

Student Radiographers' knowledge and practices of ethical responsibilities for the Radiography profession at a selected university in Gauteng Province

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Declaration

This is to certify that the work is entirely my own and not that of any other person, unless explicitly acknowledged (including citation of published and unpublished sources). The work has not previously been submitted in any form to the Durban University of Technology or to any other institution for assessment or for any other purpose.

Signature of student

_____18 July 2023_____

Date

Approved for final submission

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Dr. P.B. Nkosi

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Date

PhD: Health Sciences; MBL; MTech: Therapy;

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Dedication

This dissertation is dedicated in loving memory of my mother who preached education to me and my siblings.

To my son, Baleseng who now appreciates my diligence to education and Keagile my daughter, who I have no doubt will follow my footsteps of being an academic.

To my two grandkids, Itumeleng and Keamogetswe, who are indeed a treasure from the Lord.

Lastly, to my siblings Ruth and Cyril for support and dedication to the success of my life.

Above all, we dedicate this project to the Almighty God above, finishing this manuscript is a great opportunity to express our whole-hearted thanks and many praises unto Him.

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Abstract

Background

Student radiographers' knowledge and practices with regard to the ethical responsibilities for the Radiography profession at Sefako Makgatho Health Sciences University is described in the study. The study explored their knowledge, practices and suggestions for improvement of ethical responsibilities. Knowledge differed widely because of the differential practical experiences that participants were exposed to in the clinical environment. All the students acknowledged that they received theory lectures about ethics, although they are not entirely convinced that it is practiced at selected clinical training institutions.

Aim of the study

The study explored student radiographers' knowledge and practices of ethical responsibilities for the Radiography profession and ultimately provided recommendations to improve their knowledge and practices at the workplace. The study was conducted at a selected university in Gauteng province.

Methodology

A qualitative, exploratory study was undertaken in order to comprehend student radiographers' knowledge and practices of their ethical responsibilities in the Radiography profession. Although there have been a few studies on ethics with reference to qualified radiographers, qualitative studies on the subject of ethics regarding students is limited.

Recommendations for qualitative research on the subject are elaborated in a number of existing studies as a way of acquiring more information from the respondents and gaining more insight on the subject.

Findings

The code of conduct was clearly outlined to students on each level of the programme during their theory lectures, but was not well articulated in practice. The first and second levels of the programme offer limited knowledge on ethics, which is only incorporated into one of the core modules. Effective patient care is the primary focus of healthcare services; hence it needs more thoughtful attention in the Radiology department. Quality healthcare should be patient-centred to give patients a say in the service they receive.

The findings of the study suggested that the revised scope of practice, which is currently under review, will add to their responsibilities and will require specific focus on ethical matters, patients' rights and medical law. The General Medical Council has stated that medical ethics and law should constitute core components of the medical curriculum. When the students were questioned about their knowledge of ethical issues, they were reasonably confident of their knowledge of professional duties, such as confidentiality and scope of duties.

Conclusion

Teaching ethics to students in the clinical environment is complex and cannot be compared to teaching the knowledge of ethics in Radiography. Role-modelling and integration of ethics into the clinical education curriculum needs to be critically revisited. The scope of radiographic practice should be broad enough to include additional ethics and medical law. Ethical practice means that a radiographer must be competent to be able to demonstrate professional judgments and practice by upholding professional and ethical behaviours.

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GLOSSARY

Autonomy	The right of patients to make decisions about their medical care
Beneficence	Moral imperative of doing right
Code of conduct	Set of standard conduct of health care worker
Communication	Exchange of information between patient and health care worker
Confidentiality	Respect of patients' information
Ethics	Moral principles that govern health care worker
Gatekeepers	Mediators for accessing study settings and participants in research.
Informed consent	sufficient information for patient to make informed decision
Justice	Fairness in medical decisions
Non-maleficence	One should not do harm to patients
Professionalism	Set of values and morals of healthcare worker
Quality healthcare	Care that is safe, effective and patient-centred

ACRONYMS

A	African
ALARA	As Low As Reasonably Achievable
DUT	Durban University of Technology
HPCSA	Health Professions Council of South Africa
I/C	Indian/ Coloured
IREC	Institutional Research and Ethics Committee
n	Number
SMUREC	Sefako Makgatho University Research Committee
UK	United Kingdom
USA	United States
W	White

CHAPTER 1: OVERVIEW OF THE STUDY

1.1 INTRODUCTION AND BACKGROUND TO THE STUDY

In Buerki and Certo (2021:5) Albert Schweitzer defines ethics as: "Our concern about ethical behavior - the actions of others." All healthcare professionals have moral responsibilities towards their patients (Haddad and Geiger 2023: 1). The World Health Organization (WHO) 2022: 1 "recommended" that ethics and human rights teaching be incorporated into medical schools around the world . According to the WHO (2022: 3), radiography students should be aware of the importance of understanding ethical issues in daily practice and develop their ability to address patients' ethical concerns. The aim is to develop students' knowledge, skills and attitudes to guide their behaviour and judgment as licensed medical professionals. Knowledge and skill are two important elements to provide good and effective care to patients (Annular *et al.* 2017: 3693). Like other medical professionals, radiographers must follow established standards of professional practice as professionals who support the emotional and physical well-being of people through the pain they face (Buerki and Votero 2016: 210).

A professor in molecular virology at Penn State Eberly College of Science realised that students only get to be taught a sample of ethics in most science related courses, with Radiography being one of those courses (Anonymous. 2013: 1). The American College of Radiology created an interactive program to address ethics matters. This program can serve as a model in which ethics is expanded to Radiography as radiographers and radiologists work together most times (Nghipukuula, Daniels and Karera 2021: 10). Ssebunya (2022: 3) emphasizes the importance of including ethics in the curriculum, but is also concerned about the time allocated to the subject. Health Professional Council of South Africa published a policy in 2008 to include the subject of Justice and Human Rights in postgraduate courses for registered physicians (Kekana and Steenkamp 2019: 4).

While the aim is not specific to ethics and human rights, efforts have been made to improve the teaching and learning of medical ethics in South Africa (Kekana and Steenkamp 2019: 01). Radiology students receive behavioral management training, which includes communication skills and the ability to manage patients while maintaining a positive attitude, but there is no evidence that students behave like patients who deserve respect and dignity_(Naidoo, Lawrence and Stein 2020:1). Gayef, Çaylan and Temiz (2023: 2) reinforces this need for medical education by focusing on ethics. They also argue that teaching should move from a problem-based, student-centered, interactive approach. This research is necessary to encourage radiographers to create models that support the emotional and physical needs of the patients they interact with. The importance of this research is to advance practice and ethics of students.

Throughout their professional studies, student radiographers are expected to apply their knowledge of ethics and practice responsibly and in a manner that will benefit patients. The teaching of ethics in Radiology programs has been challenging as most Radiology departments do not have staff members with formal training in the teaching of ethics (Nghipukuula, Daniels and Karera 2021: 10). In addition, the topics in the course may not be relevant to ethical issues that are relevant to radiology practices (Nghipukuula, Daniels and Karera 2021:10). If ethics is not taught at institutions of higher learning, the students who are future professionals in the Radiography profession may not be able to support and sustain professionalism in the career of Radiography (Okafor, Okaro and Egbunke 2015: 346). However, there is a paucity of information with regard to student radiographers' knowledge and practices of ethics within the Radiography profession. The study explored student radiographers' knowledge of ethics and practices of ethical responsibilities for the Radiography profession at a selected university in Gauteng Province, and ultimately provided recommendations to improve on this aspect at the workplace.

1.2 PROBLEM STATEMENT

The education and training of radiographers in both academic and clinical settings is designed to help students integrate theory into practice (Kekana and Steenkamp 2019: 02). In addition, Kekana and Steenkamp (2019: 2) emphasised the teaching of ethics and human rights teaching in radiography undergraduate programme in order to develop professionalism. Although radiography students receive training in practice, which includes communication skills and the ability to manage patients while maintaining a positive attitude, little is known about their ethical practices (Oljeski, Homer and Krackov 2004: 570). According to Challen, Laanelaid and Kukkes (2017: 23), professionalism is now an important part of radiography curriculum, although there is little research on the professional understanding of Radiography student perceptions of professionalism, the factors influencing their perception development is limited. Previous studies have not addressed the ethical issues associated with radiography students, particularly the 'human' part of the job, including the patient encounter and staff working relationships (Munn *et al.* 2016: 330). According to Abraham *et al.* (2022: 001), students often cite examples that help them behave in a way they see and sometimes see as unfair, but for many reasons they feel incapable of controlling the situation.

Unethical behaviour is a concern to health services as it results in litigations of the health system. Therefore, ethics needs to be emphasised in detail in the Radiography curriculum. Stand-alone courses on ethics should be offered in the Radiography profession. Content that addresses universal standards and discipline-specific ethical dilemmas should also be included within the ethics curriculum. Institutes of higher learning should also work to ensure students that are prepared for the types of ethical situations they will encounter. Teaching ethics in the undergraduate programme will influence conduct and behaviour by enhancing the knowledge and practices of student radiographers in practice at the end of their programme (Kekana and Steenkamp 2019: 01).

1.3 AIM OF THE STUDY

The aim of the study is to explore student radiographers' knowledge and practices of ethical responsibilities for the Radiography profession and ultimately provided recommendations to improve their knowledge and practices at the workplace.

1.4 RESEARCH OBJECTIVES

The objectives of the study were to:

- Understand and describe the student radiographers' knowledge of ethical responsibilities for the Radiography profession;
- Explore student radiographers' practice of their ethical responsibility in the Radiography profession; and
- Make recommendations on how to enhance student radiographers' knowledge and practice of ethical responsibilities for the Radiography profession.

1.5 RESEARCH QUESTIONS

The following questions guided the study:

1.5.1 Main research question

- What is the knowledge and practices of student radiographers with regard to the ethical responsibilities of a radiographer in the Radiography profession?

1.5.2 Sub-questions

- What do student radiographers understand with regard to the ethical responsibilities for the Radiography profession?
- How do student radiographers practice ethical responsibility in their profession?
- How can student radiographers' knowledge and practice be enhanced with regard to ethical responsibilities for the Radiography profession?

1.6 SIGNIFICANCE OF THE STUDY

Ethics in Radiography aims to produce good radiographers who are capable of self-reflection and moral values that are critical in the clinical environment, whilst also affirming the four principles of ethics (Ssebunnya 2022:03). In the past, healthcare workers had the autonomy to treat a patient without any explanation of the procedure (Valero 2019: 2). Promoting patient autonomy is required as a collaborative endeavour between the patient, healthcare professionals and families and caregivers of patients. Often, practice is standardised with routine care; the patient's identity disappears, a patient is often considered a passive participant, patients are immobilised in decision-making and the relationship between the health care worker and patient is based on the premise that everything is done for the patient, but without the patient (Truglio-Londrigan 2015: 410). A patient has the right to information from the health care worker in order to make informed decisions about his or her care. Autonomy then shifted from healthcare workers to patients and this protected the rights of the patients to make informed decisions. In addition, a look into the professional ethics of student radiographers is needed. Ethics needs an in-depth critical manifestation and hence the study looked at the changing healthcare context and how the imaging departments and staff are affected by these changes.

It is concerning that some of these changes have resulted in professional frustrations, but there is a need to strive for good ethical behaviour within the Radiography profession as this will result in patients entrusting radiographers with their lives. Furthermore, this will result in student radiographers creating a more caring society. Addressing professional ethics as an ongoing process will result in student radiographers improving the quality of lives of patients as well as reducing risks in the Radiology department. The depth of professional ethics that students are exposed to from what they are taught in class to the clinical environment will influence their professional behaviour with patients.

Most radiographers in contact with patients in government hospitals do not further their studies beyond undergraduate program. Therefore, there is a need

to increase student radiographer's knowledge on ethics in their undergraduate program. The need for enhancing ethics education in undergraduate programs is further supported by Gayef, Çaylan and Temiz (2023: 2). They argue that teaching ethics should shift from a didactic -based approach to a problem-based student interaction. In this instance, the students are allowed to self-reflect on their knowledge and practices of ethics. The study emphasised the need for students to understand the ethics of basic ethical behaviour and do an introspection on how much knowledge they carry on ethics. This dissertation is presented in six chapters, as outlined in Table 1.1 below.

Table1.1: Structure of the dissertation

Chapter	Title	Content description
1	Overview of the study	<ul style="list-style-type: none"> • Orientation to the study, research background, overview of the research problem, aim and objectives, research questions, significance of the study.
2	Literature review	<ul style="list-style-type: none"> • An in-depth review of the literature related to the topic under investigation to give the researcher information on what is documented and discussed in the literature about the subject.
3	Research methodology	<ul style="list-style-type: none"> • Research methodology that underpins the study.
4	Presentation of results	<ul style="list-style-type: none"> • Presentation and interpretation of the research findings.
5	Discussion of results	<ul style="list-style-type: none"> • Discussion of the findings of the study.
6	Summary of the findings, limitations of the study, conclusion and recommendations.	<ul style="list-style-type: none"> • Presentation of the summary of findings, limitations of the study, conclusion and recommendations.

1.7 SUMMARY OF THE STUDY

This chapter explained the problem statement with the research question together with the objectives of the study as indicated. The aim and the objectives of the study were detailed and focused on the student radiographers' knowledge and practices regarding ethical responsibilities for the Radiography profession, as well as the significance of the study. The next chapter is a literature review on ethics from a global and African view, and the South African context.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

Literature review is defined as a method, explanation and replication to identify, evaluate and interpret existing studies recorded by researchers and practitioners (McNabb 2020 393). It provides evidence to researchers that the researcher understands the studies done on the subject and that the researcher identifies the issues that the researcher deems important or important from identifying the disparities in the research (McNabb 2020: 394). Furthermore, it frames the problem in the study by demonstrating the reason for conducting the research and helps form the research questions that guide the study and the choice of research methodology (Creswell 2014: 26). Therefore, the current chapter assesses the literature to show the gaps in student radiographers' knowledge and practices of ethical responsibility for the radiography profession.

