefore important for educators to properly prepare and support students for these daily interactions.

Results from the focus group interviews in phase one of this research study revealed that radiography students describe caring as being integral to choosing radiography as a career (Naidoo et al., 2018). Despite this, they feel unprepared for patient-centred interactions (Naidoo et al., 2018). Additionally, they articulated that the radiography environment does not fully support the development of a caring identity (Naidoo et al., 2018). Hence, a gap exists between the expectations of patients and the preparedness of health care professionals such as radiographers to deliver the standards of care required. As caring is an act that can be taught, the development of a model to teach caring to radiography students would assist in addressing this gap.

3. Aim

The aim of this study was to develop and describe a model to facilitate the teaching of caring to diagnostic radiography students.

3.1. Research objectives

1. to create central concepts to be utilized in a model to facilitate the teaching of caring to diagnostic radiography students
2. to describe relationships between these concepts;
3. to describe a model as a framework of reference for radiography educators.

4. Definition of key concepts

4.1. Model

A model is a symbolic or diagrammatic illustration of a concept or theoretic relationships by means of pictures, symbols, mathematical notations and diagrams (Polit and Beck, 2012:128).

4.2. Facilitation

In this model, facilitation refers to a process in which the diagnostic radiography educator provides an opportunity for the diagnostic radiography student to begin a learning journey towards developing a culture of caring.

4.3. Caring

In this study caring is referred to as an act or a display of kindness, compassion, understanding and sincere concern towards another individual. A caring radiographer in this study will be an individual who models a culture of caring and is able to interact with people in a humanistic manner and display kindness, selfless concern and compassion.

4.4. Culture

A culture of caring is having a set of shared values, beliefs and ideas

of caring being a part of a person, which becomes a part of their own identity. Based on this culture of caring, the person is able to interact with different individuals. A student radiographer who models a culture of caring is a person who interacts with people in a humanistic manner and displays selfless concern, kindness and compassion towards another individual.

5. Research design and method

5.1. Design

A qualitative, theory-generating, exploratory, descriptive and contextual research design was utilized in this study (Chinn and Kramer, 2011:185; Brink et al., 2012:124).

5.2. Method

The model development was conducted in three steps as described by Chinn and Kramer. Step one: concept analysis consisting of two phases. Step one, phase one was focus group interviews with first year diagnostic student radiographers, exploring their understanding of caring. Appreciative Inquiry was used as an interview technique. Central concepts were identified from the results of the interviews. The findings and method used for step one phase one is detailed in the article by Naidoo et al. (2018). Step one, phase two was defining and classifying central concepts. Step two was to describe the relationships between the identified concepts. Step three entailed the development and description of the model. Step one; phase two, step two and step three are the focus of the discussion in this article.

5.3. Trustworthiness

Guba's model of trustworthiness provides criteria suitable for qualitative studies. This criterion includes dependability, credibility, transferability and confirmability (Shenton, 2004; Holloway and Wheeler, 2010:243–249; Anney, 2014). Dependability in qualitative research ensures that a study is accurate and consistent. Dependability in the current study was ensured by triangulating data collection, as well as by providing a detailed description of the research methods. In addition, direct quotes are supplied when presenting findings (Holloway and Wheeler, 2010:243–249).

Credibility resembles the concept of internal validity. In this study, prolonged engagement, reflective notes, triangulation, peer review, member checking and in-depth interviews (Holloway and Wheeler, 2010:243–249) ensured credibility. Triangulation of data collection by means of focus group interviews, in-depth field notes and member checking throughout the focus group interviews took place in order to confirm participant's responses (Holloway and Wheeler, 2010:243–249). Transferability refers to the ability to transfer the findings from one context to another in a similar situation (Holloway and Wheeler, 2010:243–249). Transferability was ensured by detailed description of the research process to allow an easy comparison with another setting or population. A dense description of the setting and the participants are provided in order to ensure transferability of the study. Direct quotations from participants are provided along with detailed descriptions of the results. Confirmability confirms that the findings and conclusions of the study have not been influenced by the researcher's preconceptions. In order to achieve this, once again the researcher ensured that there was provision of an audit trail detailing the processes leading to the development of the constructs, themes and interpretations (Holloway and Wheeler, 2010:243–249).

