FACTORS INFLUENCING RADIOGRAPHERS' DECISION MAKING IN RELATION TO POSTGRADUATE EDUCATION

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Declaration

This is to certify that the work is entirely my own and not of any other person, unless explicitly acknowledged (including citation of published and unpublished sources).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.

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Approved for final submission

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Abstract

Background

The research and knowledge produced by postgraduate (PG) alumni is vital in improving the knowledge base of relevant fields. Postgraduate education is essential for an individual's academic growth and a nation's economic growth and development. South Africa is lagging behind with regard to PG outputs in various disciplines and radiography is one of them. Radiography is a relatively young academic profession in South Africa. Therefore, PG qualifications are critical to the development of the profession of radiography, both academically and clinically, to strengthen the academic force. The loss of academics, due to retirement and other reasons, necessitates the development of new academic professionals to replenish this expertise.

Aim of the study

The aim of the study was to explore the factors influencing radiographers' decision making with regard to postgraduate (PG) education using Cross's Chain-of-Response (COR) Model as the theoretical framework to improve the enrolment and quality of PG education.

Methodology

The study employed an exploratory qualitative research method, using semi-structured one-on-one interviews. The interview questions were based on Cross's Chain-of-Response (COR) Model. The study was carried out at three provincial hospitals in the eThekwini district of KwaZulu-Natal (KZN) as well as three private facilities within the district. The sample consisted of 20 qualified radiographers within these institutions. This research utilized an exploratory design and interpretivist paradigm. Thematic analysis of the collected data was performed with the use of the Atlas.ti software and the implementation of the code, re-code strategy.

Findings

Seven major themes that emerged from the data analysis were: (a) self-perception (b) attitude towards education (c) goals and expectations (d) life transitions (e) opportunities and barriers (f) information and (g) participation. The emerged themes were aligned to Cross's Chain-of-Response Model.

Conclusion

The study revealed that the practicing radiographers in KZN exhibit a high self-perception of their capability of successfully completing PG programmes in radiography. However, many of the participants demonstrate little or no interest in pursuing these programmes. Their attitude and decision making towards pursuing these programmes are negatively influenced by a multitude of factors such as the absence of incentives, lack of time and institutional grievances. Participants consider PG programmes in radiography to simply provide opportunities in the academic field to achieve personal growth and satisfaction. Incentives such as potential growth in their field, monetary gain and/or a subsidy would be the strongest motivating factors to positively influence radiographers' decision-making towards PG education.

Key words: Barriers, radiography, incentives, motivation, expectancy-value, cross's theory, postgraduate education, adult education, radiography, subsidy, transitions.

Dedication

This dissertation is dedicated to my family. To my loving and supportive wife, Verona and to my supportive and encouraging Mum who have been a source of motivation and understanding during the course of completing this study with all its challenges. Thank you Verona and Mum for affording me the time, understanding, motivation, encouragement and support required to complete a daunting qualitative study. To my late Dad, I know I had your support from the heavens above.

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Glossary of terms

Radiography: A study performed by Lundgren, Lunden, and Andersson (2015: e71) describe the field of radiography as consisting of five characteristics which are associated with patient care, the environment, mastering image production methods and technological equipment, as well as the prudent use of radiation.

Economic Growth and Development: Economic growth demonstrates an increase in a country's production whilst economic development represents an improvement of the quality of life of the country's citizens (Agarwal 2019).

Acronyms

Acronym	Full word/sentence
AD	Assistant Director
AIDS	Acquired Immune Deficiency Syndrome
BHSc	Bachelor of Health Sciences
B. Tech	Bachelor of Technology
CEO	Chief Executive Officer
CPD	Continuous Professional Development
CPUT	Cape Peninsula University of Technology
CT	Computed Tomography
DUT	Durban University of Technology
HPCSA	Health Professions Council of South Africa
KEH	King Edward VIII Hospital
KZN	KwaZulu-Natal
MEDUNSA	Medical University of South Africa
MRI	Magnetic Resonance Imaging
NQF	National Qualifications Framework
NSFAS	National Student Financial Aid Scheme
OSD	Occupational Specific Dispensation
PG	Postgraduate
Ph.D	Doctor of Philosophy
SAQA	South African Qualifications Authority
UJ	University of Johannesburg
UNISA	University of South Africa
UP	University of Pretoria
U/S	Ultrasound

CHAPTER 1: OVERVIEW OF THE STUDY

1.1 INTRODUCTION AND BACKGROUND

Radiography is one of the allied health professions and is separated into four disciplines, namely, diagnostic, ultrasound, radiotherapy and nuclear medicine. The rapid advances in equipment, medical sciences and specializations, necessitate postgraduate (PG) education in the field of radiography (Ugwe, Erondu and Onwuazombe 2012: 113). Radiographers need to be encouraged to pursue PG studies because they require continued professional development which develops their expertise and assists in keeping up with the equivalent abilities of other allied health professions (Ugwe, Erondu and Onwuazombe 2012: 118). Radiographers also need PG qualifications to enhance the radiography profession in South Africa and to strengthen the academic work force. A study performed by Mothabeng (2006: 18), relating to physiotherapy, showed that research is essential for guiding practice within specific fields, including research of education systems within the fields. Research is fundamental in moulding a profession's identity and is a foundation on which systems should be developed (Cobbing, Maddocks, Govender, Khan, Mbhele, Naidoo, Tootla and Weston 2017: 2).

The shortage of radiographers with PG qualifications has been and still is a serious long-term problem. Without Ph.D graduates, expertise required to make significant contributions to a country's knowledge base would be lacking (Zewotir, North and Murray 2015: 1). Therefore, further education is vital for an individual's academic growth and a nation's economic growth and development. According to Zewotir, North and Murray (2015: 1), a study conducted by the Academy of Science of South Africa found that South Africa is trailing other countries in relation to Ph.D. students, generating only 26 doctoral graduates per million people. A study performed by Du Plessis, Friedrich-Nel and Van Tonder (2010: 18), regarding PG qualification needs, revealed that only 7.9% of participants had PG qualifications and only 9.4% of participants were actively pursuing PG education. The

participants who achieved these PG degrees had attained their B. Tech in Radiography and those who were pursuing their PG education were pursuing Bachelor of Technology (B. Tech) degrees in Radiography as well (Du Plessis *et al*. 2010: 18). These results indicate that master's and doctorate degrees were not being pursued by any participant at that time. These are the qualifications required to develop the profession of radiography in South Africa and strengthen the academic force. According to Knapp, Wright, Clarke, McAnulla and Nightingale (2017: S51), it is important to support and advance the radiographic academic workforce such that research can flourish because radiography is a young academic profession in comparison with other professions. Knapp (2017: S51) goes on to emphasize the importance of nurturing younger professionals to achieve higher levels of education such as the Ph.D to sustain the academic workforce and replenish the expertise when other academics retire.

It is evident that the shortage of postgraduates has a serious socio-economic impact on the radiography fraternity as the growth of this field is not facilitated in this province and in this country. Ozturk (2001: 39) re-iterates this by stating that without education, growth, productivity, creativity, and technological developments, the development of individuals would not be possible.

Strategies need to be created to increase the number of radiographers who pursue PG qualifications. This will increase the number of academically inclined professionals who can then generate a positive impact on the radiography profession by conducting various forms of research and enhancing the knowledge, standards and practices in the profession. The NQF Act 67 of 2008 clearly states that the purpose of a PG qualification is to facilitate growth of the individual as well as the nation (Meyer 2016: 26). The Act also acknowledges change depending on the needs of the field as done in other countries (Meyer 2016: 26). This study attempted to understand radiographers' decision making with regard to PG education in radiography in KwaZulu-Natal (KZN) to find ways to improve

credentialism within the profession and to improve PG student enrolment. The participants who constituted the sample for this study included Diploma, B. Tech and qualified radiographers, with and without PG qualifications from all four disciplines of radiography in KZN.

1.2 PROBLEM STATEMENT

According to anecdotal evidence from the Department of Radiography at the University managing the radiography programme in KZN (University B), there is a deficiency of appropriately qualified radiographers who are required for the training and education of students both at University B and in the clinical environment, especially for the BHSc in Radiography which is a four-year degree qualification. For example, over a number of years, part time lecturers with B.Tech degrees are required to lecture and mentor students because there are no readily available lecturers with a PG masters qualification. Hence, the problem of scarcity of radiographers with PG qualifications in KZN, and the factors that influence the radiographers' decision making process with regard to pursuing a PG qualification, needs to be investigated. This research could also provide evidence-based information which could assist with ways to improve credentialism within the profession and PG student enrolment and quality of study.

1.3 AIM OF THE STUDY

The aim of this study was to explore the factors influencing radiographers' decision making in relation to PG education using Cross's Chain-of-Response Model as the theoretical framework to understand their rationale and provide guidelines to the relevant stakeholders.

1.4 RESEARCH QUESTION

What are the factors influencing radiographers' decision making in relation to PG studies?

1.5 OBJECTIVES OF THE STUDY

The objectives of the study were to:

- Explore the factors influencing radiographer's decision making in relation to PG studies
- Develop a list of recommended solutions to the relevant stakeholders to improve PG output.

1.6 SIGNIFICANCE OF THE STUDY

According to anecdotal evidence from the Department of Radiography at University B, there is a deficiency of appropriately qualified radiographers who are required for the training and education of students both at University B and in the clinical environment, especially for the BHSc in Radiography which is a four-year degree qualification. Hence, the problem of scarcity of radiographers with PG qualifications in KZN, and the factors that influence the radiographers' decision making process with regard to pursuing a PG qualification, needs to be investigated. This research could also provide evidence-based information which could assist with ways to improve credentialism within the profession and PG student enrolment and quality of study.

The Health Professions Council of South Africa (HPCSA) has seen the need for this and has consequently changed the radiography course to a four (4) year degree to replace the two (2) year part time B. Tech qualification (Radiography and Clinical Technology NEWS 2016). Hopefully, this change will encourage and promote more masters enrolments.

A country would not be able to remain globally competitive if knowledge and development is not of a high standard because the standard 'knowledge base' that has evolved over time is more demanding (Zewotir *et al*. 2015: 1). According to

Ohagwu *et al*. (2010: 3), evidence-based medicine utilizes the current best research evidence as a defining characteristic of protocols which inherently designates research as fundamental requirement in any field. The authors further emphasize that this highlights the importance of research in radiography in facilitating the paradigm shift from traditional practice methods to evidence-based methods. Therefore, as mentioned earlier, without Ph.D graduates, the expertise required to make larger contributions to a country's knowledge base would be lacking (Zewotir *et al*. 2015: 1). Therefore, postgraduate education is vital for an individual's academic growth and a nation's economic growth and development.

1.7 STRUCTURE OF THE DISSERTATION

CHAPTER 1: OVERVIEW OF THE STUDY: The background, motivation, rationale and main aim is discussed.

CHAPTER 2: LITERATURE REVIEW: A comprehensive review of literature on and related to the topic was undertaken and linked to the aim and objectives of the study.

CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY: The type and design of the research as well as the method of data collection is described.

CHAPTER 4: PRESENTATION OF FINDINGS: Findings of the study are presented in this chapter.

CHAPTER 5: DISCUSSION OF FINDINGS: Findings are discussed by referring to literature sources that either support or refute the findings.