2.2 PROCESS OF REVIEWING LITERATURE

According to Gray, Grove and Sutherland (20017: 399), a literature review is a process that involves searching, reading, understanding and drawing conclusions about published data on a topic. Since there was inadequate information regarding student radiographers' knowledge and practices with regard to the ethical responsibilities for the radiography profession, the literature review was extended to other students in the healthcare professions, such as nursing, medicine and physiotherapy. The initial search was confined to student radiographer's knowledge and practices in South Africa, followed by Africa and then in any other continent in the world.

The literature presented in this chapter was sourced from different search engines such as Pub Med. The literature was identified by using keywords such as ethics in healthcare, four principles of ethics, code of conduct of the radiography profession, medical law and radiation safety. Literature was also sourced from various journal articles found on Pub Med, such as the South

African Radiographer, the South African Journal of Radiology, the International Society of Radiographers and Radiological Technologists, and the American Registry of Radiologic Technologists. The research design and methods literature were sourced from books dealing with different research methods.

2.3 RADIOGRAPHY AS A PROFESSION

Radiography is a caring profession that requires knowledge and skill in producing images and delivering ionizing radiation in a responsible manner (American Society of Radiological Technicians [ASRT] 2017: 5). According to the same authors, diagnosis includes procedures and patient care in all medical and therapeutic fields, including radiation therapy, nuclear medicine, and ultrasound. Radiographers are professionals with special responsibilities to patients and colleagues (Gayef, Çaylan and Temiz (2023: 2). Radiographers have integrity and accountability to patients in their daily practice in the hospital (Gayef, Çaylan and Temiz 2023: 4).

Radiographic training began in England around 1910 (Van de Venter and Engel-Hills 2022:16). In South Africa these skills were transferred from operator to operator until a woman was hired by KC Clark to train as a radiographer in Johannesburg (Van de Venter and Engel - Hills 2022:16). May Tomkins went to London in the 1930s and completed a radiography course. Due to financial difficulties and lack of job opportunities in England, she returned to Johannesburg in 1933 to become the first Radiographer in South Africa. She was immediately authorized to train the first four students radiographers. Like other professionals, radiography professionals have skills, professional standards and codes of conduct (Van de Venter and Engel - Hills 2022:16).

According to Van de Venter and Engel-Hill (2022: 16). by 1939, 46 white radiographers had qualified in Johannesburg and Cape Town. This need was driven by the 2nd World War, especially in North Africa. During the 1940s emphasis of training and education was approximately 90% workplace-oriented and 10% theory. Schools of radiography for English-speaking white students

were established in the 1950s in Durban, Port Elizabeth, Cape Town and Johannesburg. The training was for a two-year diagnostic radiography diploma. Schools of radiography were later established in East London, Pretoria and Bloemfontein. In 1976, the three-year national diploma replaced the two-year national diploma. In 1978 the schools of radiography commenced offering the new three-year national diploma. During the late 1970s the South African Medical and Dental Council (SAMDC which is now the HPCSA) (Van der Venter and Engel-Hills 2022: 16).

Like other 'professionals', Radiography professionals have skills, professional standards and codes of conduct (Van de Venter and Engel-Hills 2022:17). Learning from information directly from the hospital provides a knowledge base for problem solving that contributes to the clinical reasoning and therefore professional behaviour (Talberg, Camroodien-Surve and Amosun 2021: 247). Training took place in district, and tertiary hospitals. Healthcare services exist to meet the health needs of patients; therefore, the delivery of health service should be designed to meet those needs. (Maphumulo and Bhengu 2019: 2). Radiographers play an important role in a modern health care setting where they use various imaging modalities to provide diagnostic information needed to diagnose and treat patients. As healthcare professionals, radiographers must always act in the best interest of the patient. According to Ochoma *et al.* (2015: 2), radiographers need to behave in a way that justifies trust and confidence to patients in order to uphold the profession.

The need to integrate ethics, human rights, and medical law into medical professions such as radiography stems from the need to adapt research and technology in healthcare. According to the Universal Declaration of Bioethics and Human Rights, which was accepted with applause on January 12, 2018, "The ethical problems and methods that arise with the rapid development of science should be examined within the framework of technology, human dignity and international respect", respect for human rights and fundamental freedoms"

(United Nations Educational, Scientific and Cultural Organization [UNESCO] 2007: 5)

2.4 ETHICAL RESPONSIBILITIES IN THE RADIOGRAPHY PROFESSION

With the acceptance of professionalism, the profession formed its own educational management and radiography practice policy and started to develop its own knowledge. The ethical rules of conduct for radiographers were registered under the Health Professions Act 56, of 1974 (Health Professional Council of South Africa [HPCSA] 2020: para. 1 line 1) to guide radiographers what is expected of them during interactions with patient and to make the most informed and ethical decisions. The HPCSA guideline of 2016 identifies the core ethical values and standards for good practice of healthcare workers in order to maintain good professional practice (HPCSA 2016 para. 8 line 1).

Ethics education is more consistent with the goals that can improve patient care. Teaching of ethics should aim to instil in student radiographers the knowledge, skills and attitudes necessary to guide their conduct and decision-making. Ethics education plays an important role in building the professional character of student radiographers to build a safe environment for patients (Camargo, Lu and Yousem 2017: 1094). Ethics in healthcare is defined as a study of morality, and it involves a careful reflection on and analysis of actions and behaviour. During their first year of the profession, student radiographers are taught the fundamentals of patient care which include confidentiality, communication, consent and radiation protection (Kekana and Steenkamp 2019: 5). They are also taught the fundamentals of ethics, principles and are guided by standards in the code of ethics (Kekana and Steenkamp 2019:3). Ethics education is intended to guide student radiographers in maintaining certain basics standards of behavior. It is intended to teach students obligations to determine what is good or ethical, and what is bad or unethical, in order to protect the public. Teaching of ethics is based on the following principles (Reed 2017: 521): Beneficence, Respect for autonomy, Non-maleficence and Justice. Radiography students should be cognizant of the principle of achieving a great amount of good because the

society benefits from the best than the bad. The radiographer should always aim for less harm to the patient.

- a. **Beneficence** i.e. The principle of acting with the best interest of the patient. Always strive to promote patient's health and wellbeing.
- b. **Respect for autonomy** i.e., allowing the patient to make an informed decision, it is related to informed consent: that means one cannot treat the patient without patient consent.
- c. **Non-maleficence** i.e. first, do no harm," it requires actions that avoid or minimize harm to patients. It is a fundamental principle of medical ethics that requires healthcare providers to prioritize patient safety and minimize harm.
- d. **Justice** – All patients should be treated fairly without discrimination of age, gender race or culture (Beauchamp and Childress 2015:166). Every patient needs to be protected from unnecessary radiation by applying the principle of 'As Low As Reasonably Achieved' without any discrimination from socio-economic or educational status.

Ethical responsibilities of student radiographers entail some of the following: assessing the appropriateness of the imaging examination, assisting the patient with informed consent, communicating effectively with the patient, protecting the patient from unnecessary radiation, quality control of the equipment in order to produce images of good quality (Hofmann and Lysdahl 2015: 447). Every student radiographer needs to know and understand the code of conduct of his or her profession in order to serve the patient in good moral standing (Society of Radiographers in South Africa [SORSA] 2018: 1; World Health Organisation [WHO] 2022:3).

Student radiographers have to know and understand the four principles of ethics, i.e. beneficence, autonomy, non-maleficence and social justice in their profession. Students are taught the fundamentals of ethical theories and principles which need to be practiced throughout their profession in the clinical environment (Reed 2017: 521). The clinical component of radiography

concentrates on patient care practice, where fulfilling of patient's needs is of primary importance to students (Lundgren, Lunden and Anderson 2015:70).

It is imperative that student radiographers take responsibility of understanding and obeying the requirements of becoming a registered health care professional as early as the beginning of the program. The educators in the radiography profession have a task to make sure that student radiographers can meet the demands of their code of professional conduct, in order to meet the demands and expectations of the community at large. (HPCSA 2020 para. 1 line 8). Practice standards are authoritative proclamations created by the profession to determine the quality of practice, service and training. It includes achieving the desired level and performance so that performance can be measured (American Society of Radiological Technicians [ASRT] 2017: 3). Student radiographers must consider good standards of practice when interacting with patients and must act ethically to protect patients' safety and respect their autonomy (Haskell 2019: 237).

2.5 GLOBAL VIEW OF STUDENT RADIOGRAPHERS' KNOWLEDGE AND PRACTICE OF ETHICAL RESPONSIBILITY IN THE PROFESSION

Radiography curriculum covers scientific, humanitarian, health, ethical and academic issues related to electronic knowledge, skills development in all European countries (Challen and Pronk-Lavine 2011: 02). Their programs recognize the importance of providing practical knowledge and practice to radiography students. Curriculum of the European countries is meant for student radiographers to graduate with clinical skills, knowledge and competencies. The International Society of Radiographers and Radiological Technologist (ISSRT) (2019:1). Code of Ethics has been developed to articulate the ethical behaviour and responsible conduct of radiographers to maintain adequate knowledge of the regulations that affect their patients and practice (SORSA 2018: 1). Ethical guidelines in essence refer to knowledge and practice of duties of student radiographers as stipulated in their code of conduct. One of the guidelines of the ISSRT is the ability of the student radiographers to use knowledge and clinical experience to understand new situations.

The European Society for Radiographers (ESR) has formulated a set of ethical principles and professional responsibilities to guide student radiographers about their conduct in their relationships with patients. Ethical Code represent ethical framework that aims to promote four principles or ethics i.e., beneficence, respect for patient autonomy, non-maleficence and social justice (European Society of Radiology Code of Ethics [ESR] 2013:1). According to ESR (2013:1), student radiographers should strive continually to improve their professional knowledge and skills and make these improvements available to their patients and colleagues. They should be committed to continuous improvement of their knowledge and practices in their practices within their profession. This can be achieved through incorporating medical ethics as core modules of the radiography curriculum (Kekana and Steenkamp 2019: 2).

An international review shows that there are large differences between the UK, the US and other countries are still struggling to manage that the profession (such as those on the African continent) (Mc Inerney and Lees 2018: 7). In some countries, there is still no regulatory body to regulate the practice, which causes a lack of ethics in some radiology centres. According to Mc Inerney and Lees (2018: 13) the Australian radiographers are trying to develop a model of ethical commitment, but are hampered by medical dominance, lack of independence, and lack of accountability. Therefore, fair education and knowledge of radiography students are affected. This lack of professional independence is directly related to the reluctance of Australian radiographers to take more responsibility for the content of patient-radiographer relationship obligation and patient care.

Medical dominance, management of professional societies or organisations, together with neglecting ethical compliance, has negatively impacted Australian radiographers. Evidence from literature review provides insight into the role professional bodies play in shaping the professionalism of radiography. The student radiographers' attitudes towards ethics and code of conduct in practice

is influenced by codes of ethics/conducts issued by the professional bodies. Rambod and Khademian (2019: 1) show that nursing students have moderate understanding of ethics, which means they need to learn more in this field. In some cases, it has been revealed that nurses apply ethical rules at intermediate and advanced levels. Thus, the relationship between teaching a code of ethics and its application in medical care increases nursing practice knowledge. In addition, nurses have developed ethical guidelines to prevent unethical behaviours by nurses (Verpeet *et al.* 2005: 190).

2.6 AFRICAN CONTEXT OF STUDENT RADIOGRAPHERS' KNOWLEDGE AND PRACTICE OF ETHICAL RESPONSIBILITY IN THE PROFESSION

The literature review indicates that many African medical schools including health sciences department curricula do not include ethics (Monsudi *et al.* 2015: 673). Where it is included, the subject is still accorded very little time in order to sensitize healthcare workers. Many studies in Nigeria are on patient satisfaction but include no reference to the ethical and professional conduct of student radiographers. Effective communication between patients and student radiographers has become imperative in the radiology department. In addition, it can affect patient satisfaction within the radiology department (Ochoma *et al.* 2015:2). There are tangible ethical procedures that student radiographers must familiarise themselves with in the radiology department that will improve on overall patient satisfaction (Ochoma *et al.* 2015:7).

There have been improvements in radiography education and health standards in sub-Saharan Africa (Monsudi *et al.* 2015: 673), but these advances have not yet impacted on improvements in medical oaths (Monsudi *et al.* 2015: 673). According to Nyongesa, Onyango and Kakai (2014:16), the common cause of patients complaints are factors such as bad service, such as the health worker being rude to patients, which delays service provision. In most public hospitals there is mostly delay in service due to overcrowding which leads to staff being rude and irritated, resulting in patients being unable to communicate with health care workers (Nyongesa, Onyango and Kakai 2014:16).

There are tangible ethical procedures that radiographers must familiarise themselves within the radiology department that will improve overall patient satisfaction (Ochoma *et al.* 2015:7). The same author maintained that there needs to be development in adequate ethical training of radiographers in the Nigerian University. The ethical training of student radiographers must include treating patients with respect and dignity and always maintaining patient privacy and confidentiality, i.e., applying the four basic principles of ethics. It has been recommended that regular in-service training and seminars are needed within the radiology department to prepare student radiographers on the task of improving patient satisfaction with radiological service within the department. Ochoma *et al.* (2015: 7) concluded that radiology students' morale and work ethic affect patient satisfaction and dissatisfaction. Attention should be paid to this area in order to continuously improve patient satisfaction.

According to the Ghana Health Services Code of Ethics, all medical professionals have a duty to respect patients' rights and ensure patients' trust (Botwe *et al.* 2016: 24). It is unfair that some radiography students neglect consents for x-ray examinations because of a heavy workload. It is necessary to teach the rules of ethics to radiography students and to listen carefully to the opinions of the patients about the care given by the qualified radiographers. Radiography students should respect patients' privacy and confidentiality and avoid disclosing information to others without the patient's consent, except in cases where it is required by law. In addition, all patients are given the right to be informed about their diseases and other treatment options, and they are asked not to harm patients. (Ghana Health Services 2018: 14). This is to ensure that the dignity and interests of all patients are respected in all medical procedures.