5.4. Ethical considerations

The ethical principles of respect for autonomy, non-maleficence, beneficence and justice were adhered to throughout the research

process (Brink, 2003:31; Creswell, 2013:212). Ethical permission to conduct the research was granted by the higher education institute where the study was conducted (REC-01-118-2017).

Informed consent was obtained from each participant and included an explanation of the study. Participants were supplied with the results of the study and findings may also be shared upon future requests. The participant's right to freedom of choice and expression was considered by allowing the participant the right to decide voluntarily whether to participate in the study or not. Each participant received a full description of the study and a description of what participation in the study involved. The participants' rights to privacy, confidentiality and anonymity were protected by not publishing the names of the participants. The principle of non-maleficence is adhered to by avoiding harm to participants (Brink et al., 2012:35–36). There was no form of physical or emotional harm to the participants in this study.

6. Results

6.1. Step 1: concept analysis

A concept analysis was conducted by exploring and describing the understanding of caring among first year diagnostic radiography students in a higher education institution. This step was carried out in two phases namely; identification of a central concept and definition and classification of the concepts (Chinn and Kramer, 2011:175–181).

6.2. Step 1 phase 1: identification of central concept

The results from the focus group interviews held with first year diagnostic radiography student's revealed three major themes as; caring as an integral part of a career choice, unpreparedness for interpersonal interactions and barriers and enablers to the development of a caring identity. It was evident from the stories shared that first year diagnostic student radiographers understand the meaning of caring however they found themselves in environments that did not fully support the development of a caring identity. Based on this, it was apparent that the "facilitation of a culture of caring" was the central concept.

6.3. Step 1 phase 2: definition and classification of concepts

The central concept "facilitation of a culture of caring" was defined as providing support to help student radiographers develop a humanistic behaviour of selfless concern, kindness and compassion towards another individual which conceptualises the attributes of a caring professional. It is a process of making easier the interaction between two people by developing a set of shared ideas, beliefs and values of caring that can be learned and transmitted to other radiographers.

The classifications of the concepts were:

- > The agent in this model is the radiography educator. The radiography educator will be able to facilitate the student diagnostic radiographer's journey towards the development of a caring professional.
- > The recipient in this model is a first-year student diagnostic radiographer who is unable to achieve a professional caring identity.
- > The context of this model is a medical imaging and radiation sciences department at a higher education institution in South Africa.
- > The dynamics of this model and the reason for introducing change were clearly articulated by the participants of this study. The participants spoke about being in an environment that does not fully teach or support the development of a caring professional. Radiographers are expected to be caring professionals but the current curriculum focuses on the technical aspects of the profession and fails to teach radiographers how to be caring.
- > The process involves giving student diagnostic radiographers an opportunity to grow as professionals. It is a process that will help

first-year student diagnostic radiographers to develop a culture of caring that will provide them with a set of shared ideas and values that will guide them as a group.

- > The terminus of this model is a caring radiographer who models a culture of caring.

6.4. Step 2: relationship statements

The concepts were then written into relationship statements to provide more meaning and understanding. The relationship statements are as follows:

- > The goal of the radiography educator is to facilitate the development of radiography students who will become caring professionals.
- > Within the context of diagnostic radiography, the current undergraduate curriculum teaches students how to undertake patient care but does not teach them how to be caring professionals. The challenge is to develop a culture of caring among student radiographers which will allow them to develop into caring professionals.
- > The radiography educator presents the radiography student with an opportunity to develop a humanistic behaviour of selfless concern, kindness and compassion towards another individual.
- > The radiography educator provides the necessary assistance and guidance to the radiography student by facilitating the development of a culture of caring.
- > The radiography student will embrace and implement the values and skills they are taught within this culture of caring.
- > The development of a culture of caring will lead to the development of radiography students who will become caring professionals. A caring radiographer will be able to share and transmit their set of learned values to other radiographers and students. This may ultimately result in the promotion of a patient-centred approach to caring within diagnostic radiography.