CHAPTER 6: CONCLUSIONS, LIMITATIONS AND RECOMMENDATIONS: Findings are summarised and final concluding comments are presented together with limitations and recommendations arising from the findings.

1.8 SUMMARY OF THE CHAPTER

The discussion in this chapter indicates that PG qualifications have an important socio-economic impact on the field of radiography because it facilitates growth and productivity of individuals. Consequently, it can then be presumed that it would be vital to increase the number of individuals who pursue PG qualifications because this may create growth in academically inclined professionals who can then generate a positive impact on the radiography profession. The relevant literature on the topic will be reviewed in the next chapter.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

In Chapter 1 the background, significance and objectives of the research, as well as the format used for this dissertation were presented. This chapter reviews the literature on the processes involved in a PG programme in radiography. In addition, it reviews the literature sources which highlight the factors that influence individuals to pursue the PG programmes. It also reviews the format for the current PG programmes in radiography. The importance of these programmes to the field of radiography itself and to the economy will be discussed. Literature on the research conducted on similar issues in other health fields in South Africa, as well as internationally, will also be reviewed. A discussion of the literature related to the theory being used to frame this study will be discussed.

This chapter aims to highlight the relevance and importance of the issue being researched and the validity of the chosen theory in relation to the phenomena being studied. It focuses on research involving individuals' experiences and needs with regard to their education, their life experiences, personal circumstances, as well as their future aspirations. This chapter is intended to provide a clear understanding of how these criteria influence the decision making of individuals with regard to PG programmes.

2.2 THE GLOBAL IMPORTANCE OF POSTGRADUATE QUALIFICATIONS

According to Ugwe *et al*. (2012: 113), due to the rapid advances in equipment in medical sciences and specializations, PG education is essential in the field of radiography. A country would not be able to remain globally competitive if knowledge and development is not of a high standard because the standard 'knowledge base' that has evolved over time is more demanding (Zewotir *et al.* 2015: 1). Ugwe *et al*. (2012: 118) maintains that radiographers need to be

encouraged to pursue PG education because this is a process of continuous professional development (CPD) which instils expertise to perform their profession with the equivalent abilities of those of other allied health professions. Without Ph.D graduates, expertise required to make larger contributions to a country's knowledge base would be lacking (Zewotir *et al*. 2015: 1). Pouris and Inglesi-Lotz (2014: 1) contend that tertiary institutions produce individuals with the capabilities to contribute to social and economic development by creating human capital and developing knowledge bases mainly due to the development of research and knowledge. The authors further emphasize that investments in this human capital has been recognised by international governments who financially sustain the sector because there is substantial evidence that human capital is a significant element in economic growth. Therefore, research and PG education is critical.

According to Du Plessis *et al*. (2010: 16), stagnation and regression, due to the lack of expansion of knowledge, could result in a profession's credibility being questioned. Additionally, university departmental funding is becoming dependant on PG student completion rates which is a performance indicator of the department (Govender 2012: 87). Furthermore, a review of literature indicates that a lack of research contribution is a basis of concern in many professions and countries (Pitout 2014: 1). Doctoral degrees create research that advances knowledge and theoretical foundations. These qualifications also create qualified leaders, positively impacting policies as well as preparing individuals for faculty positions at academic institutions (Alshehry 2016: 1).

It is evident that the lack of Masters graduates has a serious socio-economic impact on the radiography fraternity as it does not facilitate the growth of the field in this province and this country. Ozturk (2001: 39) adds that without education, growth, productivity, creativity, and technological developments, the development of individuals would not be possible. According to Maasdop and Holtzhausen (2011: 38), higher education is a key role player in the global economy, community

development and knowledge enhancement. The World Health Report stresses the importance of strategic planning to allow for the continuation of education for health care providers (Ugwe *et al.* 2012: 113). The author explains that the reason for this is that the performance of health care systems is dependent on the knowledge, expertise and motivation of the health care workers. Earle (2010) states that education enhancements are related to long-term enhancements in economic performance and that there are three broad theories on how education influences the economy:

- *The basic human capital approach* which shows that education increases the expertise and capabilities of the labour force which results in superior productivity and enhanced ability to use the existing technology, and consequently contributing to economic growth.
- *The innovation approach* associates education with cultivating the capability of the economy to develop new ideas and technologies.
- *The transfer approach* utilizes education as a resource to spread knowledge needed to apply new ideas and exploit new technologies.

2.3 POSTGRADUATE EDUCATION IN OTHER HEALTH FIELDS

In the field of physiotherapy, research and PG education is vital in order to allow for CPD as well as growing evidence-based knowledge which are imperative to fulfil the evolving needs of a continuously developing field (Kokic, Schuster, Brumnic, Crnkovic and Znika 2016: e132). A recent study conducted in Croatia, involving physiotherapy students, ascertained that students are conscious of the significance of research but lack the interest to partake in research themselves (Kokic *et al*. 2016: e132). The authors identified the need to motivate students to cultivate basic research skills and to improve the students' understanding of research methodology through curriculum. A study conducted by Glover, Bulley and Howden (2009: 14) found that physiotherapists have the aspiration to advance their skills professionally and were interested in pursuing a PG degree. The study ascertained that the potential participants required more information on the PG

qualification to be readily available. The authors also found that the availability of early support strategies was also required by these potential students to assist in enhancing their confidence towards further education. Another study performed by Stathopoulos and Harrison (2003: 158) on physiotherapists who had successfully completed a PG qualification found that these academics experienced a vast positive impact on their career and personal life after successfully completing PG programmes, such as career development, clinical practice growth, a confidence boost and they embraced a positive approach towards change and an increase in career prospects.

To advance the profession of dental hygiene, PG education is necessary to support growth in research, education, administration, and practice in the discipline (Boyd and Bailey 2011: 1031). Furthermore, PG education is required to sustain credibility in a climate in which other health professions require entry-level Master's and Doctoral degrees. A study conducted by Fuoad (2013: 57-62) showed that the PG curriculum in dentistry is open to change due to factors such as the surge of knowledge in the field and the needs of a constantly diversifying society. The authors describe how different countries update their dentistry curriculum dependent on the needs of their country. In Japan, competency evaluation methods have been researched, via surveys, at a nationwide university level on current PG training programmes in dentistry, to develop and advance current systems (Gotouda, Ito, Okamoto, Uchida, Taguchi, Shimosaka, Fuchigami, Fukatsu, Matsune, Kono, Matsushima, Komiya, Kasai, Shibutani, Kawara and Nasu 2016: 29).

In Nigeria, the health workers' salaries are vastly dependent on their academic qualification, particularly in the public sector (Ugwe *et al.* 2012: 118). It has been discovered that PG degrees are essential for most faculty posts with a study indicating that in the US, 55.5% of available faculty posts necessitate a Doctorate degree, while 37.1% necessitate a Masters' degree with a Doctorate desired

(Cathro 2011: 2). According to Reid (2014: 109), it is possible for PG courses to evolve, expand, or even be created in acknowledgement of the needs of the ever changing work environment The author reveals that the University of Cape Town would be creating a new masters course in 'Medicine and the Arts'. This programme would have been available from 2014 and was created because there was a need to improve the capabilities of graduates in the workplace.

2.4 POSTGRADUATE PROGRAMMES IN RADIOGRAPHY

The field of radiography is a stimulating and rapidly evolving profession with a high graduate need worldwide (Thambura, Swindon and Amusa 2014: 1202). Radiographers register for academic postgraduate (PG) programmes such as Masters and Doctoral degrees as part of their CPD (Innes 1998: 89). The Masters in Radiography is offered as a full research option and the writing of a dissertation instead of coursework study components (Portelli 2012: 3). Whitfield and Fehrsen (2001: 7) state that the reason for this research-based Masters design is to create a graduate who is a 'self-learner'. The authors believe that these graduates will have a better probability of continued self-education than an individual who is used to an examination type programme. They also state that potential students are required to submit their possible research topics to the members of the academic staff at the Department of Radiography which will then be analysed and discussed with the student. This process assists students in refining their ideas and in ascertaining a suitable methodology. Research encompasses the need for scientific evidence on which to create, improve or keep abreast of clinical practices and to raise an individual's professional status (Pitout 2014: 1). According to Zewotir *et al*. (2015: 1), a research-based Master's platform is shaped to endorse the support towards research instead of lectures, laboratory work and so forth so that students are motivated to pursue their research within their field.

According to Cape Peninsula University of Technology (CPUT) website, the current Master's qualification is intended to promote researchers who will make an

impact on their selected fields via independent research, thereby establishing a high level of knowledge in radiography (CPUT 2017). These graduates can seek employment at academic hospitals, community health centres, private and public practices and research institutes, both nationally and internationally (CPUT 2017). According to the outcome requirements of the South African Qualifications Authority (2017), a Master's degree in radiography will provide the graduate with the following skills:

- Applying scholastic information and the philosophies and techniques to provide a specialist professional service.
- Authorities in the chosen specialist field with a supervised research training which complies with national and international standards.
- Interpreting and diagnosing specific imaging modalities as well as demonstrate knowledge and expertise in all forms of human body imaging.
- Performing and presenting research appropriately with the ability to perform detailed studies in a specific field.
- The ability to pursue other Masters or advanced diploma courses as well as a Doctorate qualification in their chosen field (South African Qualifications Authority 2017).

Successful PG degree holders will have the knowledge to make a positive impact on the economy and are capable of creating new knowledge (Postgraduate studies in South Africa: A Statistical Profile 2009). In Nigeria, there has been an increase in the number of radiographers pursuing admission into PG courses because of the modifications in the professional structure of radiography practice (Ugwe *et al*. 2012: 119). The author provides the following examples of the modifications: role extension, increased employment prospects and remuneration. A study performed by Milner and Snaith (2016: 52) emphasized the need for additional research to ascertain whether career progression of a radiographer, with regard to remuneration, is linked to academic achievement. In many South African tertiary institutions, the minimum requirement of a Ph.D. is required for a permanent

lecturing job (a Master's degree is considered where there is no Ph.D. candidate available). The Ph.D. qualification is also a minimum requirement in Kenya (Cobbing *et al*. 2017: 2). The author then explains that a predominantly clinically-based profession can then create a barrier where individuals, with extensive clinical expertise, but no postgraduation degree, will not be eligible for these academic posts.

From the literature reviewed, the importance and significance of the proposed research is evident. Without improving the PG output in radiography, it is possible that, in the near future, there may be a dire shortage of PG graduates to occupy academic posts or train students in the clinical environment in KZN. Furthermore, it is recognized that structural changes in other countries have had positive impacts on the number of PG admissions in their country. This indicates that it is possible to increase PG registrations and outputs by acknowledging and understanding the needs of radiographers. The literature indicates that improving the PG output in radiography will have a positive impact on all individuals and sectors involved.

2.5 THE THEORETICAL FRAMEWORK

Theories provide a multifaceted understanding of situations that cannot be defined by a single rationale such as how societies and organisations work (Reeves, Albert, Kuper and Hodges 2008: 631). The authors maintain that theories allow researchers to look at complex subjects and focus their attention on different or specific characteristics of that subject. These characteristics consequently provide a structure within which they conduct their investigation (Reeves *et al*. 2008: 631). Several theories were considered, including the Expectancy-Value Theory, Psychosocial Interaction Model and Cross's Chain-of-Response Model.