Bangwa (2019: 367) argued that there is not enough educational material to support radiography professionals in teaching and scrutinizing outcomes and behaviours of radiography students in the clinical environment. The Zambia Health Professions Council and the Zambian Radiological Society state that radiography students should acquire the knowledge, attitudes and skills necessary for the medical

profession of radiography (Bangwa 2019: 367). Teaching professionalism is very important for the development of radiography students and to improve the quality of their training. Educators should hold radiography students more responsible for their clinical work. In this way, they can validate or evaluate the knowledge, attitudes and practices of radiography students in relation to practice in Zambian training centres. In terms of clinical training, some differences have been identified in the knowledge and practices of radiography students (Kayembe and Bangwa 2020: 14).

Like other medical professionals, physiotherapists have a structure that organizes and regulates the work of the physiotherapist and their students. The professionals body have developed best practices and behaviors for healthcare professionals. According to a study by Bolarinde and Mba (2018: 17) in Nigeria, physiotherapists have demonstrated that they are knowledgeable about best practices and are knowledgeable about the management role of the Committee Healthcare Review. These findings were mentioned by Arati and Bhakawati (2017: 20), who reported the ethical knowledge for physiotherapists and nurses, respectively.

2.7 SOUTH AFRICAN CONTEXT OF STUDENT RADIOGRAPHERS' KNOWLEDGE AND PRACTICE OF ETHICAL RESPONSIBILITY IN THE PROFESSION

Service delivery in healthcare should always be supported by professional ethics as covered in South African legislation (HPCSA 2020 para 6.1line 6). The main challenges of teaching human rights, medical law and ethics in South Africa are related to the diversity of the student body and the fact that the subject is primarily politicised (Kekana and Steenkamp 2019: 2). Radiography programs in South Africa should prepare students for independent work in their professional life without any cultural, religious or race discrimination (Kekana and Steenkamp 2019: 5). The HPCSA code of conduct makes provision for professional standards that student radiographers must adhere to HPCSA guidelines (2016: 01). Evans (2016: 12) emphasizes that the changing healthcare environment leaves student radiographers with no choice to but update their knowledge in the

area of ethics, e.g., patient's rights, medical law and influence of information technology and privacy of patients.

Service delivery in healthcare should always be supported by professional ethics as covered in South African legislation. South African radiographers also have to abide by rules set out by the HPCSA. The HPCSA guideline (2016:1) identifies the core ethical values and standards for good practice of healthcare workers in order to maintain good professional practice. According to Ssebunnya (2022: 03), although ethics in medicine has been taught since the 1980s, there is no specific information on how much knowledge and practice radiography students have. There is a need for growth in ethics education of student radiographers to increase their knowledge and practices (Gayef, Çaylan and Temiz (2023: 1). McInerney and Lees (2018: 13) support the call for emphasising teaching of skills and practices that will contribute to the development of ethical knowledge to radiography students so as to comply with ethical standards for their practice.

The scope of medical law and ethics need to be implemented throughout the radiography program and need to be dealt with comprehensively (Kekana 2019:2). Teaching of these strategies needs to be done through practical examples so that students can assimilate the dilemmas involved broadly (Kekana 2019:2). The same author maintained that biggest challenge from students is training in different hospitals i.e. government to private are for example; social economic status and and quality care of patients in different settings (public to private). Over again, according to the South African Constitution and Bill of Rights (Government of South Africa 1996:60), patients should not be discriminated against on the basis of gender, race, age, disability, religion, employment or health. according to the South African Constitution and Bill of Rights (South African Government 2018: 60), patients should not be discriminated against based on their gender, nationality, age, disability, religion, economic and health status. Acting in the best interests of the patient and respecting the patients' right is the fundamental principle of medical ethics.

Current South African health sciences students have the potential to effect a great deal of change in the country's healthcare system, if they are properly equipped with the necessary tools to do so during their training programs (Ramagaga 2018: 52). In the context of health justice, students need to have skills to help them identify vulnerable patients by advocating for the rights of the patient who are denied equitable healthcare (Ramagaga 2018: 52). Radiography students receive professional training that includes communicating and caring for patients while maintaining a positive attitude, but there is no evidence that patients are respected with dignity treat them without further intervention (Ramagaga 2018: 52).

Radiography students and qualified radiographers must act in a way that inspires public trust and confidence in order to maintain professional conduct to serve both public and private interests (Ochoma *et al* 2015: 2). The HPCSA Code of Conduct sets professional standards that radiographers must adhere to (HPCSA 2020: 2). They are legally responsible for any negligence that may occur in their work and patient care. Evans (2018: 12) states that the changing medical environment leaves radiographers with no choice but to update their knowledge in the field of ethics. Student radiographers should also be aware that the revised code of conduct (currently under review) will increase their responsibilities and require special attention to these ethical issues, patient rights, and medical law (Friedrich-Nel and Munro 2017: 19). Radiography students in South Africa have a responsibility to promote and acquire new knowledge, skills and morals (Friedrich-Nel and Munro 2017: 18).

In healthcare, it is important that radiography students do well in delivering health service, and they need to take precautions to ensure that their professional standard of the work is done unequivocally. According to Cuthbert and Quallington (2017: 108), student radiographers must comply with personal data protection law of information technology outputs and remain within the limitations of the professional sharing of patients' medical or personal content It is of outmost importance for the student radiographer to respect the patient's decision if they chose not to allow certain information to be shared and disclose for example with their families. Jones (2003: 348) argues that patients value confidentiality and

consider it necessary for their medical consultation, and that disclosing patient information to others without their consent will prevent them from seeking medical treatment in the future.

The Code of ethics of Radiographers needs to take into consideration the culture of healthcare services within the global world. Codes of ethics can be used in education to prompt discussion and reflection on moral issues and to encourage a shared understanding among professionals, the public, and government organizations concerning the special moral responsibilities of individuals in professions, organizations, and/or a specific practice (Varkey 2021: 18). Codes of ethics can be used in education to facilitate discussion and reflections on ethical issues and to promote consensus among professionals, non-governmental organizations and governments about the specific roles of individuals in the profession, organizations and/or specific practices (Botwe *et al.* 2016: 2). The aim of ethics is to make students understand and take responsibility in organizational rules and improve on organisational culture. Health care professionals, as required by their work or professional practice, have to manage situations related to patients care within their own standard of practices. (Botwe *et al.* 2016: 24).

Since the 21st century, radiology departments in tertiary hospitals have experienced more ethical dilemmas within healthcare delivery system. These issues need to be addressed in clinical imaging curricula that clinical tutors and students can manage changing workplaces (Makanjee and Engell-Hills 2018.: 201). Student radiographers have at times failed in their ethical and professional conduct to patients (Beyer and Diedericks 2010:22). There is lack of information on their knowledge and ethical responsibilities in the radiography profession. It is imperative to understand this information in order to improve their practice.

There is a need to replenish student radiographers with the profession in order to embrace integrity and ethical behaviour within the radiography profession (Okafor, Okaro and Egbunke 2015: 346). Carruth and Carruth (1991: 62) argue that medical educators have a responsibility to provide learning opportunities that allow professionals to develop the mind sets that lead to their ethical behaviour,

to be honest, and to support this emotion with sound and good thoughts. Student radiographers need to be honest and demonstrate integrity, respect for patients, a commitment to patients' welfare, a compassionate regard for patients, and a dedication to maintaining competency in knowledge and technical skills (Jonsen, Siegler and Winslade 2010:54). They require training to be competent and practice safely in their profession:-

Competency in practice can be achieved by adhering to the patient centred model depicted in Figure 2.1 below. The diagram depicts patient centred model of student radiographer's ethical behaviour, i.e., patient care during a radiographic examination. The diagram places the patient at the centre and focuses on three core issues, namely safety, education and communication. Safety emphasises ALARA in radiography by applying three radiation safety principles i.e., distance, time and shielding. To avoid repeats the students must communicate effectively by giving proper instructions during a radiographic examination. The model also explains educating the patient about the type of radiographic examination that they are about to undergo, thus including them in the care so that they can have a say in their radiographic treatment (autonomy).

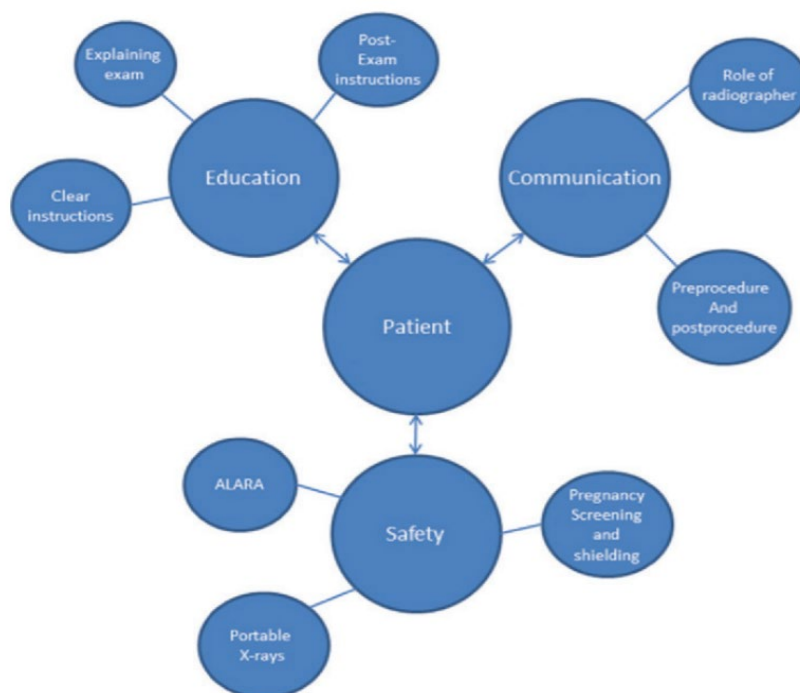


Figure 2.1: A patient centred care model for radiographers. ALARA = as low as reasonably achieved (Enes 2011: 212).

2.8 SUMMARY OF THE CHAPTER

The chapter compared the literature review internationally, on the African continent as well as in the country of South Africa. This chapter also explained the ethical responsibilities of radiographers and the four (4) main basic principles that the students are taught and must be cognisant of throughout the profession and of course acquaint themselves with as professionals. The following Chapter Three (3) explains the research methodology that was used in the study.

CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

This chapter describes the research methodology that underpinned the investigation into the problem. It explains the methods used to conduct the study, the area where the study was conducted, the sampling process and the inclusion and exclusion criteria for the sample, the data collection process and its analysis in the study. It also discusses the ethical considerations as the research tool. The current study was suited to the qualitative approach because of its explorative and descriptive nature, and it seeks to provide contextual information on the student radiographers' knowledge and practices with regard to the ethical responsibilities of the Radiography profession.

3.2 RESEARCH PARADIGM

The research paradigm is defined as the way scientists understand and examine the truth of the world (Rehman and Alharthi 2016: 51). The researcher adopted the interpretive paradigm, which searches for the deep understanding of a concept and explores how a person understands the world in which they live (Rahi 2017: 1). The main task of interpretation is to understand the world of human experience and to understand and explain the thoughts or understanding of the subject (Kivunja and Kuyini 2017: 33).. This research paradigm helps the researcher to construct meaningful data about student radiographers' knowledge and practices regarding the ethical responsibilities for the Radiography profession in the clinical setting. The essential elements of a research paradigm, namely ontology, epistemology, methodology and methods (Scotland 2012: 9) are described by Kivunja and Kuyini (2017: 26-27) as follows:

3.2.1. **Ontology** is the philosophical study of the nature of being or reality. The reality is that despite the hands-on training that radiography students receive, including communication and the ability to manage patients while maintaining a positive attitude, there is paucity of information regarding their

knowledge of their ethical responsibilities and practices in the profession, yet their ethical and professional conduct influences patients' satisfaction with the radiology service;

3.2.2. Epistemology deals with the source, nature and form of knowledge and how it is received and communicated to other people (Kivunja and Kuyini 2017: 33). The researcher believes that there are various realities that exist regarding the student radiographers' knowledge and practices regarding the ethical responsibilities for the radiography profession. Exploring and describing the varied knowledge and practices of ethics would allow for presentation of information as it is in the real world and assist in understanding the phenomenon in question. In this study, the people who provided the relevant information about the phenomenon are students in their final year of study. The students had the ethics education in theory for the past three years of each level of their study. The researcher formulated questions to collect data, analyse and write a report with recommendations. The researcher made meaning of their data through their cognitive processing of data informed by the interactions of the researcher with participants.

The kind of knowledge that the researcher seeks to explore is the participants' thoughts, views, attitudes, assumptions and understanding of the knowledge and practices of ethics they understand and how it has been unfolding with time. The nature of the study is the building up of a picture of the meaning participants have attributed to the knowledge and practices concepts of ethics and their perceptions. It is important to acknowledge that researchers and their subjects are involved in the interactive process where they interact, talk, ask questions, listen, read, write, and collect research data (Kivunja and Kuyini 2017: 33).

3.2.3. Axiology involves defining, evaluating, and understanding scientific concepts of right and wrong. behaviour relating to the research. The study followed all ethical considerations required to do the study. This included getting approval from the university to do the study as well as obtaining ethical

clearance. In this study, the researcher adhered to principles of ethics such as autonomy, privacy and confidentiality (Beauchamp and Childress 2015:166).

3.2.4. Methodology is a broad term that refers to the research design, methods, procedures, and techniques used in research. It is used in research to understand people's belief system, perspectives and experiences. It is characterized by the ways in which it often creates words rather than numbers to describe goals and knowledge that involve understanding certain aspects of social life (Bricki and Green 2018: 2). In the next section, the researcher described in detail the design, the approach and procedures used in the current study.