6.5. Step 3: description of the model

6.5.1. Structure of the model

The structure of the model (Fig. 1:) includes; the purpose of the model, the theoretical assumptions of the model, the context of the model, theoretical definitions of the model concepts, relationship statements and the model process. The theoretical definitions and relationships statements have been discussed above.

6.5.2. Purpose of the model

The purpose of this model is to provide a framework of reference for diagnostic radiography educators and students to begin a learning journey together that will enable the development of a culture of caring among diagnostic radiography students.

6.5.3. Theoretical assumptions of the model

The theoretical assumptions of this model were established on the assumptions offered by the theory of health promotion in nursing (University of Johannesburg, 2010:4).

- The student diagnostic radiographer is seen as a whole and interacts with both their internal and external environment in an integrated manner. It is therefore assumed that the person cannot be viewed in isolation without taking into consideration their environment (Naidoo, 2019).
- By creating a culture of caring among student radiographers, we will be allowing students to construct a set of values and beliefs, which will assist them in developing their own personal and professional caring identity. This change in the internal environment will then transform the students' external environment and allow them to become caring professionals who model a culture of caring (Naidoo, 2019).

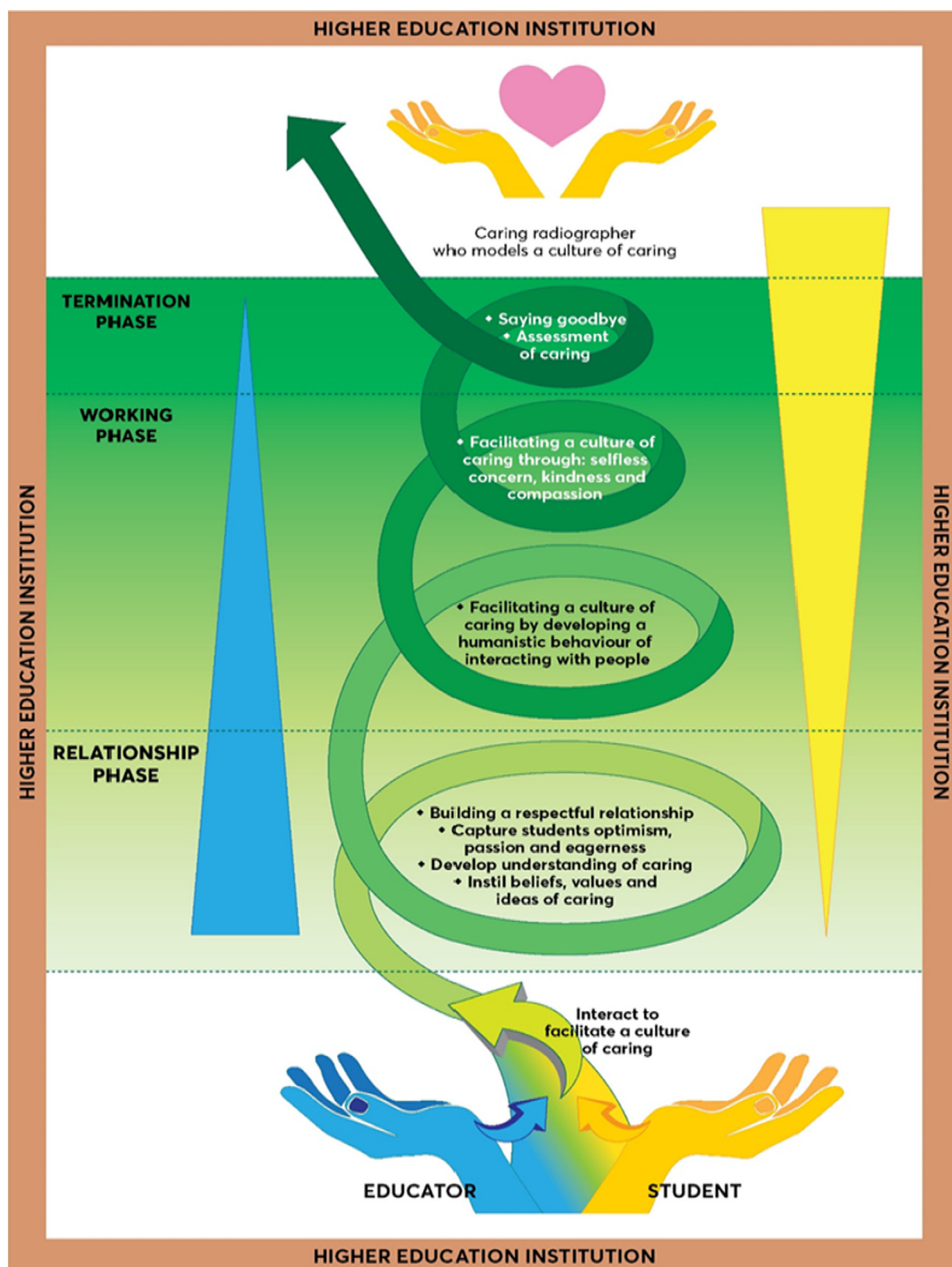


Fig. 1. A model to facilitate the teaching of caring to first year diagnostic radiography students.

- The diagnostic radiography educator is a professional who demonstrates knowledge, skills and values required to facilitate a culture of caring among students in order to teach students how to become caring professionals (Naidoo, 2019).
- The diagnostic radiography student starts the academic programme

with an idealistic and altruistic understanding of caring. This understanding can be nurtured and enhanced by the educator to achieve a culture of caring among students, which will enable them to become caring professionals towards their patients (Naidoo, 2019).

- The higher academic institution provides the context for the teaching and development of a culture of caring among student diagnostic radiographers. This context is a safe learning environment in which the educator can harness the potential of the students and allow the model process to be implemented (Naidoo, 2019).