One of the major theories considered was Expectancy-Value Theory. The early literature (1930's), prior to the introduction of the expectancy-value theory, indicates that individuals were influenced to perform an activity dependent on the

value of the activity as well as on the expectancy to succeed in the activity. In 1957, the first official Expectancy-Value Theory was mathematically formulated. (Wigfield, Tonks and Klauda 2016: 55). The Expectancy-Value Theory, as originally postulated by Atkinson in 1957, states that both motivation and effort are outcomes of an individual's expectations of success as well as the importance placed on that achievement and incentive values (Xiang 2017: 582).

The Expectancy-Value Theory is a feature of cognitive theories because an individual requires the use of cognitive processes such as reasoning and thinking in order to make the decision to either pursue or not pursue a task (Hilyer, Veasey, Oldfield and McCormick 2000: 30). Sirois (2007: 154) explains that the Expectancy-Value Theory proposes that people choose to take on behaviours that they expect to be successful in and in which they value the result. The two key factors of this theory are the success expectations and the task value and if either one of these components is missing, then the motivation to pursue a particular task reduces considerably (Witt 2016: 386). According to Witt (2016: 386) the expectancy for success and the belief in the ability to achieve this success are conceptually different. The reason is that an individual may believe that he or she has the ability to achieve a task but may not expect to successfully achieve it due to time constraints or other commitments.

Another theory that was considered was the Psychosocial Interaction Model which was developed by Darkenwald and Merriam (1982: 142) and highlights the influential role that "social environmental forces" have on participation in adult education. The basis of this Model is "the interplay between individual and environmental forces" but emphasizes that the socio-economic status of the individual is the foremost variable which encourages participation (Darkenwald and Merriam 1982: 142). Larson and Milana (2006: para 10 line 1) state that this Psychosocial Interaction Model was built on Cross's Chain-of-Response Model.

This particular model postulates that adult education is influenced by internal (individual) and external (social environment) factors.

According to Schunk and Pajares (2005: 90), current theories attach values and beliefs to many psychological and socio-cultural roots Individuals take into account both the positive and negative aspects of a task before making their final decision to pursue or not pursue it (Schunk and Pajares 2005: 90). The authors emphasize that all these aspects are considered because a single decision made can eliminate other possibilities. According to Larson and Milana (2006: para 9 line 1), Cross's Chain-of-Response Model is intended to clarify what drives certain people to participate in adult education and others not to participate. The Chain-of-Response Model by Patricia Cross (1981), (cited in Boeren 2009: 154) states that the shows the complexity of the decision making process endured before the final choice is made towards adult education. Ginsberg and Wlodkowski (2010: 31) adds to these concepts by asserting that Cross's (1981) Chain-of-Response Model is a *"psychological framework/cycle which begins with an adult's self-evaluation and attitudes about education, considers his or her life transitions and the importance of goals and expectations for education to meet them, and concludes with the barriers and opportunities to be encountered as well as the information needed to proceed."*

The author adds that, if the responses beside this chain are positive, the individual will participate in the desired education. Bamdas (2014: 246) agrees with and simplifies these concepts by stating that the Chain-of-Response Model aims to improve the understanding of the decision-making processes towards adult education. Cross's Chain-of-Response Model was ultimately selected because it considers the individual's past, present and future situations before making a decision. The researcher felt that this model provides a holistic insight into the individual radiographer's thought process regarding the decision making towards PG education.

2.6 CROSS'S CHAIN-OF-RESPONSE MODEL

According to Boeren (2009: 159), the Chain-of-Response Model developed by Cross in 1981 continues to be one of the most well-known and extensively used theory models and entails seven steps (Chain-of-Response), with each step having an influence on the decision-making process involving adult education. Figure 1 depicts the cycle involved in the decision-making process from Cross's Chain-of-Response theoretical framework.

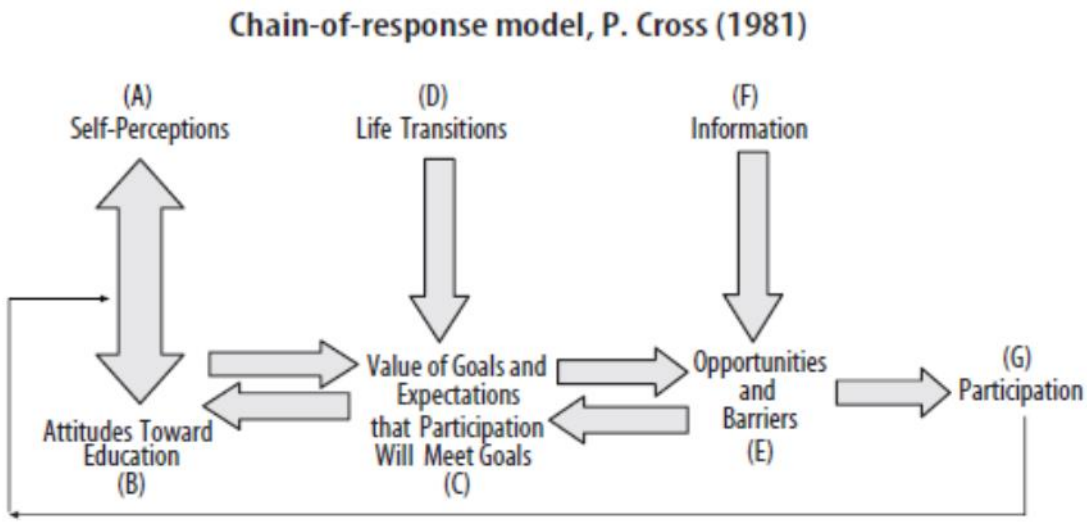

Figure 1: Cross's Chain-of-Response Model (cited in Boeren 2009: 159)

Steps A: Self perceptions and B: Attitudes toward education

Larson and Milana (2006: para. 9 line 3-5) identify the first two steps (Steps A and B) as the 'first link in the chain', and state that this link is mainly based on the psychological mind-set of the adult. These two steps in the cycle demonstrate an 'interplay' type of relationship between the self-perceptions of the adult and the developed attitude towards education (Boeren 2009: 159). The author states that '*adults with a negative learning experience in the past are less confident, enjoy learning less, have less self-esteem and thus develop a less positive attitude*

towards learning.' The author maintains that these factors interact with the next step (Step C) in Cross's model which are the values and expectations of the adult.

Steps C: Value of goals and expectations that participation will meet goals and D: Life transitions

These are external factors and emphasize the important role which belief plays in relation to whether the individual believes that goals can be accomplished or not (Larson and Milana 2006: para. 9 line 4-6). Cross, (cited in Boeren 2009: 159) says that the value placed on adult education is related to the expectancy that education will be fruitful. This is similar to Rubenson's Expectancy-Valence-Model which emphasises that the decision to pursue adult education is dependent on whether that education is in line with the individual's needs based on their experience and whether that education will lead to a desired expected outcome (Larson and Milana 2006: para. 12 line 2-3). These expectancies and values are subjective, based on the next step (Step D) in the cycle which are the life transitions experienced by adults (Boeren 2009: 160).

Step E: Opportunities and barriers

Step E in the cycle involves the opportunities and barriers towards participation in education. Opportunities towards participation in PG education are factors that create prospects for the adult's future such as improved job prospects, increase in income and so forth (Boeren 2009: 160). Likewise, barriers can impede the path to participation and Cross divides these barriers into three main themes, namely, situational barriers, institutional barriers and dispositional barriers (Larson and Milana 2006: para. 9 line 6-10). These "barriers do not come from nowhere and negatively affect participation incentives" (Larson and Milana 2006: para. 10 line 5).

According to Boeren (2009: 160), the personal situation of the individual gives rise to the situational barriers such as:

- Monetary constraints
- Time constraints due to work and family responsibilities and so forth.

The author then highlights possible institutional barriers which could occur as a result of discouraging rules and practices created by educational institutions such as:

- Inconvenient class timetables
- Inappropriate entrance prerequisites
- Lack of information and so forth.

The author then describes the dispositional barriers as being the self-esteem and attitude of the adult learner that influence their confidence towards success such as:

- Impression of being too old
- Frustration towards teachers
- State of classrooms
- Experiencing a difficult education experience up until that point.

Steps F: Information and G: Participation

Step F in the cycle pertains to information. Information on current education systems, support and services offered by the educational institute are powerful in influencing the decision-making process of individuals (Boeren 2009: 160). The author explains that the reason behind the importance of information is that it provides some clarity to the individual on the opportunities that would be possible and the barriers they may face.

In the last step (Step G), Cross, (cited in Boeren 2009: 160) states that participation may or may not occur, depending on the answers to the previous steps. The author

then emphasizes that if the individual decides to pursue the desired educational programme, the cycle will restart after enrolment and will lead to success or failure within the course. According to Larson and Milana (2006: para. 7 line 5-6), an improved understanding of these barriers can assist in creating knowledge of how to prevail over these barriers towards participation in adult education. Table 2.1 explains the concepts related the Cross's Chain-of-Response Model and depicts its application to the current research topic.

Table 2.1: Cross's Chain-of-Response Model concepts, explanation and application to the current study

Concepts from the Theory	Definition/explanation	Application to the current study
A. Self-perception	Stanard (2013: 18-19) expressed that the self-perception of individuals centre around their self-esteem and confidence, and individuals who possess low confidence in their capabilities will avoid participation in education which may test their intellect.	What are the radiographers' self-perceptions with regard to successfully completing PG education?
B. Attitudes towards education	The attitudes of individuals signify their feelings and perceptions towards education (Stanard 2013: 19). According to Türer and Kunt (2015: 166), students' attitude, be it positive or negative, directly impacts their education process. Boeren (2009: 159) maintains that, '*Adults with a negative learning experience in the past are less confident, enjoy learning less, have less self-esteem and thus develop a less positive attitude towards learning*.'	Are the radiographers likely to have a positive or negative attitude towards PG education?
C. Value of goals and expectations that participation will meet goals	Goals and expectations indicate that participation in adult education links to the individuals' ability to achieve their goals through these programmes (Stanard 2013: 19). Cross's theory says that the value placed on adult education is related	What are the career goals of radiographers today and do they feel that participating in PG education will allow them to accomplish their goals?

	to the expectancy that education will be fruitful (Boeren 2009: 159).	
D. Life transitions	Merriam (2005: 3) states that transition periods are stages in an individual's life when change occurs. The author goes on to explain that these transitions can have either positive or negative outcomes on the individual's self-esteem and self-confidence.	Does the change from one stage in life to another affect the radiographers' mind set towards PG education?