3.3 RESEARCH DESIGN

Research design is the research plan and methodology that includes decisions from general hypotheses to detailed data collection and analysis (Creswell and Creswell 2017:3). In this study, a qualitative research design was used. This structure provides information about the "individual" aspect of a problem and aims to discover and understand the impact of individuals or groups on social or societal issues (Creswell and Creswell 2017: 61). The rationale for using this design is that it is effective in obtaining specific information about the values, opinions, behaviours and social contexts of particular populations or groups (Oranga and Matere 2023: 2). The study is explorative as it sought to explain "what" and "how" a certain behaviour is applicable in a certain group (Creswell and Creswell 2017: 3). In the current study, qualitative study was used to explore the following research questions:

- a. What do student radiographers understand with regard to the ethical responsibilities for the Radiography profession?
- b. How do student radiographers practice ethical responsibility in their profession?
- c. How can student radiographers' knowledge and practice be enhanced with regard to ethical responsibilities for the Radiography profession?
- d. In the following section, the researcher described in detail the qualitative approach used in the study.

3.4 NATURAL SETTINGS

A natural setting is an uncontrolled real-life situation, meaning that no alterations have been made for the purposes of the study (Bhandari 2020a:40). Qualitative researchers do not change the environment and activities of the participants. They gather information by talking directly to people and observing their instantaneous behaviour around them. Naturalistic research seeks to gain a deeper understanding of the relationship between participants in their environment.

The study was conducted at a selected university in Gauteng province, South Africa. Gauteng is the smallest South African province approximately 18,178 km² in area with a population of 15 488 137 but comprises the largest share of the South African population (South African Government 2020 para. 3 line 1-3). There are five districts in Gauteng, namely Tshwane, Gauteng, Ekurhuleni, West Rand and Sedibeng which are depicted in Figure 3.1 below. The study was conducted at Tshwane District where the most spoken languages are Tswana, Sepedi, English and Afrikaans (Ditsele and Mann 2014:159). The selected university in the Gauteng province is an institution of Higher Learning where Diagnostic Radiography is one of the programmes offered. Diagnostic Radiography is offered as a three-year degree program with no honours. The programme is structured such that ethics is offered from first to third year.

3.5 STUDY POPULATION

A target group describes groups of people with common characteristics and similar life situations (Whaley 2017: para. 2 line 1). The target population in this research is all the Diagnostic Radiography students at a selected university from levels 1 to 3. The study population refers to the entire group of individual that the researcher is interested in generalising the conclusion to. The unit of the case in this study is radiography students who are in their third year of study. The university usually has 40 third-year Diagnostic Radiography students with the same number of students in the first and second years of the program. All the third-year students of the particular year were identified by the head of

department in Radiography at the selected university. The reason for selecting third years only is because they are in their final year of study and are at the desirable level of achievable performance. They are at the stage where the competency of the program is proved to have been attained.

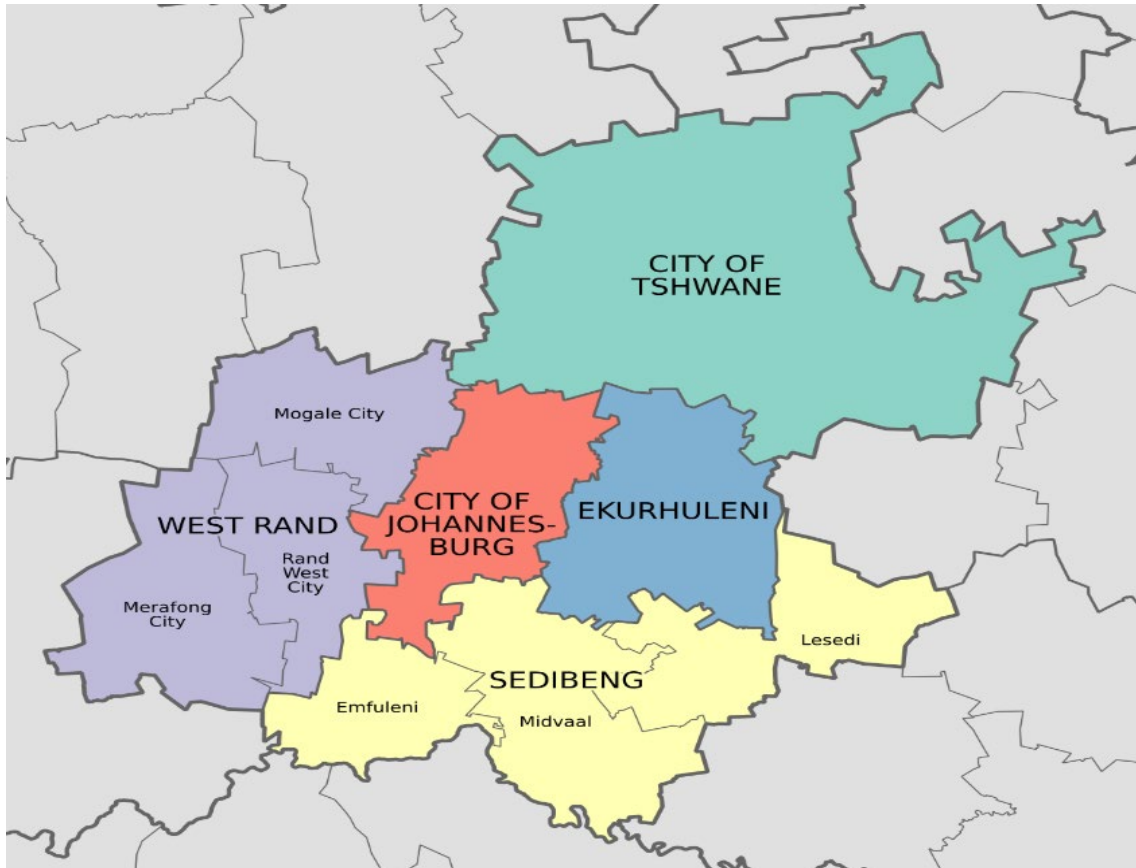


Figure 3.1: Map of the Gauteng province (Department of Labour 2016:2)

In this study, the researcher only concentrated on a group of third-year student radiographers at the selected University in Gauteng Province. The Gauteng province has a total of four (4) institutions offering Radiography, hence a population of four (4) groups of third-year students.

3.5.1 Inclusion Criteria

- All third-year student radiographers from the academic institution;
- The participants were registered with HPCSA as student radiographers;

- The participants were registered under the category of Diagnostic Radiography.

3.5.2 Exclusion Criteria

- First -year student Diagnostic Radiographers; and
- Second-year student Diagnostic Radiographers.
- All the students in institutions offering radiography in Gauteng

3.6 SAMPLING PROCESS

Sampling is the process of selecting a part of the population to represent the whole (Polit and Beck 2012: 275). It involves selecting a group of people, objects or subjects with rich knowledge about the phenomenon under study (Grove, Gray and Burns 2015: 249). The target audience is defined as all members who meet the criteria set for research (Alvi 2016: 10). It refers to the entire group of individuals that the researcher is interested in generalizing the conclusion. The data of this study are third year students studying in the Radiography department. An example is a population group that results from the researcher's inability to test everyone in a group. A non-probability sampling method using purposive sampling was used in the study to select 25 third-year students who participated in the study.

According to Given (2016: 135), saturation is the point at which additional data do not lead to any new emergent themes. In this study, no new topics were identified following the analysis of approximately two thirds of the interviews, i.e. 25 interviewees. Data saturation with no newer information coming from the participant was reached at the 23rd participant. When the researcher begins to hear the same comments again and again, data saturation is being reached. Thereafter, two (2) more participants were interviewed to achieve thematic saturation - a point was reached at which new data appears to no longer contribute to the findings due to repetition of themes and comments by participants (Vasileiou *et al.* 2018: 8).

3.6.1 Recruitment process

The recruitment process involves identifying potential research participants and providing them with the information to establish their interest to join a proposed research study (Manohar *et al.* 2018:02). The researcher requested approval from Institutional Research and Ethics Committee and a clearance certificate with number 142/19 was granted (Appendix 1). A letter of request for gatekeeper permission to do the study was sent to the selected university's Research Committee (Appendix 2a), Executive Dean of the selected university (Appendix 2b) as well as the Head of Radiography Department (Appendix 2c). Permission was granted by the Executive Dean of the selected university (Appendix 2e), Head of Radiography Department (Appendix 2f) and full approval was granted by the Durban University of Technology. The participants were identified through a class list of 3rd year students in the year of study (Appendix 10). The researcher approached the participants directly by inviting all 3rd years to an online meeting via MS Teams to brief them about the study. Participants were asked to contact the researcher through e-mail if they were willing to participate in the study.

3.7 DATA COLLECTION

The data collection process enables the person to collect information about the subject (person, object, phenomenon) and the environment in which the event occurred (Kabir 2016: 202). Once the potential participants had indicated that they were willing to participate in the study, the researcher explained the content of the information letter before data collection. They were informed that their participation would be voluntary, and they could withdraw any time from the study if they so wish without any penalty. Again, it was explained that their information was confidential and anonymous. No participant received any form of remuneration.

In order not to disrupt the work, the interviews were held at a convenient time for the participants. The interview took about 45-60 minutes. All interviews were conducted by the researcher over a period of a month. An interview guide with open-ended questions (Appendix 5) together with demographic data (Appendix

6) were used in the data collection process. Due to coronavirus disease (COVID-19), the environment where the interviews took place was sanitised i.e., "fogged" 15 minutes before the start of the interview and each participant sanitised their hands as they came into the venue. The venue was in a quiet room where there was no noise disturbance. Mask to mask interviews were conducted with each participant. The participants were advised to have their mask on during the interview process and follow the social distancing rule.

Semi-structured, one-on-one in-depth interviews were used to collect data for the current research. The interviews involved posing questions to respondents (Flick 2018: 233). In addition, follow-up questions known as probes were asked, based on what respondents had said during the one-on-one interview (Flick 2018: 233). One-on-one interviews were preferred because they are easily managed, allowing rapport to be built. Interviews were audio recorded with the permission of participants, and a verbatim written transcription of each interview was produced.

At the end of the interviews, the researcher thanked the participants for openly sharing the information within their groups. As soon as the groups had left, the researcher documented her views and approaches and compiled them into her thoughtful notes. The collected data was stored on a computer where the password was known only to the researcher. It was used solely for the purpose of the study and will be disposed of after five years. Data was analysed and reported objectively by the researcher.

3.8 DATA ANALYSIS

Qualitative data analysis is the interpretation of collected data to create order, to give meaning and communicate effectively (Harding and Whitehead 2013: 142). This is done by entering a "perception" of all information through multiple readings and re-readings. Collected data was transcribed verbatim before data analysis (Appendix 8) then analysed using Tesch's eight steps of data analysis as described in Creswell (2014:186) to identify themes:

- Researcher read all documents to get a complete impression of the data collected.
- The researcher wrote down marginal thoughts that emerged from the data.
- Similar content is grouped together. This content is divided into main content, special content and important content.
- Enter the content as a number that should be written next to the relevant section in the file. Other terms or numbers that occur are written next to the text.
- Use the most descriptive words for the content and turn it into categories.
- Researchers have put together a list of all relevant topics and new topics.
- The researcher evaluates the data by collecting the data available in each category in which the theme occurs.
- Existing files have been re-encoded.

To avoid bias, the framed interview questions were open-ended, and the researcher guided the participants to provide truthful and honest answers. General questions were asked first, before moving to specific or sensitive questions. The researcher avoided leading questions that can prompt the participant to respond in favour of a particular assumption. In some instances, the questions were asked in different ways like asking what a third person would do in a particular situation. All the collected data were analysed with a clear and unbiased mind. The researcher also ensured that pre-existing assumptions were kept at bay. To ensure quality in the study, the researcher used trustworthiness which is discussed next.

3.9 TRUSTWORTHINESS

The reliability or rigor of research refers to the level of trust in the data, interpretations and methods used to ensure the quality of the research (Connelly 2016: 435). Trust is based on the four factors described below (Connelly 2016: 435).

3.9.1 Credibility refers to the confidence from the participants that the results are accurate, reliable and reliable (Forero *et al.* 2018: 03). Researchers can

ensure that participants' answers are not misinterpreted during data analysis. To ensure the reliability of this study, audio recordings were made during the interviews. Review the data until data saturation builds confidence in the accuracy of the findings. At the time the report was written, the record was transcribed to ensure that all information was accurately reproduced.

3.9.2 Transferability means the extent to which results can be generalized or transferred to other contexts or settings. To assess the validity of findings for people in other fields, it may be useful to perform similar activities using the same methods, for example, to analyse similar literature for high reach so that the results can be generalized (Forero *et al.* 2018: 03).

3.9.3 Dependability is to ensure that the results of this qualitative analysis are reproduced if the research is included in the same participant, coder and subject group (Forero *et al.* 2018: 02). Perform the audit by saving the data on the computer using a password, save the raw data of each conversation for future use.

3.9.4 Conformability according to Forero *et al.* (2018: 02) is the confidence that the results have been confirmed or confirmed by other researchers. Voice records were made to reflect the information of the participants. Research supervisors will review researchers' comments as independent workers.

3.10. ETHICAL CONSIDERATIONS

The study was approved by Durban University of Technology's Institutional Research and Ethics Committee (Appendix 1b). A letter of permission to conduct the study was sent to the selected university Research Committee (Appendix 2a), the Executive Dean in the School of Medicine (Appendix 2b) and the Head of Department in Radiography (Appendix 2c). All participants in the study were given letter of information to consent participating in the study (Appendix 4).

The participants consented to participate in the study without any coercion and were informed that they could withdraw from the study if not comfortable to continue with the study. The written consent forms from participants were obtained before conducting the interview and participants were assured of anonymity (Appendix 4). Interviews with participants were conducted in English because student radiographers are professionals who have completed their Higher Education in English.

3.11 SUMMARY OF THE CHAPTER

The chapter detailed how the researcher conducted the study. It outlined the philosophical underpinnings of the research, the research design and its approach, study population, sampling process, data collection and analysis. The chapter ended with a description of ethical considerations in the study. The next chapter presented the findings of the study.