6.5.4. Context of the model

The context for this model is a higher education institution, where a diagnostic radiography programme is offered, in Gauteng, South Africa. This context is significant and has meaning due to the research having been conducted within this environment.

6.5.5. Model process

The model begins with the educator and the student coming together to facilitate a culture of caring. In this phase, the student will be provided with theoretical knowledge that will form a solid foundation for their growth and development as they move into the subsequent phases of the model.

The first step in this phase of the model is to develop a trusting and respectful relationship between the educator and student. According to literature, building respectful relationships is important because this promotes the development of a positive relationship between the educator and student (Gallagher, 2013; Claessens et al., 2017). The researcher felt it was important to build a respectful relationship between the educator and students as this would result in the student successfully achieving the desired goal of becoming a caring professional.

The second step in this phase of the model is capturing the students' initial optimism, passion and eagerness with which they enter the programme. The theme "caring as an integral part of a career choice" revealed that students chose radiography because they wanted to help people in need and make a difference. Therefore, it is important to ensure that students remain optimistic and passionate about radiography and patients in order to be competent, caring professionals. Optimism, passion and eagerness are driving forces for students to succeed and achieve their goals (Johnson, 2012; Wray, 2015).

Additionally, in this phase of the model, as part of creating a culture of caring in the student, there is a need to develop a set of shared values, beliefs and ideas of caring. Once students have gained a good understanding of caring based on their personal knowledge and their understanding of the various philosophies, collaboratively as a group they will develop this set of shared ideas, beliefs and values. The knowledge the student will gain in the relationship phase of this model will form the foundation for the development of their subsequent caring skills, which they will learn in the succeeding phases.