Concepts from the Theory	**Definition/explanation**	**Application to the current study**
E. Enablers/ Opportunities and barriers	Enablers towards participation in education are factors that create prospects for the individual's future such as improved job prospects, increase in income and so forth (Boeren 2009: 160). Likewise, barriers can impede the path to participation and Cross divides these barriers into three main themes, which are: situational barriers, institutional barriers and dispositional barriers (Larson and Milana 2006: para. 9 line 6-10). As mentioned earlier, Larson and Milana (2006: para. 10 line 5) state that '*barriers do not come from nowhere*', and negatively affect participation motivations.	What are the beliefs of radiographers with regard to the opportunities that PG education offers them and what barriers do they believe will hinder their pursuit of PG education?
F. Information	Information denotes the knowledge that individuals possess regarding education opportunities (Stanard 2013: 19). Information on current education systems, support and services offered by the educational institutes are powerful in influencing the enablers and barriers experienced by individuals with regard to their decision-making process (Boeren 2009: 160). Stanard (2013: 19) cites an important quote from Cross (1981a: 127); "*Without accurate information, point E in the model is weak because opportunities are not*	What information and knowledge do radiographers currently have on PG education and what information would they prefer to be readily available?

	discovered, and barriers loom large".	
G. Participation	Cross, (cited in Boeren 2009: 160) states that participation may or may not occur depending on the answers to the previous steps. The author then emphasizes that if the individual decides to pursue the desired educational programme, the cycle will restart after enrolment and will lead to success or failure within the course.	What factors are required to influence radiographers to finally participate in PG education?

2.7 FACTORS INFLUENCING A RADIOGRAPHER'S DECISION MAKING

PG studies are commonly juggled around family and social lives and usually pursued while being employed on a full-time basis (Innes 1998: 89). These enrolments and outputs need to be enhanced to maintain a standard which is consistent with the economic and social development needs (Badat 2010: 23). The poor PG student enrolments and outputs are restraining the growth of the social configuration of the new group of academics in South Africa. They are insufficient for the economic and social development requirements of the country (Badat 2010: 20). A recent study was conducted by Chopra, Woolley, and Gunnarsson (2015: 221), comprising early career doctors and the barriers they face regarding PG education. The authors emphasized the importance of understanding the key barriers and enablers that these medical postgraduates experience in order create a targeted approach to increase their throughput.

The Health Professionals Council of South Africa (HPCSA) hopes that the phasing out of the National Diploma in Radiography from 2020 onwards and the introduction of the four year professional Bachelor's Degree in Radiography, will facilitate a growth in future masters and doctoral degree enrolments (Radiography and Clinical Technology NEWS 2016). It is believed that this possible increase in enrolments will inevitably increase the number of scientific research publications by radiographers and will update practice and professional standards

(Radiography and Clinical Technology NEWS 2016). It is evident from this 'hope' by the HPCSA that PG education is of immense importance. The factors involved in influencing a radiographers' decision making towards PG education will be discussed below with reference to Cross's Chain of Response Model.

2.7.1 Self-perceptions

Larson and Milana (2006: para. 9 line 3) state that self-perceptions are mainly based on the psychological mind-set of the adult. Stanard (2013: 18-19) states that the self-perception of individuals centre on their self-esteem and confidence. He also emphasizes that individuals who suffer from low confidence in their capabilities will avoid participation in education which may test their intellect. Restraining forces prevailing over driving forces negatively affect an individual's mind-set in this decision making process which makes it necessary to find solutions to build up driving forces and minimize restraining forces (Cathro 2011: 2). In order to achieve this, it is vital to establish what these driving and restraining forces are.

Stress is a restraining factor. According to Myers (1999: 4), there are two types of stress that occur from working on a dissertation, namely, stress in the task and stress in the social sense. Stress in the social sense occurs when students are unable to socialize without the feeling of guilt that time could be better spent working on their studies, whilst stress in the task sense occurs when the time spent working on their studies makes them feel that they are neglecting their friends and family (Myers 1999: 4). According to do Carmo, Ferreira, Affonso, Calças, Belintani and Filho (2016: 1), academic stress has many health-related consequences which impacts on the students' academic performance. This research will provide information on the restraining forces and the driving forces that influence individual radiographers in KZN.

2.7.2 Attitudes towards education

According to Cross's Model (cited in Boeren 2009: 159), the attitude of an individual towards education is another important factor influencing their final decision on pursuing PG education. Boeren (2009: 159) maintains that, '*Adults with a negative learning experience in the past are less confident, enjoy learning less, have less self-esteem and thus develop a less positive attitude towards learning*.' Türer and Kunt (2015: 166) further emphasize this reality by stating that a student's attitude, be it positive or negative, directly impacts his or her education process.

Physical (life circumstances), attitudinal (self-perceptions and attitude about oneself) and structural (institutional or organizational) barriers have been found to be the main barriers to continuing professional development by many researchers (Ugwe *et al*. 2012: 118-119). This study identified the attitudes that radiographers have towards PG education in radiography, be it positive or negative, and attempted to understand the rationale behind these attitudes. The researcher believes that these attitudes are important factors that influence the individual's decision making, and understanding these factors will assist in finding possible solutions to converting potentially negative attitudes into positive attitudes.

2.7.3 Value of goals and expectations that participation will meet goals

Larson and Milana (2006: para. 9 line 4-5) state that values, goals and expectations are factors which emphasize the important role of the individual's belief in relation to whether goals can be accomplished or not They state that Rubenson's Expectancy Valence Model emphasises that the decision to pursue adult education is dependent on whether that education is in line with the individual's needs. These needs are based on their past experience and whether that education will lead to a desired expected outcome (Larson and Milana 2006: para. 12 line 2-4). Alosaimi (2016: 3) agrees with this by asserting that adult

education promotes a self-directed, independent student, who is in control of their individual education development which is dependent on their previous experience, personal objectives or on career advancement. Similar to Rubenson's Expectancy Valence Model, Cross's theory states that the value placed on adult education is related to the expectancy that education will be fruitful to one's expectations (Boeren 2009: 159). Beldağ (2016: 101) defines value as the set of viewpoints influencing individuals' opinions to whether something is worth choosing or not.

The developing literature indicates that apparent career and academic benefits, costs and family commitments are considered when deciding whether to pursue a PG degree (Sran and Murphy 2009: 238-239). An individual's internal goals and particular needs form the framework for his or her specific approach towards learning (Naqvi and Naqvi 2017: 1). A recent study performed by Case, Marshall, Mckenna, and Mogashana (2018: 92-94) found that some of the reasons provided by young South Africans towards pursuing PG education were future career planning, such as careers in the academic field, as well as intrinsic reasons which were the love of learning and knowledge. These are known as 'hygiene' factors which was first suggested by Hertzberg (1966), which are the fundamental enablers for adult education (Mellors-Bourne, Hooley and Marriott 2014: 1-2). The author maintains that understanding these factors will facilitate understanding the PG education decision making process. This is emphasized by Morgan (2017) who states that even though a PG degree allows for career advancement and academic development, it may not be the best route for everybody because many employers place superior value on employment history and capabilities over academic credentials. Is this the case for radiography in KZN?

A study conducted by Thambura *et al*. (2014: 1205) identified the importance of remuneration as a factor in individuals' decision to leave government posts or emigrate from KZN. The researcher found that radiographers in KZN are keen on diversifying and extending their scope of practice to minimize dependency on

supplementary professionals in the medical field. The researcher believes that identifying the value and expectation that radiographers have regarding PG education in radiography in achieving their career goals is fundamental in creating an understanding of their view of these qualifications and its importance in the field of radiography.

2.7.4 Transitions

Merriam (2005: 3) states that transition periods are stages in an individual's life when change occurs. The author explains that these transitions can have either positive or negative effects on the individual's self-esteem and self-confidence. According to Boeren (2009: 160), the above-mentioned expectancies and values are subjective, based on the life transitions experienced by adults. Hoffman (2009: 14) hypothesized that the academic transitional challenges of a number of students are directly related to their main motivation for registering. The study performed by the author regarding the academic transitional experiences of PG students at the University of Western Cape uncovered a range of motivational factors for pursuing PG qualifications. The author found that self-actualisation, improving social status and the expansion of knowledge were a few of the motivating factors for these individuals. There is a predominant view that not much adjustment is required when registering for PG study after undergraduate programmes, but according to the literature this is not the case (West 2012: 128). A study performed by Heussi (2012: 1) regarding students' perceptions of the transition into PG education found that the difficulties that students experienced were related to both their external commitments as well as with the university course itself. A recent study performed by Shanley and Lambon (2016: e110-e111) hypothesized that students enrol in master's degree programmes to develop their training but find the transition from undergraduate to PG study challenging.

Heussi (2012: 3) also found that within the university, steps can be taken to aid students in this transition and that these steps can be created utilizing information

received from focus group investigations. Shanley and Lambon (2016: e110-e111) identified the positive role of the following strategies towards this transition:

- Pre-course support.
- Early support such as support from staff and peers.
- Assistance with time management skills.
- Ongoing academic support, such as academic writing and feedback on the project.

The study conducted by Heussi (2012: 5) found that greater support at the beginning of the course as well as improving the quality of this support was desired. This study attempted to identify and understand the transition needs of radiographers. These findings will indicate whether the current systems in place at university level facilitate a smooth transition process from undergraduate to PG programmes and whether improvements are needed.

2.7.5 Enablers and Barriers

Enablers for participation in education are factors that create prospects for the individual's future, such as improved job prospects, increase in income and so forth (Boeren 2009: 160). Likewise, barriers can impede the path to participation and Cross divides these barriers into three main themes, namely, situational barriers, institutional barriers and dispositional barriers (Larson and Milana 2006: para. 9 line 9-10). Larson and Milana (2006: para. 10 line 5-6) state that '*barriers do not come from nowhere'*, and negatively affect participation motivations. According to Boeren (2009: 160), these three main barriers can be explained as follows:

Firstly, the personal situation of the individual gives rise to the situational barriers such as monetary constraints and time constraints due to work and family responsibilities and so forth.

Secondly, the institutional barriers occur as a result of discouraging rules and practices created by educational institutions which include inconvenient class timetables, inappropriate entrance prerequisites and a lack of information.

Finally, the dispositional barriers are described as being the self-esteem and attitude of the adult learner, with these barriers influencing their confidence towards success. Some of these barriers entail having the impression of being too old, frustration towards teachers, state of classrooms and experiencing a difficult education experience up until that point.

Over half of graduates who intend to pursue PG studies end up not doing so with financial reasons being the major obstacle (University and College Union 2015). Individuals from non-traditional backgrounds and older individuals were also less likely to pursue PG studies (University and College union 2015). Other apparent restraining forces perceived are income potential, funding, insufficient mentoring and training, absence of free time and flexibility to satisfy family needs (Chopra *et al.* 2015: 222). A study performed by Balcarczyk *et al*. (2016: 234) showed that Individuals from non-traditional backgrounds endure added barriers such as lack of family support, discrimination and financial difficulties. This study attempted to identify and understand the enablers and barriers experienced by radiographers' in KZN. The researcher believes that the findings of this study regarding the enablers and barriers would be essential in understanding the radiographers' decisions on pursuing PG education in KZN. Providing this knowledge to the relevant bodies will ensure that they are aware of these needs.

2.7.7 Information

Information on current education systems, support and services offered by the educational institutions are powerful in influencing the enablers and barriers experienced by individuals with regard to their decision-making process (Boeren 2009: 160). According to Mellors-Bourne *et al*. (2014: 18), information represents

an essential function in rational educational decision making. The findings of this study provide an insight into the information that radiographers' currently have regarding PG education. It aims to ascertain whether the information 'known' by radiographers' are factual in addition to the source of this information. The study will determine whether radiographers are open to gathering additional information regarding PG programmes in addition to establishing the nature of the information required.