CHAPTER 4: PRESENTATION OF THE RESULTS

4.1 INTRODUCTION

This chapter presents the findings of interview data obtained from 22 student radiographers who are at level three of their study at a selected university in Gauteng province, South Africa. Data was elicited by means of semi-structured interviews which were conducted face-to-face and one-on-one with each participant. An interview guide with a list of questions that would generate data from the participants was used (Appendix 5). All the interviews were audio-recorded and transcribed verbatim before data analysis. The interview data were analysed for their relevance to the research questions of the study. The chapter begins by describing the interviewees briefly and presenting the findings of the study. The study was intended to explore student radiographers' knowledge and practices of ethical responsibilities for the radiography profession at a selected university in Gauteng province. The research questions were:

4.1.1 Main research question

What knowledge and practice do student radiographers' have on the ethical responsibilities for the Radiography profession at a selected university in Gauteng province?

4.1.2 Sub-questions

- (a) What do student radiographers understand with regard to the ethical responsibilities for the Radiography profession?
- (b) How do student radiographers practice ethical responsibility in their profession?
- (c) How can student radiographers' practice be enhanced with regard to ethical responsibilities for the Radiography profession?

An interview schedule used consisted of two sections: the first section was for the collection of demographic data, and the second contained questions that were asked by the researcher during the interview. A face-to-face interview was conducted with participants at the selected hospital. The findings presented in this chapter were interpreted in relation to literature in order to understand

student radiographers' knowledge and practices of ethical responsibilities for the radiography profession in a selected university in Gauteng province. The results of the study first describe the demographics of participants in the study, and then present the key findings as themes which are discussed in terms of their sub-themes.

4.2 DEMOGRAPHIC DATA OF THE PARTICIPANTS

The researcher used a non-probability purposive sampling method to select participants for the study. Participants who fulfilled the criteria and who were willing to participate and agreed to participate in the study by giving consent, were interviewed. The demographic data of the 22 third-year student radiographers who participated in the study is depicted in Table 4.1 below. The table displays participants in terms of age group, gender and race. Most participants were females, with 14 females and 8 males. Their ages ranged from 20 to 32 years of age, with the majority of participants were aged 20 and 22, four were 23-25 and one each at 26-29 and 29-32. All the participants were of African origin, while other racial groups were not represented.

Table 4.1 Demographic data of study participants

Participant	Gender	Age (Years)				<u>Race</u>			
No.	M/F	20-22	23-25	26-28	29-31	African	White	<u>Indian</u>	<u>Coloured</u>
1	Female	X				<u>X</u>			
2	Female		X			<u>X</u>			
3	Female	X				<u>X</u>			
4	Female	X				<u>X</u>			
5	Male			X		<u>X</u>			
6	Male	X				<u>X</u>			
7	Male	X				<u>X</u>			
8	Male		X			<u>X</u>			
9	Female	X				<u>X</u>			
10	Female	X				<u>X</u>			
11	Male	X				<u>X</u>			
12	Male	X				<u>X</u>			
13	Female	X				<u>X</u>			
14	Female	X				<u>X</u>			
15	Female				X	<u>X</u>			
16	Male		X			<u>X</u>			
17	Female	X				<u>X</u>			
18	Male	X				<u>X</u>			
19	Female	X				<u>X</u>			
20	Female	X				<u>X</u>			
21	Female	X				<u>X</u>			
22	Female	X				<u>X</u>			

4.3 CONCEPTUALISATION OF RADIOGRAPHY STUDENTS' KNOWLEDGE AND PRACTICE OF ETHICAL RESPONSIBILITIES FOR THE PROFESSION

Thematic analysis of the data reveals key themes that can be identified from the data. The following six (6) points emerged from the data analysis:

- a) Understanding of ethics in the radiography profession.
- b) Code of conduct outlined.
- c) Ethical responsibility in the profession.
- d) Demonstrating ethical responsibilities in the profession when handling patients.
- e) Ensuring quality in one's practice when handling a patient.
- f) Enhancing handling of patients with regard to ethical responsibility

These themes are interrelated and help to understand the experiences of the participants based on the interviews. These are the subject of the study.

From these themes, the researcher discussed their related sub-themes that emerged, as illustrated in Table 4.2. Suggestions from the recorded discussions were used to legitimize the developed topics and concepts. A sample of the interview transcripts is attached (Appendix 7).

Table 4.2 Summary of themes and sub-themes

Theme	Subthemes
4.3.1. Understanding of ethics in the Radiography profession.	4.3.1.1 Moral values and principles. 4.3.1.2 Set of rules that provide guidelines to follow in the radiography profession. 4.3.1.3 Behaviour that distinguishes between right and wrong.
4.3.2. Code of conduct outlined.	4.3.2.1 High standards of personal conduct in the professional duties. 4.3.2.2 Ethical behaviour when handling patients and in the company of colleagues. 4.3.2.3 Being presentable and respectable. 4.3.2.4 Professional relationship between radiographer and patient.
4.3.3 Ethical responsibilities in the profession.	4.3.3.1 The act of beneficence. 4.3.3.2 Rights of the patient - Autonomy. 4.3.3.3 Always be truthful and honest with information to the patient. 4.3.3.4 Communication with the patient.
4.3.4 Demonstrating ethical responsibilities in the profession when handling patients.	4.3.4.1 Always keep patient information confidential. 4.3.4.2 Follow data protection laws. 4.3.4.3 Privacy during radiographic procedures. 4.3.4.4 Treating patients with respect and dignity regardless of their age or race.
4.3.5 Ensuring quality in your practice when handling a patient.	4.3.5.1 Quality care in the radiology department. 4.3.5.2 Producing radiographs with the lowest possible exposure. 4.3.5.3 Striving to provide optimal patient care.
4.3.6. Enhancing handling of patients with regard to ethical responsibility.	4.3.6.1 Encouraging continuing education. 4.3.6.2 Encouraging feedback from patients. 4.3.6.3 Educating patients about their rights. 4.3.6.4 Expansion of workforce. 4.3.6.5 Ethics education afforded more time.

4.3.1. Theme 1: Understanding ethics in the Radiography profession

When the interviewees were asked about their understanding of ethics in the radiography profession, they highlighted that ethics in the radiography profession is associated with moral values and principles of human conduct, understanding that they need to adhere to the guidelines that govern radiographers in the profession and deal with the behaviour of a radiographer to distinguish between right and wrong. The following statements below are the examples of their answers:

“Erm I know it has got something to do with moral values. Like ethics erm...can be the study of moral values of human conduct. Like [sigh] for example in radiography ethic is used by professional radiographers to apply like their values in practice and also ensure that treatment of patients is at its highest level.” **Participant 4, 20-22, Female.**

“Ethics refers to the set of rules or guidelines that govern radiographers in the profession that needs to be followed” **Participant 6, 20-22, Male**

“Ethics in the radiography profession are moral principles that deals with the behaviour of a radiographer that distinguishes the right from wrong” **Participant 5, 26-28, Male.**

4.3.2. Theme 2: Code of conduct

When participants were asked if the code of conduct was clearly outlined to them followed by probing. Most of them acknowledged that the code of conduct was outlined to them. They painted high standards of personal conduct, ethical behaviour when handling patients and in the company of colleagues, being presentable and respectable and professional relationship between the radiographer and patient. The following statements illustrated this:

“Yes, the code of conduct was clearly outlined. It has always been emphasized that as professional radiographers we should always strive to carry out our duties in a professional and ethical way by maintaining high standard of moral values.” **Participant 7, 20-22, Male.**

Provide good care to the patients equally with no favouritism”

Participant 16, 23-25, Male.

Yes, we were guided about being presentable and respectable at all times” **Participant 13, 20-22, Female.**

“Keep the relationship between the patient and radiographer professional “

Participant 18, 20-22, Male.

4.3.3 Theme 3: Ethical responsibilities in the profession

The interviewees were asked if they have any knowledge of their ethical responsibilities in the profession followed by probing. Most of them highlighted the act of kindness with a strong inference of doing well to others such as act of beneficence, respecting rights of the patient *i.e.*, autonomy, by always be truthful and honest with information to the patient and communicating effectively with the patient. The following quotes confirmed this:

“Beneficence, that is promoting good action and preventing evil or harm to patients” **Participant 4, 20-22, Female.**

“Respecting and understanding the rights of the patient. If patient refuses to do the procedure radiographers must respect patient decision”
Participant 11, 20-22, Male.

“Be honest and truthful to patients about the treatment they are about to get” **Participant 13, 20-22, Female.**

“Communicating with the patient clearly by giving them a full explanation of the procedure as well requesting informed consent” **Participant 3, 20-22, Female.**

4.3.4 Theme 4: Demonstrating ethical responsibilities in the profession when handling patients

Most indicated that they always treat information about patients as confidential as possible and use it only for the purpose for which it was given for, they always follow best practices of data protection laws when handling confidential patient's information, that patients should be afforded some privacy during the radiographic procedures and treating patients with respect and dignity regardless of their socio-economic status. The excerpt below affirms this:

"I do not disclose any confidential information about the patient to my colleagues unless if it of significant information" **Participant 1, 20-22, Female.**

"I Follow data protection laws about personal information of the patient in the department" **Participant 6, 20-22, Male.**

"Giving patients privacy and respect is essential during the examination". **Participant 2, 23-25, Female.**

"To treat patients with equal respect and care irrespective of their age, race, lifestyle and state of health" **Participant 5, 26-28, Male.**

4.3.5 Theme 5: Ensuring quality in practice when handling a patient

Most participants elucidated to quality health care in the radiology department including the ability to produce radiographs with the lowest possible exposure and striving to provide optimal patient care. The following excerpts illustrate this:

"Identifying patient's needs" **Participant 12, 20-22, Male.**

"Achieving good quality images with minimum exposure with the concept of do more good than harm" **Participant 19, 20-22, Female.**

"Ensure well-organized service delivery to patients". **Participant 21,**

4.3.6 Enhancing handling of patients with regard to ethical responsibility.

The interviewees thought it is important to encourage continuing education for radiographers by attending more workshops and seminars to update their knowledge, to encourage feedback from patients by use of surveys, educating patients about their rights, expansion of workforce by employing more staff, ethics education to be afforded more time in theory and clinical and generate standard ethical protocols. The following statements described this:

“To attend workshops, seminars and conferences on ethical responsibilities in the radiology department” **Participant 10, 20-22, Female.**

“A survey at the end of any radiographic examination will assist with the way radiographers should conduct themselves?” **Participant 7, 20-22, Male.**

“By putting posters on the walls to educate patients about “Batho Pele Principles” **Participant 8, 23-25. Male.**

“To employ more staff members to improve on the efficiency of radiographers without compromising patient care” **Participant 17, 20-22, Female.**

To accord the ethics education more time in theory and clinical” **Participant 4, 20-22, Female.**

“For the department to generate standard ethical protocols for radiographers to share and follow to improve the efficiency of the department” **Participants 5, 26-28, Male.**

4.4 Summary

This chapter presented the findings of the study as themes. The findings of the study confirmed the student radiographers' knowledge and practices of ethical responsibilities for the Radiography profession. The next chapter discusses these findings, based on the analysis and interpretation done in the chapter.

CHAPTER 5: DISCUSSION OF THE FINDINGS

5.1 INTRODUCTION

The previous chapter presented the findings of the study as main themes. These findings will now be discussed based on the analysis and the interpretation of the main themes that were supported by participants' statements. These statements were used to derive an essential invariant structure, which focused on common student radiographers' knowledge and practices with regard to the ethical responsibilities for the Radiography profession. The chapter discusses the findings of the study by focussing firstly on demographic profiles of the study participants to provide a contextual background of the third-year student radiographers interviewed then the main themes.

Demographic information may assist in explaining the perceptions of respondents, and any similarities or differences (Bloomberg and Volpe 2012: 105). Next, the themes that emerged as well as their sub-themes are discussed. The main themes that emerged were the understanding of ethics in the profession, code of conduct, ethical responsibilities in the profession, demonstrating ethical responsibilities in the profession when handling patients, ensuring quality in practice when handling a patient, and enhancing handling of patients regarding ethical responsibility. Lastly, the chapter reconciles the findings with the aim of the study and consolidating it with literature and theory.

5.2 DEMOGRAPHIC PROFILE OF STUDY PARTICIPANTS

The study participants were third-year student radiographers at a selected university in Gauteng province, about to complete their tertiary education and to begin community service within the country at different hospitals in the next coming year, and registered with the HPCSA as student radiographers. This cohort of students had learned about ethics since the beginning of the program in level one.

5.2.1 Gender

When the participant sample was considered, 63.6% (n = 14) of participants were identified as female and 36.3% (n = 8) identified as male student radiographers. The higher proportion of female to male radiographers noted in the current study is in tandem with national figures as indicated by the Health Systems Trust [HST] (2017: 306) who reported that in 2016 there were 573 female and 93 male radiographers registered by the HPCSA. This represents an approximate percentage of 86% female and 14% male registered radiographers. Published data in the United Kingdom suggest that there is similar imbalance of the number female and male radiographers stating that, from 2005 to 2013, around 85% of all enrolled students were female and the remaining 15% were male (The National Health Services Scotland's Education, and Workforce Report 2015: 14).

5.2.2 Age

About 77% (n = 17) of the study participants were aged between 20 to 22 years, 14% (n = 3) were in the 23 to 25 age bracket, 5% (n = 1) in the 26-28 age bracket and 5% (n = 1) between 29 to 31. This is a relatively young population when compared to other studies. The study conducted in Durban, South Africa by Ganesh (2017:105) on first-time registered chiropractic Masters' students had 100% of participants falling within the 23 to 27 year's age range.

5.2.3 Race

A total of 100% (n = 22) of participants were Africans. There were no other race groups that participated in the study. According to Van der Merwe *et al.* (2016: 77), the demographic composition of selected applicants regarding race and gender varies at different medical schools. This supports the reason why this particular university has African participants only.

5.3 DISCUSSION OF THEMES

The themes emerging after the student radiographers were asked to describe their knowledge and practices pertaining the ethical responsibilities for the Radiography profession are discussed in more detail below.