The next phase of the model is the working phase. This phase of the model entails the development of a culture of caring by teaching students how to interact with individuals in a humanistic manner and how to display caring attributes such as selfless concern, kindness and compassion. Therefore, the first step of this phase will be the development of effective communication skills as a means to improve interpersonal interactions. Literature indicates that communication may be delivered in many forms, namely speaking, texting, email, etc. However, for communication to be effective, all parties involved in the communication must understand the message transmitted correctly (Zeppetella, 2012:11).

The next step in this phase of the model is the development of humanistic skills in the student as a way to promote a more patient-centred and caring interaction. Interacting with patients in a humanistic manner is fundamental in ensuring that patients are treated as human beings as opposed to simply being objectified by the body part being imaged. In order to treat patients as human beings, students need to be taught how to be kind, compassionate and altruistic towards their patients.

Being compassionate towards patients is critical. Roach describes compassionate care as "immersion into the pain, brokenness, fear, and anguish of another, even when that person is a stranger" (Burnell and

Agan, 2013:180). Compassion allows the radiographer to view the patient for who they are and to provide them with a patient-centred approach to caring. Literature describes compassion as having the ability to alleviate the patients' suffering and being able to attend to their needs in the best way possible (Bleiker et al., 2016:258). Caring for patients in a respectful, empathetic manner is a way of displaying such compassion. As a way of encouraging kindness in students, the researcher believes it is important for students to acknowledge random acts of kindness that they have experienced or acts that they have performed.

The last phase of the model is the termination phase. In this phase the student will have a final assessment to evaluate the skills they have learned to develop a culture of caring. An assessment is defined as a process of measuring a student's progress (O'Shaughnessy and Joyce, 2015:198). Evaluation is a necessary part of learning. This final assessment will take place in the clinical environment.

7. Evaluation

The terminus of this model is a caring radiographer who models a culture of caring. Therefore, when this model is implemented, the end result should be a radiographer who has the skills necessary to interact with patients on a caring level. The values, beliefs and ideas of caring developed in the radiographer will guide them to be more conscious of their actions and enable them to be caring professionals.

7.1. Clarity of the model

The question on clarity refers to semantic clarity, semantic consistency, structural clarity and structural consistency (Chinn and Kramer, 2011:197).

Semantic clarity ensures that the definitions of the concepts used provide meaningful understanding of the theory. The concepts in this theory were defined using both dictionary and literature sources. A conceptual definition was created to provide meaning for the concepts within the context of diagnostic radiography education.

Semantic consistency ensures that the concepts are used accurately in the theory and are in keeping with the definitions that are provided. The assumptions of the model are aligned with the definition of the concepts of the model. This shows consistency in the theory.

Structural clarity and semantic clarity are closely aligned. The connections used need to be understandable and easy to recognise. The structure of this model was represented graphically using simple shapes and structures.

Structural consistency is when the structures used in the theory are used consistently. The structure of a spiral was used in this model to depict the process of the theory. This is consistent with the concept of growth and development as this model is aimed at developing caring radiographers.

7.2. Simplicity of the model

Chinn and Kramer (2011:201) explain that a theory is considered simple when there are minimal elements used in each descriptive category. In this theory a central concept was identified and then relationship statements were developed. These relationships were written as simple, easy-to-understand statements.

7.3. Generalisability of the model

This refers to whether or not the theory can be applied to a broader range of situations. The theory in this study applies to diagnostic radiography educators who will facilitate the teaching of caring to diagnostic radiography students and the theory also applies to diagnostic radiography students who are willing to learn and become caring professionals. While the focus of this theory is on diagnostic

radiography, the researcher believes this model is general enough to be applied to the broader radiography profession. This model can easily be adapted to be applied to the different disciplines of radiography by simply using discipline-specific scenarios to teach humanistic patient interactions.