2.8 SUMMARY OF THE CHAPTER

In this chapter the importance of theoretical frameworks was discussed. The chapter highlighted how these theoretical frameworks allow researchers to understand situations and occurrences from a specific viewpoint. The Chain of Response Model by Patricia Cross (1981) was the theoretical framework chosen for this study as it showed the complexity of the decision making process towards adult education. This theoretical framework distinguishes the driving forces that individuals experience when deciding whether to participate or not in adult education.

From the literature reviewed above, it is understood that there are numerous factors that are involved in the decision to pursue or not to pursue PG education. The immense importance that PG degrees command with regard to the growth of any field is emphasized. From similar studies performed in different fields, it is evident that the pursuit of a PG qualification decision making rationale have similarities and differences between fields. The next chapter will describe the research design and methodology employed for this study.

CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY

3.1 INTRODUCTION

The main purpose of this study was to develop an understanding of the factors that influence radiographers' decision making with regard to PG education in order to provide evidence to improve the enrolment and quality of postgraduate education in radiography. This chapter highlights the research design, methodology, research process and ethical considerations followed in this study.

3.2 RESEARCH DESIGN

Kumar (2011: 94) states that research design can be defined as a procedural plan implemented by the researcher in order to perform a scientific study and attain valid and objective results effectively and economically. According to Creswell (2015: 12), the research design of a study depicts the strategies that the researcher uses to conduct the research. It is the route of inquiry within the chosen quantitative, qualitative or mixed method approach that the researcher has chosen that provides a distinct direction that the researcher can follow (Creswell 2015: 12). This research design conceptualises a functioning plan to perform the various steps necessary to complete the research study (Kumar 2011: 94). The author emphasizes that the research design ensures that these steps are sufficient to obtain valid, objective and correct responses to the desired research questions (Kumar 2011: 94).

Taylor and Bogdan (1998: 3) state that methodology is the process in which we manage problems and pursue answers. According to De Vos, Delport, Fouché, and Strydom (2009: 252), research methodology defines the participants, the sampling strategy, the data collection techniques and tools. The aim of choosing the appropriate research design is to maximize the probability of producing information that provides a credible answer to the research question (Tashakkori and Teddlie 2010: 239). Qualitative research necessitates a larger,

less limiting design concept (Bickman and Rog 2009: 215). This research utilized an exploratory research design, interpretivist paradigm and qualitative research methodology.

3.2.1 Exploratory research

Research that is exploratory in nature investigates a phenomenon in its entirety which includes the manner in which it has originated, the approach exhibited at the moment and other factors related to the phenomena (Polit and Beck 2012: 18). Exploratory research serves as a beneficial approach because it creates a greater insight into persistent phenomena (Babbie 2011: 67). A reliable exploratory research has to be carried out transparently, honestly and follow the guidelines created to ensure its reliability which will essentially create valid results and which may create a new way of viewing a problem (Reiter 2017: 131). An exploratory research method was chosen to maximize the probability of producing information that provides a credible answer to the research question. This method also allows the opportunity to understand individuals' attitudes, beliefs, viewpoints and judgements towards postgraduate education in radiography, with no limitations.

3.2.2 Qualitative research

Qualitative research data encompasses open-ended interview questions, with every effort made to certify that information obtained is not forced onto the interviewees (Mudavanhu 2016: 211). Creswell (2012:4) defines the qualitative research design as "*an approach of exploring and understanding the meanings individuals or groups ascribe to a social or human problem*". De Vos *et al*. (2011:66) explains that the quantitative research design attempts to explain and control the setting whilst qualitative designs are more empathetic towards the personal reality of the participants whilst existing in a natural setting. Maree (2010:353) states that qualitative research intends to understand behavioural patterns arising from the individuals' own life narratives and themes. According to Welman, Kruger, and Mitchell (2005:191), qualitative research is ideally suited to illustrate small groups, communities and organisations.

The qualitative research method, utilizing the semi-structured interview format was chosen for this study because it was the best way to identify individuals' experiences, viewpoints, emotions, understanding of the topic being researched and the rationale for their decisions on PG studies. According to Jamshed (2014: 87), semi-structured interviews are in-depth interviews in which the participants' answer a set of predetermined, open-ended questions. Jamshed (2014: 7) continues to explain that semi-structured interviews utilize a semi-structured interview guide in order to optimize the interview time and explore multiple participants' responses methodically and comprehensively.

3.3 PARADIGM

A paradigm is defined as "systems of beliefs and practices that influence how researchers select both the questions they study and the methods that they use to study them" (Morgan 2007: 49). Creswell and Plano-Clark (2011: 25) state that a paradigm has a complete worldview together with the expectations that are related to that view. The different types of research paradigms are:

- Ontology: which depicts what reality is.
- Epistemology: which depicts how something is known.
- Methodology, which is the ideal route of research (Bunniss and Kelly 2010: 360).

There are four basic types of paradigms, namely, positivism, post-positivism, interpretivism, and critical theory (Bunniss and Kelly 2010: 360). Table 3.1 provides an in-depth understanding of these paradigms as illustrated by Bunniss and Kelly (2010: 361).

Table 3.1: Paradigms

	Positivism	Post-positivism	Interpretivism	Critical theory
Ontology: What is the nature of reality?	Reality is static and fixed The world is ordered according to an overarching objective truth		Reality is subjective and changing There is no one ultimate truth	Reality may be objective but truth is continually contested by competing groups
Epistemology: What is the nature of knowledge?	Objective, generalisable theory can be developed to accurately describe the world Knowledge can be neutral or value-free	Objective knowledge of the world is not necessarily fully accessible Seeks to establish 'probable' truth	Knowledge is subjective There are multiple, diverse interpretations of reality There is no one ultimate or 'correct' way of knowing	Knowledge is co-constructed between individuals and groups Knowledge is mediated by power relations and therefore continuously under revision
Methodology: What is the nature of the approach to research?	The aim is to discover what exists through prediction and control Theory is established deductively Uses scientific method to develop abstract laws to describe and predict patterns Looks for causality and fundamental laws	Seeks to develop knowledge through the falsification of hypotheses Emphasis on well-defined concepts and variables, controlled conditions, precise instrumentation and empirical testing	Focus on understanding Uses inductive reasoning Meaning is constructed in the researcher–participant interaction in the natural environment Gathers diverse interpretations (e.g. grounded theory, ethnography)	Focus on emancipation Research is used to envision how things could change for the better Seeks representation of diverse and under-represented views Characterised by continual redefinition of problems and cooperative interaction (e.g. action research)
Methods: What techniques can be used to gather this information?	Tends to use quantitative methods, often including statistical testing of hypotheses (e.g. randomised controlled trials, questionnaires)	Quantitative and qualitative methods: systematically gathered and analysed data from representative samples (e.g. surveys, interviews, focus groups)	Tends to use qualitative methods to capture various interpretations of a phenomenon (e.g. naturalistic observation, interviews, use of narrative)	May use both quantitative and qualitative methods, usually in a participatory way Often uses iterative research design (e.g. case studies, focus groups, participant observation)

The interpretivist paradigm is the chosen paradigm for this research topic. Taylor *et al.* (2016: 3) states that the interpretivist paradigm involves the understanding of social trends from the perceptions of individuals. This type of paradigm was chosen because it links directly with the goal of the research which was to explore the factors influencing radiographer's' decision making with regard to PG education. Qualitative research data encompasses open-ended interview questions, with every effort made to certify information obtained is not forced onto the interviewees (Mudavanhu 2016: 211)

3.4 SETTING

A research setting is defined as the location where the data collection occurs (Polit and Beck 2012: 743). This study was conducted in the eThekwini district in the province of KZN within both private (three practices) and provincial (three) radiography departments. Five, four, and five participants were interviewed from each of the three provincial departments. Four, one and one participant were interviewed from each of the three private practices. The research for this study focused on individuals, with all grades/years of service, employed within these organizations. To ensure confidentiality, the names of organizations were not disclosed during the write-up of this dissertation.

3.5 SAMPLING PROCESS

A convenience sampling method was chosen for this study. Ilker, Sulaiman and Rukayya (2016: 2) define convenience sampling as a form of nonprobability sampling where the chosen participants meet certain practical criteria, such as convenient access and vicinity, availability and/or the interest to participate in the study. The inclusion and exclusion criteria for this study are listed below:

3.5.1 Inclusion criteria

- Radiographers from all four disciplines (Diagnostic, Ultrasound, Radiotherapy and Nuclear Medicine) of radiography
- Currently registered with HPCSA and working in KZN.

3.5.2 Exclusion criteria

- Student radiographers.
- Community service radiographers practicing in KZN.
- Radiographers who are not practicing.

The invite to participate in the research interviews was sent to the managers of the approved facilities. Twenty one (21) participants volunteered their participation, with one participant withdrawing their participation at a later stage. The researcher believed that this number was adequate in this study because

the researcher felt that the saturation point was reached at this point. According to Mason (2010: 2), saturation of data is reached when new data does not provide any new information regarding the research topic.

3.6 DATA COLLECTION TOOL

The data collection tool was separated into two sections and can be viewed in appendix 7b. The first set of questions was aimed at interviewees who had not completed a postgraduate programme in radiography. The second set of questions was aimed at interviewees who had completed a postgraduate programme in radiography. The questions were similar in nature and differing primarily regarding the future and present tense. For example, those who have not completed a PG qualification were asked; “Can you describe your ideal career goals in radiography? .. and in your opinion, will a postgraduate course in radiography help you achieve these goals or can you achieve these goals without this course? Explain why?” and those who have completed their PG qualification were asked; “Can you describe your ideal career goals in radiography? … and in your opinion, has the postgraduate course that you completed in radiography allowed you to achieve these goals as yet or has it brought you closer to these goals or could you achieve these goals without? If no, explain why? If yes, describe how?”.

The questions were formulated using the factors involved in Cross’s Chain-of-Response Model which were self-perceptions, attitudes towards education, life transitions, value of goals, and expectation that participation will meet those goals, information, opportunities and barriers, and finally, participation. The questions were kept to a minimum and to the point to ensure that interviews were not prolonged because the interviews were conducted during participants’ lunch breaks at work. However, probing questions were asked as required as each interview evolved.

3.7 DATA COLLECTION PROCESS

Total population convenience sampling technique of all qualified radiographers in KZN was utilized. Convenience sampling was selected because it allows the researcher to choose his/her participants dependent on their ease of accessibility (Ilker, Sulaiman and Rukayya 2016: 2). A total of 20 radiographers participated in the study.

Permission, in the form of a permission letter (Appendix 2a) was first requested from the District Research Coordinator of KZN in order to pursue this research. The permission letter, provisional ethical approval and summary of the study were submitted to the co-ordinator to receive this permission. Once this permission was received (Appendix 2b), permission was then requested from the Department of Health in KZN by registering the relevant documents on their website. Once approval was received from the Department of Health (Appendix 3b), in order to proceed with the study, this approval letter, along with the information letter (Appendix 5) and permission letter (Appendix 4a) was emailed to the hospital managers and the departmental managers of participating provincial hospitals who then provided this information to their work force. The researcher then contacted the manager after a few days to ascertain if there were any participants. For the private practices, the relevant documents (which were sent to the hospitals) were emailed to their human resources departments. After approval was received, the same information was then emailed to each department's venue manager who provided the same assistance as the provincial department manager. Once the participants were identified and appropriate dates and times were received, the interview process was initiated.