5.3.1 Understanding of ethics in the profession

When student radiographers were asked about their knowledge and practices regarding the ethical responsibilities for the radiography profession, the study showed that they have significant knowledge on ethics. The participants understood ethics as moral values and principles in the profession, set of rules that provide guidelines to follow in the radiography profession and as the behaviour that distinguishes between the right and wrong. This finding agrees with Varkey's (2021: 18) that ethics is built on a set of core values or principles in the radiography profession. According to Bwanga (2020: 12), ethics is defined as a set of values, behaviours, and relationships that underpins the trust the public has towards radiographers (Bwanga 2020: 12). According to Young and Wagner (2021: 02), the study of ethics is always trying to separate the good from the bad. The layperson's idea of morality is associated with the connotation of right and wrong.

To facilitate an understanding of ethics in the Radiography profession, participants outlined the guidelines appropriate to the profession (HPCSA 2009 para. 7 line 2). Accordingly, every Radiology department has to offer more precise guidance and direction that converses ethical guidelines which contains value-oriented principles (HPCSA 2009 para. 2 line 2). These standards define the professional practice. The standards are there to guide the activities of the individual responsible for the care of patients in the areas of interpersonal relationships with patients and colleagues including ethical behaviour (Kekana and Steenkamp 2019: 15). The participants alluded that ethics refers to the set of rules or guidelines that govern radiographers in the profession that needs to be followed. They understood that radiographers need guidance about the

required standards of professional behaviour. This is in line with scope of practice of Diagnostic Radiography (HPCSA 2020: para. 1 line 1).

5.3.2 Code of Conduct outlined

The study found that the students interviewed emphasized high standards of personal conduct. They recounted that they should commit themselves to the standards of the profession in order to provide high levels of patient care (Tashiya, Daniels and Karera 2021: 09). These professional standards were demonstrated by maintaining a high standard of moral values. The same authors mentioned that radiographers in their profession have a moral and legal responsibility to patients and professional duty to provide high levels of care to patients. Similar studies by Donmez and Oszoy (2016: 988) identified that nurses demonstrated high levels of professionalism as a significant predictor of quality care.

Participants explained that in keeping with high standards of personal conduct, one then maintains public trust and confidence in the profession. Their anticipation was confirmed in practice when the staff maintained high standard of moral values. The reputation of the profession should not be compromised by the conduct or behaviours of its members or the wider radiography workforce. Participants shared their experience that the Code of Conduct made them more aware of the need to treat patients with respect and communicate effectively.

The participants explained how the code of conduct influences good patient care and when handling patients and in the company of colleague. Mulisa, Tessema, and Merga (2017: 02) agree that patient satisfaction is the degree to which patients feel their needs and expectations are met and is the degree to which patients agree on their expectations of quality care, and their perceptions of what they receive. Radiographers should consider social and emotional considerations of patients during radiological examinations to improve patient care.

According to the HPCSA (2016:09) general ethical guidelines, radiographers should ensure that their appearance is such that it inspires confidence in patients by being presentable and respectful. Participants defined the ideal professional radiographer as the one who has a good relationship with the patient, showed respect, and has knowledge of a good patient's centred approach (Kekana and Steenkamp 2019: 15). They realize that trust will form the basis of the relationship between the radiographer and patients.

5.3.3 Ethical responsibilities in the profession

When participants were asked about their ethical responsibilities in the profession, they appeared to have concepts about ethical responsibilities in the radiography profession. Participants believed that radiographers should do what is best for patients, which would help patients make informed decisions in practice. The students recognise that patients with decision-making capacity have the right to make decisions about their own care and treatment. The students echoed that patients need to be given an opportunity to have their own input be considered when decisions are made because patients have a right to retain control over their body. A radiographer can suggest or advise, but any actions that attempt to persuade or coerce the patient into making a choice are violations of autonomy ethical principle. If these options are in the patient's best interest, the patient should be allowed to make their own decision, even if the radiographer does not believe in these options. Varkey's (2021:18) view of the principle of philanthropy is that it is the duty of the health care worker to act in the benefit of the sick and to promote various moral principles to prevent any harm.

Participants also acknowledged that all patients have the right to information about their conditions or alternative radiographic treatment. According to Varkey (2021: 20), truth telling of the full disclosure to the patient, however grave the disease is, should be the norm. The same author validates that it should be the

standard norm to provide full information with thoughtfulness and sensitivity to patients who want to know.

Makanjee, Thambura, and Engel-Hills (2018: 195) also expressed the same opinion that colloquial communication with patients is important to ensure that patients understand their needs and what will happen during a radiographic procedure. Participants confirmed that communicating clearly, openly and truthfully will assist patients in making conscious decisions for themselves (Ehrlich and Coakes 2016: 108). Truth-telling is a vital component in any health care worker- otherwise the radiographer loses the trust of the patient and again it maintains a high standard of moral values on the radiographer.

Participants highlighted that good communication between radiographer and patients helped patients feel safe, comfortable and relaxed. Radiographers know that clear explanation of the procedure to the patient instils confidence in the patient. Participants understood that by communicating clearly in the language that the patient understand, patients can make informed decisions. By communicating clearly, openly and effectively, patients will be able to make conscious decisions for themselves (Ehrlich and Coakes 2016: 108).

5.3.4 Demonstrating ethical responsibilities in the radiography profession

In demonstrating ethical responsibilities in the profession, participants understood that they should not disclose any confidential information about the patient to their colleagues, unless if it of significant information. They should completely avoid discussing patient confidential information during their tea or lunch breaks unless if it is of crucial importance to other radiographers. Confidential records should not be left where other radiographers may have casual access to them. These findings are supported by Botwe (2016: 24) because health care professionals should respect patients' privacy and confidentiality and avoid disclosing information to others without the patient's consent unless required by law. A study performed by Noroozi *et al.* (2018: 875)

resonates that respecting patient's confidentiality and privacy are considered as the patients' rights.

Radiology Information System (RIS) and Picture Archiving and Communication Systems (PACS) enable the quick and widespread distribution of patient data and images beyond the institution that they were initially acquired, and it is expected that only those who have the right to access them should therefore protect patient information without electronically distributing it. Therefore, radiographers have a duty to protect patient's data. Information on the PACS should be encrypted with a unique password assigned to every radiographer in the radiology department. This finding agrees with a joint paper between the European Federation of Radiographer Society (EFRS) and European Society of Radiology (ESR) (2019: 32) that appropriate technical and organisational safeguards of encryption of data is essential when working with this electronic medical information of the patient.

In a previous study, Varkey (2021: 20) echoed that justice is generally interpreted as fair, equitable, and appropriate treatment of persons. Radiography is a profession with its own code of ethics, requiring all radiographers to disregard personal biases in a professional setting. Ethical responsibilities in practice are impacted by so many factors, such as culture, religion, education and socio-economic status. The participants agreed that patients needed to be treated with equal respect and care irrespective of their age race, lifestyle and state of health.

5.3.5 Ensuring quality in your practice when handling a patient

When participants were asked how to ensure quality when handling patients, they elucidated quality health care in the Radiology department as identifying the needs of the patients. Effective quality process in the radiology department includes patient care that includes efficiency of the radiology department. Mulisa, Tsema, and Merga (2017: 02) agree that patient satisfaction refers to the extent to which patients perceive their needs and expectations are met by the

service provider. Thus, identifying patient needs can provide better patient care. Respect for the needs and wishes of patients is the basis of all humanistic treatment.

Participants understood that good patient care procedures are essential for a successful medical imaging departments to provide quality medical images while maintaining patient safety by maintaining minimum radiation dose to both patient and staff (ALARA). i.e., Achieving good quality images with minimum exposure with the concept of do more good than harm (Beneficence). The ALARA principle means that even if it is a small dose, if receiving that dose has no direct benefit, one should try to avoid it (Centre for Disease Control [CDC] 2015 para. 1 line 2).

This has been stated by Al Ewaidat *et al.* (2018:02), the concept of "as low as possible" (ALARA) derives from the link between image quality and radiation dose.

5.3.6 Enhancing handling of patients with regard to ethical responsibility

The study found that the participants were aware that enhancing radiographer's ethical responsibilities when handling patients will advance with encouraging continuing education for radiographers by attending more workshops and seminars to update their knowledge. Radiographers develop and maintain a high level of skill and knowledge through continuous learning to make best decisions regarding patient's circumstances. Naidoo and Naidoo (2018: 210) echo these findings and explains that enhancing or improving the skills mix has to be a lifelong learning practice for radiographers because they need to stay informed of the current changes in the health services environment. For the department to offer the best quality health care, participants recognized that it is important to identifying patient's needs though patient's feedback done through questionnaires or surveys.

Participants recommended that the patients should have knowledge about the conduct of the radiographers, and this can be done by placing 'Batho Pele' principles (Jardien-Baboo *et al.* 2016: 399) posters on the Radiology walls so

that they can understand radiographers' responsibilities, measure the standard of service they received in the department or differentiate between good and bad behaviour. Participants also felt that ethics education should be afforded more time to enhance ethical responsibilities when handling patients. Chowdhury (2016: 1) supports the finding that a variety of teaching, learning, and education are needed to develop ethics, values, and ethics in students' minds and to develop many of the skills and attitudes necessary for academic success.

5.4 FINDINGS IN RELATION TO THE AIM OF THE STUDY

The current study is conducted with the aim of exploring student radiographers' knowledge and practices of ethical responsibilities for the Radiography profession and ultimately provide recommendations to improve their knowledge and practices at the workplace. The study's aim was achieved and the themes which emerged from the student radiographer's knowledge and practices with regard to their ethical responsibilities for the radiography profession regarded understanding ethics in the Radiography profession, code of conduct, ethical responsibilities in the Radiography profession, demonstrating ethical responsibilities in the profession when handling patients, ensuring quality in your practice when handling a patient and enhancing handling of patients with regard to ethical responsibility. Participants in this study were interviewed and they responded to three research questions which were based on the study's objectives. The questions and the findings obtained are provided below:

5.4.1 What do student radiographers understand with regard to the ethical responsibilities for the Radiography profession?

The study found that the students had reasonable knowledge regarding ethical responsibilities for the Radiography profession. They demonstrated average to good levels of moral values principles. The study found that the students displayed knowledge of professional duty to conduct themselves in a manner based on established professional standards. They were quite knowledgeable about some principles of ethics i.e., act of beneficence and rights of the patient Autonomy and Truth-Telling dignity. They realized that by improving their

communication skills, the radiographer patient relationship could be improved thus improving patient

5.4.2 How do student radiographers practice ethical responsibility in their profession?

The findings obtained in the study indicated that students are familiar with principles of ethics applied in practice such as privacy, confidentiality and justice. The findings were in line with what the students were taught in class that they are not supposed to share patient's confidential information with their colleagues or anyone else, except if the patient has given consent or it is in the interest of public health. They understood that they have the responsibility to upholding patient's privacy. These findings again are in line with the professional obligations as stipulated in the HPCSA ethical guidelines that they have to be in the better position to provide the level of confidentiality (HPCSA 2016:10). The study found that participants agreed that patient engagement during a radiographic procedure assisted in identifying patient's needs, thus striving to provide optimal patient care through quality care.

5.4.3 How to enhance student radiographers' practice with regard to ethical responsibilities for the Radiography profession?

The findings of the study showed that there is a need for continuing education. Participants felt continuing education is significant because they need to stay informed of the current changes in the health services environment. They also elaborated on the need for more staff members in the Radiology department to promote quality health care and efficient running of the department. The study further demonstrated that more ethics workshops and seminars will definitely enhance quality health care. One participant was of the opinion that the use of questionnaires and surveys in the Radiology department will assist in enhancing quality healthcare. The study further demonstrated that patients need to be educated about their rights during radiographic examination and treatment in an effort to improve on patient care and satisfaction. Additionally, the study findings highlighted the need for more time to be allocated for ethics education to succeed in ethics knowledge and be able to apply the relevant skills when handling patients.

5.5 SUMMARY OF THE CHAPTER

The chapter began by discussing the demographic profiles of study participants to foster a contextualisation of the information sources for the study. The chapter then discussed the findings of the study with reference to the various themes that were uncovered. The following chapter will conclude this research and outline the summary of findings, limitations and the recommendations.

CHAPTER 6 STUDY LIMITATIONS, RECOMMENDATIONS AND CONCLUSION

6.1 INTRODUCTION

In this chapter, the findings of the study are summarised. The chapter highlights the strengths of the study, study limitations and recommendations, then conclude the chapter. The study was performed to explore and describe student radiographers' knowledge and practices of ethical responsibilities for the Radiography profession. It was done to uncover factors that can distinguish the knowledge that the student radiographers at a selected university in Gauteng have in ethics and their practices of ethical responsibilities for the radiography profession. To obtain the desired information, participants were asked to describe their knowledge and practices with regard to the ethical responsibilities for the Radiography profession in relation to:

- understanding ethics in the Radiography profession;
- practicing ethical responsibility in their profession; and
- enhancing ethical responsibilities in the profession.

The next section summarises the study findings.

6.2 SUMMARY OF FINDINGS

Interpretation and analysis of the interview data provided by participants yielded six themes, namely: understanding ethics in the Radiography profession, code of conduct outlined, ethical responsibilities in the profession, demonstrating ethical responsibilities in the profession, ensuring quality in practice and enhancing ethical responsibilities. Each of these themes are summarized below:

6.2.1 Understanding ethics in the Radiography profession

The students displayed that they have significant knowledge on ethics. They understood ethics as moral values and principles in the profession, sets of rules that provide guidelines to follow in the Radiography profession and as the

behaviour that distinguishes between the right and wrong. This finding concurs with Varkey (2021: 18) that ethics is built on a set of core values or principles in the Radiography profession.

The participants outlined the guidelines appropriate to the profession (HPCSA 2009 para. 7 line 2). Accordingly, every Radiology department has to offer more precise guidance and direction that converses ethical guidelines which contains value-oriented principles (HPCSA 2016 para. 2 line 2). These standards define the professional practice. The participants alluded that ethics refers to the set of rules or guidelines that govern radiographers in the profession that needs to be followed. They understood that radiographers need guidance about the required standards of professional behaviour, which are in line with scope of practice of Diagnostic Radiography of the HPCSA (HPCSA 2020: para. 1 line 1).