7.4. Accessibility of the model

This refers to the extent to which the indicators of the concepts can be identified and the aim of the theory achieved (Chinn and Kramer, 2011:203). The definitions of the concepts are simple and depict accessibility of the model. The guidelines to operationalise the model provide educators with the necessary tools to teach, monitor and assess this behaviour. Therefore the researcher believes that this model is accessible and has the ability to bring about change among student diagnostic radiographers.

7.5. Importance of the model

This is based on a theory's relevance in practice. According to Chinn and Kramer (2011:204), an important theory is:

- forward looking
- useable in practice, education and research
- valuable for creating a desired future.

This model is a proactive guide to develop a caring radiography professional starting with the first-year students. In this way the theory looks forward. The guidelines provided for the operationalisation of the model are practical and relevant to the clinical environment. The theory is thus useable in practice and education.

7.6. Limitations

The developed model has not yet been implemented.

8. Conclusion and recommendations

Diagnostic radiography is slowly moving towards a more patient-centred environment and this requires student radiographers to be equipped with the skills necessary for their daily interactions with patients. A social constructivist teaching philosophy underpinned the implementation of the model process. In keeping with social constructivism, it is recommended that radiography educators engage with their creative side to develop more realistic, relevant scenarios, which will help students to cope better with the reality of the clinical environment. It is recommended that radiography educators use authentic teaching methods such as simulation-based teaching, role-playing exercises, reflective learning and peer discussions.

8.1. Radiography practice

The clinical rotations in the form of WIL provide students with a platform to apply their theory in a more practical manner. Clinical radiographers need to be reminded of the role they play in a student's learning journey. Students view their seniors as role models and people they aspire to emulate. It is recommended that clinical radiographers pay closer attention to their own actions and adopt a more patient-centred approach to caring for patients.

8.2. Radiography research

Radiography research is necessary for the improvement of radiography practice. Radiography educators should encourage students to engage in research from early on in order to grow the research community within diagnostic radiography. The research model developed

in this study can be operationalised as a possible topic for a master's study. This model should also be considered for its transferability to other disciplines in radiography, namely radiotherapy, ultrasound and nuclear medicine.

Original contribution of the study

This research model is an original contribution to the profession of diagnostic radiography education as there is no model currently available within a South African context to facilitate the teaching of caring to diagnostic radiography students. This model is an attempt to fill this gap in research.

In conclusion, the aim of this study was to develop a model to facilitate the teaching of caring to diagnostic radiography students. This aim was achieved. This model provides a simple, practical guide to teaching caring to students in a meaningful way that will allow them to develop a culture of caring. Student radiographers have the potential and willingness to grow and learn. Educators should harness this potential as a way to cultivate caring identities among student radiographers.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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References