The semi-structured, one-on-one in-depth interview method was conducted by the researcher himself at the participants' workplaces. Data was captured via voice recordings using the researcher's cell phone. The length of each interview ranged from nine (9) minutes to forty (40) minutes depending on the responses of the participants. One participant preferred not to have his/her voice recorded but rather have the researcher take notes of his/her responses. These

interviews were completed between June 2019 and September 2019 at the convenience of the participants and their departmental managers. In provincial facilities, the different disciplines of radiography are separated departmentally. Each discipline was interviewed on separate days. It is not believed that the participants had a lengthy period to discuss the questions amongst themselves within each discipline. The interviews at the private practice with four participants' were carried out over two visits, at different practice departments whilst the last two required one visit each. Each interview was performed in a closed private room within each department with none of the other participants being able to listen into each interview.

3.8 DATA ANALYSIS

Data transcription was undertaken by the researcher directly after data collection. Repetitive listening to the audio recordings was performed in order to avoid missing important components related to the study (Asif and Rodrigues 2015: 281). The content of each transcribed interview was read and re-read to improve the understanding of the gathered information and to identify patterns and themes. Patton (2015: 541) mentions that the content analysis in qualitative research denotes the probing of the transcribed text in search of repeated words and/or themes. The practice of probing for these patterns and themes may be termed pattern analysis and theme analysis separately (Patton 2015: 541). Thematic analysis is a descriptive method of reducing the collected data in a flexible manner by analysing, identifying and reporting the themes established (Castleberry and Nolen 2018: 808). The data was coded and re-coded using the Atlas.ti software with common themes being coded together. All the codes created were analysed to establish common themes arising from all the interviews. Individualistic themes and viewpoints were also part of the final data. The final data has been presented in a narrative form.

3.9 TRUSTWORTHINESS

According to Bitsch (2005: 82), Guba (1981) established the criterion of trustworthiness and Guba and Lincoln (1989) further developed the trustworthiness criterion into the following characteristics: credibility, transferability, dependability, and confirmability. These characteristics are detailed below.

3.9.1 Credibility

Lincoln and Guba (1985), cited in Hays and Singh (2012: 200) describe credibility as the 'believability' of the research study. It determines whether the research results are believable and result solely from information obtained and accurately interpreted from the participants' original data (Anney 2014: 276). It is one of key criteria used to conclude if the findings of the qualitative study make any sense or not (Hays and Singh 2012: 200).

To ensure credibility of this study, the participants selected were of various age groups, ethnicities, backgrounds and working environments. This ensured that the believability of the study would be of an acceptable standard because the data collected was holistic in terms of the range of participants so that the information obtained was not biased.

3.9.2 Transferability

Transferability denotes the extent to which the results attained can be transferred to other settings with other participants (Anney 2014: 277). For qualitative studies, establishing transferability is attained by providing a detailed description of the research methodology used regarding the research settings, participants and time frame (Hays and Singh 2012: 200) which would allow the readers of the research study to make informed decisions on the applicability of the study to their individual setting. Anney (2014: 277) emphasizes that the readers' assessment of transferability is facilitated by providing the reader with a comprehensive description and purposeful sampling. Comprehensive

description is provided when the researcher explains in detail, the research approaches and methodology used, the data collection tools and procedures, the setting of the study, and finally the results (Anney 2014: 278). According to Shenton (2004: 70), the following information is fundamental in assisting the readers of the research to believe in the transferability of the research and will be included in the research:

- The number of organisations taking part in the study and where they are based;
- Any restrictions in the type of people who contributed data;
- The number of participants involved in the fieldwork;
- The data collection methods that were employed;
- The number and length of the data collection sessions;
- The time period over which the data was collected.

These fundamental essentials to ensure transferability were discussed in Section 3.6 Data Collection Process. Demographic data of the participants as well as their settings are clarified in chapter 4 to provide the readers with detailed background of the participants. A comprehensive description of the entire research process is discussed in this chapter.

3.9.3 Dependability

Lincoln and Guba (1985), as cited in Hays and Singh (2012: 201) refer to dependability as the consistency of the findings over time and across other research studies by different researchers. Hays and Singh (2012: 201) state that dependability is the ability of the study to result in similar findings to past studies on the same problems, as well as being reproducible. The authors also state that every member involved in the research study must approve of the findings. Anney (2014: 278) explains that dependability is achieved using any of the following techniques, namely audit trail, a code-recode strategy, stepwise replication, triangulation, and peer examination or iterator comparisons.

The findings of this study were similar to related studies performed in other fields as mentioned in chapter 2. This satisfies the requirement of dependability of the findings. The methodology utilized for this study has been discussed in detail in this chapter which enables replication of this study with the expectancy of similar findings. Hays and Singh (2012: 214) explain that an audit trail presents physical evidence of the data collection and the analyses procedures utilized. These procedures are described in this chapter with the paper trail beginning with permission seeking from the District Research Coordinator and ending with the coded and re-coded data which was finally utilized to produce the findings of the study.

3.9.4 Confirmability

Lincoln and Guba (1985), as cited in Hays and Singh (2012: 201) explain that confirmability denotes the extent to which the findings of a research study are legitimate expressions of the research participants. Achieving confirmability expresses the extent to which interference from the researcher was avoided. Triangulation of results is again important in order to ensure the results obtained are solely from the participants and not due to the researcher's bias (Shenton 2004: 72). Anney 2014: 279) agrees that '*confirmability is concerned with establishing that data and interpretations of the findings are not figments of the inquirer's imagination, but are clearly derived from the data'*. This is accomplished by listening to the recorded data, narrating and describing it as precisely as possible (Hays and Singh (2012: 201). The author confirms that confirmability of a qualitative investigation is attained by performing an audit trial and triangulation. Furthermore, once credibility, transferability, and dependability are attained, confirmability is achieved (Nowell, Norris, White, and Moules 2017: 3). To achieve confirmability, the participants' interview recordings were listened to multiple times and transcribed verbatim. These verbatim transcriptions allowed for precise reporting of the findings.

3.10 ETHICAL CONSIDERATIONS

Adams and Callahan (2013: para. 1 line 1-3) state that, between 1945 and 1956, an international tribunal convened in Nuremberg, Germany to create the principles by which research involving human subjects should be governed. The authors explain that these principles were called the Nuremberg Code, "*which mandated balancing the advancement of science with the rights and welfare of humans who serve as research subjects."* The Nuremberg Code consists of 10 principles which places significant emphasis on the voluntary and informed consent of individuals who are capable of making these choices (Israel 2014: 27). Israel (2014: 27-29) further explain that, under the Code, participants also had the right to withdraw from experiments and researchers were obligated to discontinue their work if it would possibly cause injury or death to the participants. Subsequently, according to Adams and Callahan (2013: para. 2 line 1-2), many regulations and policy statements have been established by both domestic and international organisations. Some of these regulatory guidance documents are as follows:

- World Medical Association Declaration of Helsinki (World Medical Association).
- The Belmont Report.

Adams and Callahan (2013: para. 2 line 3-4) express that these regulations and policies share a mutual purpose which is to "*protect the autonomy, safety, privacy, and welfare of human research subjects."* Within individual institutions, where research is performed, the responsibility for the interpretation and application of these ethical regulations and policies rest with committees known as Institutional Review Boards (IRBs) (Adams and Callahan 2013: para. 2 line 5-6).

Like the Nuremberg Code before it, the Declaration of Helsinki places emphasis on autonomy (Israel 2014: 31). However, as explained by Israel (2014: 31), the Declaration of Helsinki maintains that, in all instances, the researcher is responsible for their participation:

'*The responsibility for the human subject must always rest with a medically qualified person and never rest on the subject of the research, even though the subject has given consent.'*

The Declaration of Helsinki differs from the Nuremberg Code in two instances:

- The first is that the Declaration of Helsinki permits consent to be attained by legal guardians in circumstances where the participants are unable to provide consent. This differs from the Nuremberg Code which states that voluntary consent from the participant is compulsory.
- Secondly, the Nuremberg Code allows the subject to voluntarily remove themselves from participation. This was removed in the Declaration of Helsinki and in its place, was the recommendation that the researcher should cease the research if they think that it has the potential to be harmful.

The Belmont Report is a significant document for researchers with its primary purpose being to protect the rights of the research participants (Miracle 2016: 223). The Belmont Report also functions as an ethical framework that can be used in research and consists of three major principles, namely, respect for persons (autonomy), beneficence and justice. These principles were aimed at assisting in the understanding of the ethical issues related to research involving human participants (Israel 2014: 35). Furthermore, according to the authors, these three principles are of paramount importance in the development of many ensuing approaches to ethical control across the Western world.

The appropriate ethical clearance from the Institutional Research Ethics Committee (IREC) was obtained prior to beginning the research process (IREC Number: IREC 033/19) (Appendix 1). Gatekeeper permission was also sought and obtained from the District Manager (Appendices 2a and 2b), KZN Department of Health (Appendices 3a and 3b), as well as the CEOs of the selected facilities (Appendices 4a – 4f). A letter of information was then given to the participants (Appendix 5) as well as a consent letter (Appendix 6). Honesty, confidentiality, respect, non-discrimination, objectivity and integrity are a few vital research rules (Resnik 2015). These rights of participants were

diligently practiced by the researcher during the interview process. Together with these rights, the researcher did not attempt to influence individuals into participation and ensured that the participants were aware that there would be no remuneration for participation. The research process did not purposely cause any harm to the participants and all the participants were treated fairly and equally.

3.10.1 Autonomy

According to Adams and Callahan (2013: para. 4 line 1), autonomy refers to the individualistic ethical right whereby individuals have the right to decide whether or not they will participate in any endeavour. For autonomy to be instilled, the potential participants must be permitted to make their own decision after understanding what their participation would require and the possible effects of this participation (Adams and Callahan 2013: para. 4 line 2). This is accomplished during the informed consent process. Ritchie *et al*. (2014: 87) express that the informed consent process involves providing the potential participants with sufficient information which then permits them to make a decision to either participate or not. Israel and Hay (2006: 61) mention that informed consent comprises two related undertakings:

- Firstly, the participants are required to fully understand the requirements of the study
- Secondly, they are required to voluntarily agree to the nature of the intended research and to the task they would be required to perform in the research.

Hays and Singh (2012: 79) emphasize that, for autonomy to be instilled appropriately, the potential research participants are required to understand that their participation may be withdrawn at any time without penalty. Israel and Hay (2006: 35) state that an individual's ability to make autonomous decisions can change during their lifetime due to circumstances such as illness and disability. The authors mention that due to this, an individual's level of autonomy requires to be re-evaluated from time to time and the relevant level of protection

be provided. According to Adams and Callahan (2013: para. 4 line 6-8), vulnerable populations are those who are believed to have impaired cognition and are deemed to have diminished autonomy and would require further safeguards with regards to achieving autonomy. Examples of vulnerable populations are children, cognitively impaired elderly, mentally ill subjects or seriously ill people.

Prior to participation, the potential participants were provided with a full explanation of the study regarding its significance and rationale. It was clarified that their participation is totally voluntary, and should they wish to withdraw their participation in the future, it will be withdrawn with no consequences.