6.2.2 Code of conduct.

The students interviewed emphasized high standards of personal conduct. These professional standards were demonstrated by maintaining high standards of moral values. According to Tashiya, Daniels and Karera (2021: 09), radiographers in their profession have a moral and legal responsibility to patients and professional duty to provide high levels of care to patients. Similar studies by Donmez and Oszoy (2016:988) identified that nurses demonstrated high levels of professionalism as a significant predictor of quality care.

In keeping with high standards of personal conduct, the participants explained that one must then maintain public trust and confidence in the profession. Their anticipation was confirmed in practice when the staff maintained high standard of moral values. The reputation of the profession should not be compromised by the conduct of its members or the wider radiology workforce. They noted that their experience with the code of conduct has made them more aware of the need to respect patients and communicate effectively when dealing with patients.

6.2.3 Ethical responsibilities in the profession

Participants appeared to have concepts about ethical responsibilities in the Radiography profession. They believed that radiographers should pursue the best interests of the patient to help them make informed decisions regarding their care and treatment. They recognize that patients with decision-making capacity have the right to make decisions about their own care and treatment. They believed that radiographers must act in the best interest of the patient and that this will assist them in making informed decisions in practice. They acknowledged that patients who have decision-making capacity have the right to make decisions regarding their care and treatment. They echoed that patients need to be given an opportunity to have their own input and be considered when decisions are made because patients have a right to retain control over their body.

Radiographers can advise or make recommendations, but any attempt to persuade or force the patient to make a decision violates the code of ethics. Regardless of whether the radiographer believes these choices, patients should be allowed to make their own decisions as long as these choices are in the patient's best interest. Varkey (2021: 18) supports the view that the principle of beneficence is the radiographer's duty to act in the best interest of the patient. Participants also acknowledged that all patients have rights to information about their conditions or alternative radiographic treatment. Varkey (2021: 20) reaffirms that truth telling of the full disclosure to the patient, however grave the disease is, should be the norm. The same author validates that it should be the standard norm to provide full information with thoughtfulness and sensitivity to patients who want to know.

6.2.4 Demonstrating ethical responsibilities in the profession

The participants understood with knowledge that they should not disclose any confidential information about the patient to their colleagues, unless if it is significant information. These findings are supported by Botwe (2016: 24) because health professionals should respect patients' privacy and confidentiality

and should not disclose information to others without the patient's consent unless required by law. Noroozi *et al.* (2018: 875) also echoed that respecting patient's confidentiality and privacy should be considered as the patients' rights. Participants acknowledges that radiographers have a duty to protect patients' data and understood that encryption of data is essential when working with this electronic medical information of the patient. Information on the PACS should be encrypted with a unique password assigned to every radiographer in the Radiology department.

Radiography as a profession has its own code of conduct that requires all radiographers to disregard personal biases in a professional setting. Varkey (2021: 20) agrees that justice in general means treating people fairly, equitable and appropriately. The participants stipulated that patients needed to be treated with equal respect and care irrespective of their age, race, lifestyle and state of health. Thus, ethical responsibilities in practice are impacted by so many factors, such as culture, religion, education and socio-economic status.

6.2.5. Ensuring quality in your practice

The participants elucidated that quality healthcare in the Radiology department is identifying the needs of the patients. Effective quality process in the Radiology department includes patient care and it improves the efficiency of the Radiology department. According to Mulisa, Tessema, and Merga (2017: 02), patient satisfaction refers to the degree to which patients needs and expectations are met by service providers. Therefore, determining the needs of the patient can provide effective patient care. Respect for the needs and wishes of patients is the basis of all humanistic treatment.

Participants agreed that good patient care is essential for an effective medical imaging department to provide quality clinical images while maintaining appropriately dose reduction to staff and patients (ALARA) Participants were cognisant that a good quality patient care system is essential in an efficiently run medical imaging department to provide quality clinical images while maintaining

patient and staff radiation doses as low as reasonably achievable (ALARA), i.e., achieving good quality images with minimum exposure with the concept of do more good than harm (Beneficence). This is supported by Al Ewaidat *et al.* (2018: 02), who stated that the essential reason for the “as low as reasonably achievable” (ALARA) idea stems from the link between image quality and radiation dose.

6.2.6 Enhancing ethical responsibilities in the profession

Radiographers develop and maintain a high level of skill and knowledge through continuous learning to make best decisions regarding patient’s circumstances. Thus, the participants were aware that enhancing radiographer’s ethical responsibilities when handling patients will advance with encouraging continuing education for radiographers by attending more workshops and seminars to update their knowledge. Naidoo and Naidoo (2018: 210) echo these findings and explains that enhancing or improving the skills has to be a lifelong learning practice for radiographers because they need to stay informed of the current changes in the health services environment. The participants recognized that it is important to identifying patient’s needs though patient’s feedback done with questionnaires or surveys.

6.3 STRENGTHS OF THE STUDY

The strength of the study is in that it captures new beliefs, as with this study the participants perceived that ethics education should be afforded more time to enhance ethical responsibilities when handling patients. Chowdhury (2016: 01) supports the findings that various teaching, learning and teaching methods should be planned in order to develop morality, values and ethics in students' minds and to develop various skills and qualities necessary for successful research.

Participants believed that radiographer-patient relationships can be strengthened, and patient care be improved through improved effective verbal

communication. The study found that participants agreed that patient engagement during a radiographic procedure assisted in identifying patient's needs. Thus, striving to provide optimal patient care through quality care notably keeping with high standard of personal conduct to maintain public trust and confidence. This was confirmed in practice when the staff maintained a high standard of moral values and their experience was that the code of conduct has made them more conscious of the need to respect patients, communicate effectively when handling patients. They explained how the code of conduct influences good patient care when handling patients and in the company of colleagues.

The study will encourage continuing education for radiographers by attending more workshops and seminars to update their knowledge. This will assist in developing and maintaining high level of skill and knowledge through continuous learning to make best decisions regarding a patient's circumstances. It is echoed by Naidoo and Naidoo (2018: 210) that enhancing or improving the skills of lifelong learning practice is needed to stay informed of the current changes in the health services environment.

Futhermore, it will encourage the Radiology department to offer the best quality health care by identifying patient's needs though patient's feedback done through questionnaires or surveys, in order to measure the standard of service they received in the department or differentiate between good and bad behaviour. This can be done by placing 'Batho Pele" principles posters against the Radiology department walls so that they can understand radiographers' responsibilities.

6.4 STUDY LIMITATIONS

The study was time-consuming to get the participant all at once, i.e., it was done when the participants were on theory block. It was difficult to make arrangements during lecture periods as some of the lectures are attended at different service

departments, so bringing them together at the same venue was a bit tedious although some could honour the time. The study to some extent attests that there is no guarantee that the participants were reliably responding because some will just answer to make the researcher believe that they have knowledge of ethics. There are no clearly defined set of quality criteria available for judging for reliability in qualitative research. The guarantee on the part of participants to respond reliably can be achieved if the informants have a solid background knowledge regarding the ethics of research that is provided through guidelines. The researcher's presence during data gathering, which is often unavoidable in qualitative research, can affect the subjects' responses. The participants were reluctant to answer as the researcher's presence made them uncomfortable in that they did not want to be seen as if they do not have the knowledge of the subject of ethics.

Another limitation specific to the current study exists in the data collection process because during the process, the participants did not seem to provide relevant responses to the questions. Then the researcher had to prompt the participants to get additional information, which was also a tedious exercise.

The recruitment process was a challenge as the students had lectures and commitments that prevented them from participating in the study.

The data was collected during the COVID – 19 pandemic and this was a challenge in that participants were unwilling to engage longer in the interviews.

6.5 RESEARCHER'S REFLECTIONS

Reflection assists the researcher to provide both the successes and failures of the research project. It helps to ensure positive changes in the revolving world and model mentees. The analysis of the project prepares one to truly integrate the lessons learned from the reflection.

Any individual may possess a deep knowledge about a certain subject. However, if the individual lacks competency and deep understanding, then the overall competency in the subject will not achieve its intended purpose. Therefore, a research project offers a researcher an opportunity to have a deep understanding and competency in the subject area. This research project explored in depth the knowledge of student radiographer's knowledge and practices of ethical responsibilities for the Radiography profession at a selected university in Gauteng province. The researcher's competency and understanding of the subject in general has greatly improved with the interaction with the participants. The researcher managed to harvest critical information from the participants during interviews.

Critical analysis and discussions are the elements of the work that increase value in a research project. Although critical analysis was challenging and confusing during the research process, the value of it was treasured at the end of the research project. The researcher's value regarding the subject matter was well deliberated with the participants and improved the interaction with the participant, except that there were negative experiences where some participants lacked enthusiasm.

When the researcher started to write the project, the first problem was the lack of vocabulary. The researcher's writing skills have also greatly improved as a result of engaging in Research Report, and this will assist with future academic writing as well as engaging with other academic writers or assisting students with research. The importance of writing will always remain significant in the academic world. Academic writing is so meaningful. To the researcher, writing was perceived as monotonous and boring as she did not know the importance of writing to her academic environment. The researcher has however realised that through writing, one can gain knowledge in all kinds of fields, but one's emotional life can also be enriched to a large extent. Therefore, the researcher believes that writing is not homework, and not a task, but a good friend who can help her write down everything in her life.

The researcher's first interaction with her supervisor was during registration and the supervisor clarified her expectations, but since the researcher was in a different province, communication was mostly on e-mails and phone calls. The process of research approach, formulation of research questions as well as research objectives were deliberated through e-mails and phone calls for further clarifications. Advice and guidance through the research process by the supervisor was very helpful in terms of increasing the quality of the Research Report and equipping the researcher with knowledge on effectively conducting similar studies in the future. Important points regarding participants' interviews, themes discussions and findings were highlighted and addressed. These online discussions with the supervisor were highly motivational and informative, prior to this the researcher assumed that research was rather a boring experience.

6.6 RECOMMENDATIONS IN THE STUDY

The following recommendations are based on the findings of the current study.

6.6.1 Recommendations for the university in Gauteng

The suggestion is to have more journal clubs on ethics at least once a week as a form of continuing education about ethics to enhance student radiographers' practice regarding ethical responsibilities in the radiography profession. More ethics workshops and seminars will also enhance quality health care as well as promote quality healthcare to efficiently run the radiology department. More time to be allocated for ethics education to succeed in ethics knowledge and be able to apply the relevant skills when handling patients. Currently, ethics education is embedded in one of the modules and constitutes about 5% of the module. A separate module on ethics and medical law should be constituted. Community engagement participation will assist in educating patients about their rights during radiographic examinations and treatment to improve on patient care and satisfaction and they need to stay informed of the current changes in the health services environment.

6.6.2 Recommendations pertaining to the practice departments

The students should be encouraged to develop and maintain an ethical self-identity which will give them the confidence to contribute and lead debates within their working environment. To enhance practice students should try to attend continuous clinical ethics sessions in which cases involving ethical issues are presented and discussed by Radiology staff and members of the department on medical ethics. Proper guidelines in the Radiology department need to be in line with what was articulated in theory. More educational material is needed to support radiographers in teaching and assessing principles of ethics in the clinical environment.

6.7 CONCLUSION

Teaching ethics to students in the clinical environment is complex and cannot be compared to teaching the knowledge of ethics in a Radiography school. Role modelling and integration of ethics into the clinical education curriculum needs to be critically revisited since students are influenced by the environment that they are exposed to. The scope of radiographic practice should be broad enough to include additional ethics and medical law information.

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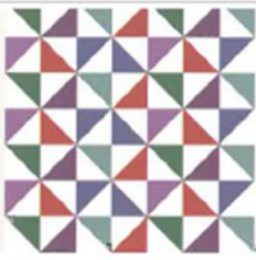

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LIST OF APPENDICES

Appendix 1a

		<p>Institutional Research Ethics Committee Research and Postgraduate Support Directorate 1st Floor, Benwyn Court Gate 1, Steve Biko Campus Durban University of Technology P O Box 1334, Durban, South Africa, 4001 Tel: 031 373 2275 Email: research@dut.ac.za http://www.dut.ac.za/research/institutional_research_ethics www.dut.ac.za</p>
<p>8 October 2019</p> <p>Ms J G Mosathupa 12 Garlick Street Pierre Van Ryneveld 0157</p> <p>Dear Ms Mosathupa</p> <p>Student radiographers' knowledge and practices of ethical responsibilities for the radiography profession at a selected university in Gauteng province</p> <p>I am pleased to inform you that PROVISIONAL APPROVAL has been granted to your proposal subject to:</p> <ul style="list-style-type: none">➤ Obtaining and submitting the necessary gatekeeper permission/s to Institutional Research Ethics Committee (IREC). <p>PLEASE NOTE THAT THIS IS NOT A FINAL APPROVAL LETTER. KINDLY SUBMIT THE ABOVE MENTIONED DOCUMENTS WITHIN THREE MONTHS TO THE IREC OFFICE. DATA COLLECTION CAN ONLY COMMENCE WHEN IREC ISSUES FULL APPROVAL</p> <p>The Proposal has been allocated the following Ethical Clearance number IREC 142/19. Please use this number in all communication with this office.</p> <p>Approval has been granted for a period of ONE YEAR, before the expiry of which you are required to apply for safety monitoring and annual recertification. Please use the Safety Monitoring and Annual Recertification Report form which can be found in the Standard Operating Procedures [SOPs] of the IREC. This form must be submitted to the IREC at least 3 months before the ethics approval for the study expires.</p> <p>Yours Sincerely</p> <p>Professor J K Adam Chairperson: IREC</p> <div data-bbox="628 1379 927 1554"></div>		

Appendix 1b



Institutional Research Ethics Committee
Research and Postgraduate Support Directorate
2nd Floor, Benwyn Court
Gate 1, Steve Biko Campus
Durban University of Technology
P O Box 1334, Durban, South Africa, 4001
Tel: 031 373 2375
Email: levishad@dut.ac.za
http://www.dut.ac.za/research/institutional_research_ethics
www.dut.ac.za

15 January 2020

Ms J G Mosathupa
12 Garlicke Street
Pierre Van Ryneveld
0157

Dear Ms Mosathupa

Student radiographers' knowledge and practices of ethical responsibilities for the radiography profession at a selected university in Gauteng province
Ethical Clearance number IREC 142/19

The Institutional Research Ethics Committee acknowledges receipt of your gatekeeper permission letters.