- Anney, N.V., 2014. Ensuring the quality of the findings of qualitative research: looking at trustworthiness criteria. *Journal of Emerging Trends in Educational Research and Policy Studies* 5 (2), 272–281. (Online). Available: <https://pdfs.semanticscholar.org/1419/F7b54e6b7f1215717a5056e0709f8946745b.Pdf>.
- Beck, C.T., 2001. Caring within nursing education: a metasynthesis. *J. Nurs. Educ.* 40 (3), 101–109. 2001. <https://doi.org/10.3928/0148-4834-20010301-04>.
- Beyer, L., Diedericks, P., 2010. The attitudes of radiographers towards patients in government hospitals in Bloemfontein. *The South African Radiographer* 48 (2), 22–27. (Online). Available: <http://web.B.Ebscohost.Com.Dutlib.Dut.Ac.Za/Ehost/Pdfviewer/Pdfviewer?Vid=1&Sid=93907d08-5fce-4648-9a04-2a2c43eb47b9%40sessionmgr120>.
- Bleiker, J., Knapp, K.M., Hopkins, S., Johnston, G., 2016. Compassionate care in radiography recruitment, education and training: a post-Francis report review of the current literature and patient perspective. *Radiography* 22 (3), 257–262. (Online). Available: <https://doi.org/10.1016/J.Radi.2015.12.008>.
- Blum, C.A., Hickman, C., Parcell, D.A., Locsin, R., 2010. Teaching caring nursing to RN-BSN students using simulation technology. *International Journal for Human Caring* 14 (2).
- Bolderston, A., Lewis, D., Chai, M., 2010. The concept of caring: perceptions of radiation therapists. *Radiography* 16 (3), 198–208. (Online). Available: <http://www.Sciencedirect.Com/Science/Article/Pii/S107881741000044>.
- Boykin, A., Schoenhofer, S.O., 2013. *Nursing as Caring a Model for Transforming Practice*. (Project Gutenberg Ebook).
- Brink, H., 2003. *Fundamentals of Research Methodology for Healthcare Professionals*. Juta, Cape Town.
- Brink, H., Van der Walt, C., Van Rensburg, G., 2012. *Fundamentals of Research Methodology for Healthcare Professionals*, 3rd ed. Juta, Lansdowne.
- Burnell, L., Agan, D.L., 2013. Compassionate caring tool (Online). Available: <http://internationaljournalofcaringsciences.Org/Docs/6.%20burnell%20compassionate%20care%20tool.Pdf>.
- Cherry, K., 2019. Can People Learn to be More Compassionate? Research Suggests the Brain Can Be Trained in Compassion. <https://www.verywellmind.com/can-people-learn-to-be-more-compassionate-2795560>.
- Chinn, P.I., Kramer, M.K., 2011. *Integrated Theory and Knowledge Development in Nursing*, 8th ed. Mosby, St. Louis.
- Claessens, L.C.A., Van Tartwijk, J., Van der Want, A.C., Pennings, H.J.M., Verloop, N., Den Brok, P.J., Wubbels, T., 2017. Positive teacher–student relationships go beyond the classroom; problematic ones stay inside. *J. Educ. Res.* 110 (5), 478–493. <https://doi.org/10.1080/00220671.2015.1129595>.