3.10.2 Beneficence

Israel and Hay (2006: 36) state that beneficence in research is the *'responsibility to do good'* by providing the maximum potential benefits to the participant while safeguarding their well-being and ensuring minimal harm. Beneficence requires the researcher to provide the individual participant and/or society with the maximum benefit from their investigation (Hays and Singh 2012: 79). Adams and Callahan (2013: para. 5 line 2-3) state that the foundation of beneficence is provided by a detailed and comprehensive research design which undergoes '*rigorous scientific review*' before advancing for ethical evaluation.

It was explained to the research participants that the findings of this research study would benefit them and the radiographic society by providing an understanding of the rationale behind the decision making towards PG education in radiography. These findings will then be communicated to the relevant institutions and regulating bodies, assisting them in understanding the mind-set and needs of radiographers, so that changes would be effected to benefit the radiographic community in general and the individual participant in the future.

3.10.3 Justice

According to Israel and Hay (2006: 36), justice in ethics considers the distribution of both the benefits and burdens of the research study. They contend that it would be unjust if a participant were denied potential benefits which they were entitled to or endure the burden unjustifiably. Fisher and Anushko (2009: 96) agree that justice is the responsibility to guarantee fair and even distribution of both the advantages and disadvantages amongst the populations. Justice necessitates the impartial selection of participants (Adams and Callahan 2013: para. 6 line 1-2). The authors add that justice demands the avoidance of populations, such as children, who may be unethically influenced into participating. Justice necessitates that potential participants must benefit from the research (Adams and Callahan 2013: para. 6 line 2-3). Hays and Singh (2012: 80) express that justice ensures that the findings from a disproportionate sampling process is not misappropriated to other demographics. Justice was ensured during this study by inviting individuals from all groups, circumstances and statuses as stated by Hays and Singh (2012: 80) to participate in this research study. The participants were chosen by adhering to the inclusion and exclusion criteria. This ensured that the study was not specific to any individual characteristic or background and no singular perspective was awarded preference. Participation in the study was strictly voluntary with informed consent being obtained prior to commencement.

3.11 SUMMARY OF THE CHAPTER

It is evident that the research design and methodology of any research study is of utmost importance because it forms the blueprint of the study. It creates a functional, clear and precise plan to be adhered to by the researcher in order to attain valid and objective results whilst utilizing the most economical route. This chapter has outlined the blueprint utilized by the researcher in order find answers to the desired research questions. The research design and methodology, chosen by the researcher, has been clarified. The rationale behind each decision made by the researcher regarding the chosen location, sample, data collection and analysis process has also been clarified. The

procedures that were followed to attain ethical clearance to pursue the study has been outlined and the ethical and trustworthiness rules adhered to during the study is explained. The next chapter will present the research findings from the analyses of the collected data.

CHAPTER 4: PRESENTATION OF FINDINGS

4.1 INTRODUCTION

In this chapter, a thematic analysis of the data obtained from twenty (20) semi-structured research interviews of qualified radiographers currently practicing in KwaZulu-Natal and the themes are presented. The themes and sub-themes that emerged will be described in synchronisation with Cross's Chain-of-Response Model. The demographics of the research participants are displayed in Table 4.1 and the themes and sub-themes are presented in Table 4.2. The findings of the semi-structured research interviews conducted, including the responses of the research participants are also presented. All the themes are related to Cross's Model and comprehensibly influence the factors affecting the decision making process of qualified radiographers towards PG education in KwaZulu-Natal.

4.2 DEMOGRAPHICS OF RESEARCH

Table 4.1: Demographic characteristics of study sample (n=20)

P No.	Gender	Age	Marital status	Facility
1	Female	31	Married	Private
2	Female	30	Married	Private
3	Female	25	Single	Private
4	Female	44	Married	Private
5	Male	33	Married	Self-Employed
6	Male	27	Single	Private
7	Male	35	Married	Provincial
8	Female	25	Single	Provincial
9	Female	48	Single	Provincial
10	Male	29	Single	Provincial
11	Female	62	Married	Provincial
12	Male	44	Married	Provincial
13	Male	46	Married	Provincial
14	Female	48	Married	Provincial
15	Female	27	Single	Provincial
16	Male	34	Married	Provincial
17	Female	42	Married	Provincial
18	Male	38	Married	Provincial
19	Female	28	Married	Provincial
20	Female	41	Married	Provincial

Key3

P No. = Participant Number

4.3 THEMES AND SUB-THEMES FROM THE COLLECTED DATA

From the data collected, seven general themes were identified involving the decision making rationale of radiographers toward PG education in radiography. Together with these general themes, sub-themes were also identified. Table 4.2 below provides a summary of the themes and sub-themes. These themes and sub-themes are discussed with reference to the participants' verbatim responses to the questions.

Table 4.2: A summary of themes and sub-themes

	THEMES		SUB-THEMES
1	Self-perceptions	1.1	Confidence in the research participants' abilities.
		1.2	Negative beliefs.
2	Attitudes towards education	2.1	Negativity towards PG education in radiography.
		2.2	Positivity towards PG education in radiography
3	Goals and expectations	3.1	The belief that goals can be achieved without PG education in Radiography
		3.2	Academic industry goals
4	Life transitions	4.1	Time
		4.2	Family commitments
5	Opportunities and barriers	5.1	Academia and personal gain
		5.2	Situational barriers
		5.3	Institutional and dispositional barriers
6	Information	6.1	Improve the availability of information
		6.2	Encouragement to study
		6.3	Support
7	Participation	7.1	Monetary incentives
		7.2	Incentives via subsidy

4.4 THEME 1: SELF-PERCEPTIONS

The research participants were questioned regarding their self-confidence in successfully completing a PG programme should they decide to pursue the programme. From the data analysed, it was established that self-perception portrayed a minor role in the research participants' decision-making process. Two distinct sub-themes were identified: Sub-theme 1.1: Confidence in the research participants' abilities and Sub-theme 1.2: Negative beliefs.

4.4.1 Sub-theme 1.1: Confidence in the research participants' abilities

From the information gathered, it can be presumed that self-confidence is not an area of concern when it comes to pursuing PG degrees as most of the research participants are highly confident of success. Two research participants reported that they holistically enjoyed their studies towards their degree. These participants completed their three-year degree outside KZN. When these participants were questioned about their self confidence in successfully completing a PG programme, one of the participants responded to the question as follows:

"That one is easy, I won't have a problem." (Participant #13).

This participant had a good experience during the undergraduate programme and had the following to say:

"There was no challenges. Then everything, the way it was structured, even the hours, we were just crossing the fence for clinical and come back you see. There was nothing that…there was no challenges at all." (Participant #13).

"I studied at the University A, my undergraduate. When I qualified, I got a degree. PG, I went back to the University A, I studied 2 years' part time and I qualified with a diagnostic radiography honours degree. It was an amazing experience and I believe that why I went back to study with them PG. I have a study published. My

honours paper is published in a journal, so ya, definitely my confidence levels are ok." (Participant #19).

Seventeen of the research participants who completed their diploma in KZN found their diploma to be a proficient and efficient experience with only one participant having a negative experience. Most of the research participants, who completed the B. Tech programme in KZN had mixed to negative experiences whilst those who had not pursued the programme have heard negative comments from their friends and colleagues. Even with these experiences and negative external comments, the research participants' self-confidence levels were worth noting as observed in the quotations below:

"Well, personally if the supervisor is somebody that I think that I can work with then I am very confident that I can complete the masters in the required amount of time." (Participant #2).

"I think based on my personality I think that I would succeed in this course if I was interested and I would take the initiative to go and find out more." (Participant #1).

"Very confident, I've done the B. Tech. I'm aware of the academic expectations and the standard they will require. So I feel that I'm fully confident that I can achieve that if I chose to do it." (Participant #12).

"It comes down to discipline. I just have to be disciplined enough and I guess it can be done." (Participant #20).

4.4.2 Sub-theme 1.2: Negative beliefs

Three research participants experienced a certain level of low confidence due to external factors and not directly due to their own inability to successfully complete a PG programme. They asserted the following:

"But in terms of self-confidence now, I feel that there's no lecturers or people that are in place that would give you the supervisory skill that you require to do it." (Participant #16).

"I think I'll be fine. I think it's just the work environment. Personally, my mind set at the moment. I feel very demotivated at the moment to pursue anything." (Participant #17).

"But I think now I just feel like because being venue manager is hectic sometimes, so I feel like it's exhausting. So like when you go home, would you have time or would you feel tired to sit and do work." (Participant #3).

4.5 THEME 2: ATTITUDES TOWARDS EDUCATION

From the data obtained, it was evident that radiographers had strong viewpoints and attitudes towards PG education in radiography. These attitudes are created by the information that these individuals have on PG education in radiography. Two distinctive sub-themes were recognized from the collected data: Sub-theme 2.1: Negativity towards PG education in radiography and sub-theme 2.2: Positivity towards PG education in radiography.

4.5.1 Sub-theme 2.1: Negativity towards PG education in radiography

From the research data obtained, many of the research participants exhibited a negative perception towards PG education in radiography. The responses below demonstrate this negativity which seemingly stems from the notion that a PG qualification in radiography would not be recognised by their employers and would not create a path for career advancement nor bring about any form of remuneration:

"Lots of people said don't waste your time doing masters in radiography, you know, rather do something else. Do your masters in anything else but radiography. Which is something I couldn't understand initially but I think they actually made a valid point, because there is no remuneration. You are not even recognised for having your masters." (Participant #4).

"For me I don't see the benefit of having a masters degree as it doesn't help you in the radiography field. It doesn't help you increase your salary or be recognised in private or public companies. So there is no point for me to do masters." (Participant #1).

"So in therapy, I wouldn't get my masters. To me that's absolutely pointless." (Participant #6).

4.5.2 Sub-theme 2.2: Positivity towards PG education in radiography

There were four research participants who had a more positive attitude towards PG education in radiography. The responses below highlight their eagerness to possibly pursue a PG programme in the future or believe that a PG qualification would improve their competency as a radiographer:

"I'd actually like to do my masters and then one day maybe my doctorate. I know it's a very far goal, but I would like to do that. And I always feel like ill regret it if I don't." (Participant #3).

"Ideally I would have liked to have had my Ph.D by now. I believe having those degrees would have made me a better radiographer." (Participant #9).

"I want to do my masters, I'm already brainstorming topics. I'm hoping to enrol for my masters next year. I will definitely do it at University A, they have captured me. I want to be a doctor. I just want that title." (Participant #19).

"I would love to do my masters and my Ph.D at a later stage." (Participant #20).

4.6 THEME 3: GOALS AND EXPECTATIONS

The research participants' goals varied from becoming managers, application specialists, and specialized radiographers within specific modalities such as MRI and mammography. Majority of the participants believe that they can achieve their goals without obtaining a PG qualification. Two distinct sub-themes were identified from the gathered information: Sub-theme 3.1: The belief that goals can be achieved without PG education in Radiography and Sub-theme 3.2: Academic industry goals.

4.6.1 Sub-theme 3.1: The belief that goals can be achieved without PG education in Radiography

The overwhelming consensus from the research participants is that they can achieve their goals without PG education unless they decide they want to enter the academic field and pursue lecturing. The consensus was that pursuing a masters in radiography in the clinical environment would only be for personal gain. This is illustrated with the participants' responses below:

"Ideally I would like to become a specialist specifically in MRI as I enjoy that the most. The current postgraduate course in radiography will not help me achieve this." (Participant #1).