Please note that FULL APPROVAL is granted to your research proposal. You may proceed with data collection.

Any adverse events [serious or minor] which occur in connection with this study and/or which may alter its ethical consideration must be reported to the IREC according to the IREC Standard Operating Procedures (SOP's).

Please note that any deviations from the approved proposal require the approval of the IREC as outlined in the IREC SOP's.

Yours Sincerely

Professor J K Adam
Chairperson: IREC



Appendix 2a

Letter of permission to the Head of Department in Radiography

12 Garlicke street
Pierre Van Ryneveld
Centurion
0157

Head of Department of Radiography
P. O. Box 159
Medunsa
0204
Mamovagabo.mochifefe@smu.ac.za

Dear Sir /Madam

REQUEST FOR PERMISSION TO CONDUCT RESEARCH

I am a post graduate student at the Durban University of Technology (DUT), currently studying towards Master's Degree in Radiography. My research topic is **Student radiographers' knowledge of ethical responsibilities for the radiography profession at Sefako Makgatho Health Sciences University, Gauteng province**. The purpose of the study is to explore the student radiographers' knowledge with regard to the ethical responsibilities for the radiography profession and ultimately provide recommendations to improve their knowledge of ethics and practices at the workplace.

Your permission is requested to conduct individual/ focussed group interviews on all third year student radiographers at Sefako Makgatho Health Sciences University.

Participants will be selected by means of purposive sampling and informed consent will be obtained from them to participate in the interviews.

Having access to the students at the institution would be of great importance to complete the study. The interviews will be conducted at the department of Radiography. I therefore request your permission to conduct my research investigation at the institution. I am attaching the research proposal with the necessary information sheet and informed consent that will be provided to participants. Participants will participate voluntarily and may withdraw, without fear or favour, from the study at any time. All information of the participants and the institution will be handled with confidentiality. The participants will remain anonymous and codes will be used to protect participants' identities.

Information acquired during this research project will be shared with all participants and organisations prior to public dissemination. Results of the study will be published in an accredited journal or a peer review journal.

If further information is required, please do not hesitate to contact me telephonically on 0839931688 or via email address jane.mosathupa@smu.ac.za or my supervisor Dr P.B. Nkosi on paulinen1@dut.ac.za. Thank you for your time and consideration in this matter.

Yours sincerely,

04/11/2019

Ms Jane Mosathupa

Sefako Makgatho Health Sciences University

Appendix 2b

12 Garlicke street
Pierre Van Ryneveld
Centurion
0157

Sefako Makgatho Health Sciences University
Prof H Mabuza
P.O.Box 210
Medunsa
0204

Dear Sir /Madam

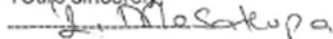
REQUEST FOR PERMISSION TO CONDUCT RESEARCH

I am a post graduate student at the Durban University of Technology (DUT), currently studying towards Master's Degree in Radiography. My research topic is Student radiographers' knowledge of ethical responsibilities for the radiography profession at a selected university, Gauteng province. The purpose to the study is to explore the student radiographers' knowledge with regard to the ethical responsibilities for the radiography profession and ultimately provide recommendations to improve their knowledge of ethics and practices at the workplace.

Your permission is requested to conduct individual interviews on third year student radiographers at Sefako Makgatho Health Sciences University in the Radiography Department. Participants will be selected by means of purposive sampling and informed consent will be obtained from them to participate in the interviews. Having access to the students at the institution would be of great importance to complete the study. I am attaching the research proposal with the necessary information sheet and informed consent that will be provided to participants. Participants will participate voluntarily and may withdraw, without fear or favour, from the study at any time. All information of the participants and the institution will be handled with confidentiality. The participants will remain anonymous and codes will be used to protect participants' identities. Information acquired during this research project will be shared with all participants and organisations prior to public dissemination. Results of the study will be published in an accredited journal or a peer review journal.

If further information is required, please do not hesitate to contact me telephonically on 0839931688 or via email address jane.mosathupa@smu.ac.za or my supervisor Dr P.B. Nkosi on paullinen1@dut.ac.za. Thank you for your time and consideration in this matter.

Yours sincerely,



Ms Jane Mosathupa
Sefako Makgatho Health Sciences University
Email: jane.mosathupa@smu.ac.za

09/10/2019

Appendix 2c



Postgraduate Studies, Research Development, Integrity & Ethics Sefako Makgatho University Research Ethics Committee (SMUREC)

Ms JG Mosathupa
12 Garlick Street
Pierre Van Ryneveld
CENTURION
0157

Dear Ms Mosathupa,

RE: PERMISSION TO CONDUCT A STUDY AT SEFAKO MAKGATHO HEALTH SCIENCES UNIVERSITY

SMUREC NOTED an email dated 05 December 2019, requesting permission to conduct a study at the University.

SMUREC NOTED that the researcher has been granted provisional approval from the Durban University of Technology Research Ethics Committee, subject to obtaining and submitting the necessary gatekeeper permission/s from the Institutional Research Ethics Committee (IREC).

Study Title:	Student radiographers' knowledge and practices of ethical responsibilities for the radiography profession at a selected university in Gauteng province
Researcher:	Ms JG Mosathupa
Supervisor:	Dr PB Nkosi
University:	Durban University of Technology
Research Type:	Master's degree in Radiography
Ethical Clearance number:	IREC 142/19
Approval letter date:	08 October 2019

The committee **RECOMMENDED** that the researcher must address the following before permission may be granted:

- (i) This qualitative study includes a possible ten interviews with the third year students, and hopes to make generalized contributions to the radiography profession. The main research question is focused on the knowledge and practices of student radiographers with regard to the ethical responsibilities of a radiographer in the radiography profession. The Committee has considered this application, and is of the view that conclusions relating to the profession cannot be drawn from only a few interviews at one selected university from the Gauteng province. The committee thus recommends a much broader inclusion of radiography departments from other institutions and/or medical schools.

Motloutgi Street, Ga-Rankuwa
Pretoria, Gauteng
PO Box 163, Medunsa, 0204
www.smu.ac.za

Telephone: +27 12 521 5617 / 3698
Facsimile: +27 12 521 3749
Email: lorato.phiri@smu.ac.za

- (ii) An online survey may be more appropriate when more participants and/or institutions are included. Kindly reconsider the data collection aspects of the study.

SMUREC awaits your response to above recommendations and submission of a revised protocol that addresses these concerns.

Yours Sincerely,

PROF C BAKER
CHAIRPERSON SMUREC

Cc.: Dr PB Nkosi

10 December 2019



SEFAKO MAKGATHO
HEALTH SCIENCES UNIVERSITY
SMU Research Ethics Committee
Chairperson

Date: 06 January 2020

Appendix 3

Consent form



Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, _____, about the nature, conduct, benefits and risks of this study - Research Ethics Clearance Number: XXXXXXXXXXXX
- I have also received, read and understood the above written information (Participant Letter of information) regarding the study.
- I am aware that the results of the study, including personal details regarding my sex, age, date of birth, initials and diagnosis will be anonymously processed into a study report.
- In view of the requirements of research, I agree that the data collected during this study can be processed in a computerised system by the researcher.
- I may, at any stage, without prejudice, withdraw my consent and participation in the study.
- I have had sufficient opportunity to ask questions and (of my own free will) declare myself prepared to participate in the study.
- I understand that significant new findings developed during the course of this research which may relate to my participation will be made available to me.

Full Name of Participant

Date

Time

Signature

I, Jane Moshale (name of researcher) herewith confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.

Jane Clemons Moshale
Full Name of Researcher

09.10.2019
Date

J. Moshale
Signature

Full Name of Witness (If applicable)

Date

Signature

Full Name of Legal Guardian (If applicable)

Date

Signature

Appendix 4

Letter of information for participants



Dear Participant,

I would like to welcome you to my research study and thank you for your interest and participation.

Title of the Research Study: Student radiographers' knowledge of ethical responsibilities for the radiography profession at Sefako Makgatho Health Sciences University, Gauteng province.

Principal Investigator/researcher: Jane Mosathupa, B.Tech Radiography: (Diagnostic)

Co-Investigator/supervisor/s: Dr B. Nkosi, PhD in Health Sciences

Brief Introduction and Purpose of the Study: The study will:

- Explore third year student radiographers' knowledge with regard to the ethical responsibilities for the radiography profession and ultimately provide recommendations to improve their knowledge of ethics and practices at the workplace.
- Gain robust understanding of their attitude, opinions, perceptions and expectations of their knowledge of ethics.

Data will be collected using audio recordings during the interview sessions. The participants will be required to provide answers to the interview questions.

Outline of the Procedures: If you are willing and have signed the letter of informed consent, an interview will be set up at your convenience. It will be approximately 20 minutes and will take place at the institution.

Risks or Discomforts to the Participant: There are no risks/discomforts involved from the participation in this study.

Benefits: This study will be useful to the Radiography Department as the findings may result in the modification and improvement in the current curriculum, enhancing "radiography students" knowledge of ethics.

Remuneration: Participation in this research study is voluntary and no remuneration will be awarded.

Costs of the Study: Participants will not incur any costs by participating in this research study.

Confidentiality: The details and information obtained through the interview process will be treated with utmost confidentiality. Personal identification details may be required and in that case the identity of participants will only be known to the researcher. You may withdraw your participation of this study at any time.

If you have any further queries, please do not hesitate to contact me or my supervisor. Your time, opinions and assistance in this study is invaluable and greatly appreciated.

Persons to Contact in the Event of Any Problems or Queries

If you require any further information, please do not hesitate to contact me telephonically on 0839931688 or via email address jane.mosathupa@smu.ac.za or my supervisor Dr P.B. Nkosi on paulinen1@dut.ac.za.

Thank you for your time and consideration in this matter.

Appendix 5

Appendix 5: Interview guide¶

¶

Please answer in your own words¶

¶

Questions → → → → → → → → ¶

1.→ What do you understand about ethics in the radiography profession?¶

2.→ What are the ethical responsibilities of a radiographers in the profession?¶

3.→ How do you show your ethical responsibility in your profession when handling a patient?¶

4.→ How do you ensure quality in your practice when handling a patient?¶

5.→ What should be done to enhance your handling of patients with regard to ethical responsibility?¶

Appendix 6

Demographic information



Gender

Tick appropriate box (X)

Male	<input type="checkbox"/>
Female	<input type="checkbox"/>

Age in years

Tick appropriate box (X)

20 – 22	<input type="checkbox"/>
23- 25	<input type="checkbox"/>
25-28	<input type="checkbox"/>

Race

Tick appropriate box (X)

African	<input type="checkbox"/>
White	<input type="checkbox"/>
Indian/ Coloured	<input type="checkbox"/>

Appendix 7

Sample of transcript

Participant No: 02

Interview Date:11/02/2020

Section A: Demographic Data

A African female 3rd year (final year) student radiographer of between the ages of 23-25 years

Section B: Interview

Interviewer: Greeted the participants and introduced myself as well as explaining the purpose of the interview.

Interviewer: Can I begin with the interview?

Participant: Yes, you may

Research questions:

Interviewer: What do you understand about ethics in the radiography profession?

Participant: *Umm the way I understand it, it is values and morals in the radiography profession. Judges how radiographers should behave and conduct themselves as a health profession.*

Interviewer: Was the code of conduct clearly outlined to you?

Participant: *Yes, theoretically but in clinical practice I came across bad morals and conduct, it becomes difficult to implement the code of conduct when people you should learn from are doing otherwise clinically*

Interviewer: What are the ethical responsibilities of a radiographer in the profession?

Participant: *Ooh treating patients with respect, explaining radiological exams to the patient before she/he consent. Relate well with other clinical staff*

Interviewer: How do you demonstrate your ethical responsibilities in your profession when handling patients?

Participant: Erm... Giving patient privacy and respect, Explaining the procedure to the patient and make sure they understand the benefits and risks before they can consent

Interviewer: How do you ensure quality in your work place?

Participant: eish...by always looking professional i.e. wearing full uniform. By communicating to the patient and understanding their history and not judge them based on my beliefs

Interviewer: What should be done to enhance your handling of patients with regard to ethical responsibilities???

Participant: Truly speaking by finding ways to implement ethical conduct in clinical practice

Appendix 6 Sample of transcript

Participant No: 04

Interview Date:11/02/2020

Section A: Demographic Data

An African male 3rd year (final year) student radiographer of between the ages of 25-28 years

Section B: Interview

Interviewer: Greeted the participants and introduced myself as well as explaining the purpose of the interview.

Interviewer: Can I begin with the interview?

Participant: Yes, you may

Research questions:

Interviewer: What do you understand about ethics in the radiography profession?

Participant: In radiography ethics are morals principles that deals with the behavior of a radiographer, it is correlated with what is good for a person.

Interviewer: Was the code of conduct clearly outlined to you?

Participant: Of course yes because it outlined the ethical principles that governs decisions and behaviour at an organisation e.g. the hospital

Interviewer: What are the ethical responsibilities of a radiographers in the profession?

Participant: Err... it is to always respect the patient, treat them respect and kindness. The radiographer must show the patient dignity and maintain patients

Appendix 8

EDITOR'S LETTER

Researchers Beyond-Borders (PTY)
Umhlanga, Durban
South Africa
19 May 2023

To whom it may concern

Editing of Masters Dissertation: Jane Granny Mosatlupa (Student number - 21855937)

Title: Student Radiographers' knowledge and practices of ethical responsibilities for the Radiography profession in a selected university in Gauteng Province

This letter serves as confirmation that the aforementioned dissertation has been language edited.
Any queries may be directed to the author of this letter.



Regards

Makani Pillay
Researchers Beyond-Borders
contact@researchersbeyond-borders.com
www.researchersbeyond-borders.com