- Clouder, L., 2005. Caring as a 'threshold concept': transforming students in higher education into health (care) professionals. *Teaching in Higher Education* 10 (4), 505–517. (Online). Available: <http://web.B.Ebscohost.Com/Dutlib.Dut.Ac.Za/Ehost/Pdfviewer/Pdfviewer?Vid=1&Sid=8499d015-88c4-4ebb-9a19-332b93a16e33%40sessionmgr101>.
- Costello, J. and Haggart, M. n.d. The nature of nursing: can we teach students how to care? <https://pdfs.semanticscholar.org/8d5d/36eacbd3ae2ee9e6f51beb3857c03239788b.pdf>
- Creswell, J., 2013. *Qualitative Inquiry and Research Design: Choosing Among Five Approaches*, 3rd ed. Sage, Los Angeles.
- Dillion, S., Stines, P.W., 1996. A phenomenological study of faculty-student caring interactions. *J. Nurs. Educ.* 35 (3), 113–118. 1996. <https://doi.org/10.3928/0148-4834-19960301-06>.
- Flynn, S., 2016. Who cares? A critical discussion of the value of caring from a patient and healthcare professional perspective. *International Journal of Orthopaedic and Trauma Nursing* 20, 28–39. (Online). Available: <http://www.Sciencedirect.Com/Dutlib.Dut.Ac.Za/Science/Article/Pii/S1878124115000490>.
- Gallagher, E., 2013. The effects of teacher-student relationships: social and academic outcomes of low-income middle and high school students (Online). Available: <https://steinhardt.Nyu.edu/Appsych/Opus/Issues/2013/Fall/Gallagher>.
- Hayre, C.M., Blackman, S., Eyden, A., 2016. Do general radiographic examinations resemble a person-centred environment? *Radiography* 22, E245–E251. (Online). Available: <http://0-Search.Ebscohost.Com/Ujlink.Uj.Ac.Za/Login.aspx?Direct=True&Db=Edselp&An=S1078817416300451&Site=Eds-Live&Scope=Site>.
- Holloway, I., Wheeler, S., 2010. *Qualitative Research in Nursing and Healthcare*, 3rd edition. Wiley-Blackwell, West Sussex.
- Johnson, B., 2012. Why optimism matters for student success – now and after graduation (Online). Available: <https://www.Onlinecollegecourses.Com/2012/06/21/Why-Optimism-Matters-For-Student-Success-Now-And-After-Graduation-2/>.
- Naidoo, K., Lawrence, H., Stein, C., 2018. The concept of caring amongst first year diagnostic radiography students. *Nurse Education Today* 71, 163–168. (Online). Available: <https://doi.org/10.1016/J.Nedt.2018.09.025>.
- Naidoo, K., 2019. A model as a framework of reference to facilitate the teaching of caring to first year diagnostic radiography students. (Doctoral Thesis), University of Johannesburg.
- O'Shaughnessy, S.M., Joyce, P., 2015. Summative and formative assessment in medicine: the experience of an anaesthesia trainee. *International Journal of Higher Education* 4 (2), 198–206. (Online). Available: <https://epubs.Rcsi.Ie/Cgi/Viewcontent.Cgi?Article=1001&Context=Smedart>.
- Paulson, D., 2004. Taking care of patients and caring for patients are not the same. *Aorn Journal* 79 (2), 359–366. (Online). Available: <http://www.sciencedirect.com/science/Article/Pii/S0001209206606121>.
- Polit, D.F., Beck, C.T., 2012. *Nursing Research: Generating and Assessing Evidence for Nursing Practice*, 9th ed. Lippincott Williams & Wilkins, Philadelphia.
- Ranheim, A., Kärner, A., Berter Berterö, C., 2012. Caring theory and practice—entering a simultaneous concept analysis. *Nursing Forum* 47 (2), 78–90. (Online). Available: https://www.researchgate.net/publication/224707398_Caring_Theory_and_Practice-Entering_a_Simultaneous_Concept_Analysis.
- Reeves, P.J., Decker, S., 2012. Diagnostic radiography: A study in distancing. *Radiography* 18 (2), 78–83. <https://doi.org/10.1016/J.Radi.2012.01.001>.
- Richardson, C., Percy, M., Hughes, J.M., 2015. Nursing therapeutics: teaching student nurses care, compassion and empathy. *Nurse Education Today* 33 (5). <https://doi.org/10.1016/j.nedt.2015.01.016>.
- Rowe, A.D., 2013. Brain Can Be Trained in Compassion, Study Shows. <https://www.psychologicalscience.org/news/releases/compassion-training.html>.
- Shea, S., Samoutis, G., Wynyard, R., Samoutis, A., Lionis, C., Anastasiou, A., Araujo, A., Papageorgiou, A., Papadopoulos, R., 2016. Encouraging compassion through teaching and learning: a case study in Cyprus. Shea et al. *Journal of Compassionate Health Care* 3, 10. <https://doi.org/10.1186/s40639-016-0027-6>.
- Shenton, A.K., 2004. Strategies for ensuring trustworthiness in qualitative research projects. *Education for Information* 22, 63–75. (Online). Available: <https://Pdfs.Semanticscholar.Org/452e/3393e3ecc34f913e8c49d8faf19b9f89b75d.Pdf>.
- Strudwick, R.M., 2016. Labelling patients. *Radiography* 22 (1), 50–55. Suhendi. <http://www.sciencedirect.com/Science/Article/Pii/S1078817415000565>.
- University of Johannesburg, 2010. *Theory of Health Promotion in Nursing*. Department of Nursing Sciences, Doornfontein.
- Wray, M., 2015. Why optimistic students earn better grades creating positive futures. <http://Creatingpositivefutures.Com/Why-Optimistic-Students-Earn-Better-Grades/>.
- Zeppetella, G., 2012. Communication skills. *Palliative Care in Clinical Practice*. https://doi.org/10.1007/978-1-4471-2843-4_2.