"At the moment, a postgraduate course in radiography will not help me in any goals. I can achieve my goals without studying." (Participant #7).

"I've opened up my own practice, so that's part of my goal, but my goal will be fully reached when I have a full radiography or radiology centre which has x-ray, CT, and whatever other modalities I want to put in it." (Participant #5).

When participant 5 was asked if they require PG education to achieve these goals or if he/she could achieve these goals without PG education, he/she responded with the following:

"I can achieve it without." (Participant #5).

"I really wanted to do U/S, ever since I was in grade 10. So I made sure that I get into U/S. I feel like there's not much that you can do from there. I was actually considering getting like my own practice." (Participant #3).

When participants were asked if they would need a PG degree to accomplish their goals, one of the participants responded:
"From what I found out and stuff, I don't think you would really need that. Because I checked, you need at least 2 years post diploma to open your practice." (Participant #3).

The participants who were content with their current role in their departments and their life situations and had no immediate future career goals to pursue had the following to say:

"To tell you the truth, I'm just working, I don't have anything. I don't have anything beyond. There are x-ray managers and also AD's, we are at the same level. But then one has been given the responsibilities to manage the department, but when it comes to remuneration, we are the same." (Participant #13).

"I am content with the role as chief radiographer. I am not interested in managerial roles. For that reason, a PG qualification won't help me in any way." (Participant #13).

4.6.2 Sub-theme 3.2: Academic industry goals

The consensus is that a PG degree in radiography only assists radiographers if they have career goals linked with academia. This belief is revealed with the participants' responses below:

"I think my ideal goal would be to go into lecturing. If I want to do lecturing, I have to do a postgraduate course, I would have to do my masters." (Participant #4).

"The masters in radiography only prepares you for a career in academics." (Participant #12).

One participant did complete their PG studies and had the following to say:

"I don't think you can ever stop learning so I don't think I have reached any goals. I did my qualifications for personal satisfaction. I was fully aware that it was not going to make a difference to me as far as my career went in the public sector. I had or I have no intention of working at a teaching institute." (Participant #11).

One participant felt that PG education in radiography may assist to achieve his/her goals from a theoretical standpoint, as noted in the excerpt below:

"The career goals would be to attain more knowledge in interventional radiology. So that's my forte in terms of radiography diagnostic. I think PG course will give you some degree of theoretical knowledge, but the clinical aspect, you still have to…., it takes years of learning to do that. So you do some research in your PG masters, doctorate, in terms of research and getting some perspective in your field in which you want to get there. But the clinical aspect is the more important aspect of it." (Participant #16).

4.7 THEME 4: LIFE TRANSITIONS

From the participants' verbalized comments, it can be concluded that the transitions that they go through in life does play a role in pursuing PG education at that time. It can also be presumed that these transitions do not permanently hinder an individual, because all the participants are confident that they can successfully complete a PG programme if chosen to do it. Two sub-themes are again identified from the research data: Sub-theme 4.1: Time and Sub-theme 4.2: Family Commitments. However, one research participant feels that life transitions do not influence his/her decision making towards PG education and expressed the following:

"No life transition hindered me from studies. I'm totally influenced by what I wanted to do." (Participant #18).

4.7.1 Sub-theme 4.1: Time

The research data reveal that transitions and situations provide individuals with less time to pursue any form of education. The responses below focus on this belief that they will not have enough time to manage studies and life during these transitions:

"Time is important. And with work being hectic. Can't have time off to go and study and compile your research. It's going to be hectic." (Participant #8).

"It's not easy studying and working. Time is an issue." (Participant #5).

"If I had to do it now I don't think id succeed because I have a few other things on my plate. But if I had to pursue it, I'd be in the right mind. I'd know that I'd have to put in the hours and get that done." (Participant #10).

"In order for you to complete a masters successfully, and to do a well-rounded research, you need that dedication and time to do that. And right now I think that, in a personal capacity there's no time. (Participant #6).

One participant found time to be a hindrance a few years ago as she was planning her marriage but at this point in her life, time is no longer a constraint. This is noted in the excerpt below:

"I think I have all the time in the world right now." (Participant #15).

4.7.2 Sub-theme 4.2: Family commitments

The research data indicate that the transition to beginning and maintaining a successful family life is a major factor regarding individuals' reluctance to pursue PG programmes. The research participants' expressed the following:

"So I didn't pursue a B. Tech because of the fact that I was planning on getting married. I decided to defer for a while." (Participant #15).

"I would have to find balance in my life after having my baby." (Participant #2).

Participant 9 did attempt their masters qualification but had to de-register due to family life commitments and had the following to convey:

"Ideally I would have liked to have had my Ph.D. I did enrol for a masters last year, but unfortunately I had to withdraw because in terms of my family commitments, I was unable to make good progress doing my masters." (Participant #9).

"You know to do a PG, you are going to have to cut like you know, watching soccer on the weekends, you know there's a lot that you going to have to cut. You know that during the weekends I usually take my daughter to extra classes, you know once if I register, that means my wife has to take care of those things. There's a lot of things that has to change. Behaviour, responsibilities, a lot." (Participant #13).

"I can't study now. There's no time with my family responsibilities, kids and work." (Participant #14).

4.8 THEME 5: OPPORTUNITIES AND BARRIERS

From the views expressed by the research participants, it is evident that the barriers towards PG education in radiography outweigh the opportunities that it may provide. The data revealed that there are two main opportunities that PG programmes create and present many situational, dispositional and institutional barriers. Three sub-themes were recognized regarding the opportunities and barriers: Sub-theme 5.1: Academia and personal gain, Sub-theme 5.2: Situational barriers and Sub-theme 5.3: Institutional and dispositional barriers.

4.8.1 Sub-theme 5.1: Academia and personal gain

The data reveal that there are two opportunities that PG programmes create for radiographers. Firstly, PG education functions as a gateway to an academic career such as lecturing and secondly, it provides the individual with the opportunity to achieve personal satisfaction. Academia has been mentioned previously as it links to an individual's goals as well. The research participants' stated the following:
"The overall aspect of doing a masters is rewarding in the end. Rewarding for their personal growth." (Participant #16).

"There is no real incentive to doing masters other that personal achievement." (Participant #10).

Participant #3 is keen on pursuing her masters and future doctorate degrees for her own personal achievement because she says:

"I like to do it for my own reasons. One of that is like you don't need to put paper on a wall. Because you just build yourself. You feel more confident by studying further because you know that you have education behind you. Knowledge is the key. Also very few very study further, so it's also an achievement so it's something to be proud of." (Participant #3).

One participant reported that she felt a bit differently and were of the opinion that PG qualifications would help her become a better radiographer clinically by saying:

"I do feel that if I had these extra qualifications it would have made me a better quality radiographer practically." (Participant #9).

Another participant who completed his/her PG degree declared the following:

"I did my qualifications for personal satisfaction." (Participant #11).

4.8.2 Sub-theme 5.2: Situational barriers

Family and work commitments are barriers towards participating in education because it may not allow for much time to carry out these studies. Another barrier experienced regarding the research participants' decision making towards PG education is finance. The following situational barriers were expressed by the research participants:

"It's not easy studying and working. Time is an issue. There's plenty of barriers financially. And also time, because to find the time to go the campus with work, with your family at home, with your extended family, spending time…. I'm not even doing it and I don't have the time to do all those things there." (Participant #5).

Participant 3 also mentioned that laziness is a barrier:

"One of it is lazy, because you can but you don't make the time to do it. But then people also don't have funds, education is a bit expensive. So people do, especially with like work, trying to work, earn a salary and then pay for an education. It's hard." (Participant #3).

"Personally, obviously I would also have to think about it from a cost aspect is. You paying it out of your own pocket. So, and these courses are not exactly cheap. So obviously from myself, from a personal point of view, I would have to free up, financially, and obviously time would be a major factor for me." (Participant #6).

"It is sad that for PG, we don't get NSFAS. You pay from your own pocket from the little salary that you getting, you go and pay R10000+ fees. But UP was so expensive, I think it was R30 000 something. You come back to the department and you still earn like anybody else that didn't do anything." (Participant #19).

4.8.3 Sub-theme 5.3: Institutional and dispositional barriers

From the responses below, it can be understood that a multitude of barriers were experienced by the research participants' regarding the University B's administration of the radiography programme in KZN:

"I studied both degree and diploma in University B. Very disorganised. Very, don't know what they doing." (Participant #17).

This participant continued to say that she would consider pursuing a masters in public health and not radiography:
"A masters now will get me nothing. No more money. I'll still be doing what I'm doing now. I would not do a masters in radiography. Probably if I considered doing a masters I would do it in public health. So the masters. No. I wouldn't want to deal with University B." (Participant #17).

When the participant was asked if he/she knew anybody who pursued a masters in radiography and knew what their experience was like, he/she said:

"I know two people. One signed up for the masters with University B and then left because it was too disorganised and whatever. The other person I know managed to complete hers, but she wasn't working at the time. So I think somehow she managed to find it easier." (Participant #17).

"I have heard that communication is not the best from University B. So for me that might be a bit too frustrating. I've dealt with both University B and University C and feel that at University C the communication received from them was excellent." (Participant #2).

"Communication is not good. You are going to go to class only to be told, oh sorry we don't have lectures today. So they said if you want to do it, rather do it through University D. Because University D is more organised. Yes it's far, but at the end of the day you are going to get your money's worth." (Participant #20).

"For me right now, from what I hear is that the lecturers are not so stable at University B. So my concern right now is who would be my mentor. Who from University B would be a good mentor to guide a diagnostic radiography student to do a masters. So I think a lecturer is concern." (Participant #1).

"I think now, again if you got someone who's more understanding from your position, like say my position personally, I work, I have a family and the lecturer is there. If they can understand us more and obviously maybe explain more. Because we had some lecturers who would just say ok, go to this website here, go through this, answer the questions, that's it. If that's the case, then do it through UNISA. Personally from that point of view, University B wise, being more hands on is better." (Participant #5).

"A lot of people are doing B. Tech through University B and they found it to be extremely challenging. The last 2 years I found my colleagues being miserable when it came to B. Tech and they said that's it, no more. They don't want to look at doing their masters or any other studying at the moment." (Participant #20).

This participant had a positive outlook on his/her colleagues' negative experience and had the following to add:

"But I think it's just a phase, it's just because they were just so overwhelmed with studying their B. Tech and maybe in the future they would reconsider." (Participant #20).

4.9 THEME 6: INFORMATION

It is clear from the data gathered that radiographers require more clarity regarding PG programmes, their structure, requirements and rationale behind requirements. Most of the participants do not know any individuals who have pursued PG education in radiography. Three sub-themes were recognized: Sub-theme 6.1: Improve the availability of information, Sub-theme 6.2: Encouragement to study and Sub-theme 6.3: Support.

4.9.1 Sub-theme 6.1: Improve the availability of information

According to the participants, the information that they possess regarding PG education in radiography is very limited. From their responses below, it is evident that it would be helpful if the information was easily accessible:

"I don't have many friends who have done these postgrad courses but from what I heard, it can be time consuming from the work load. I don't know too much. And it's back and forth with content. My knowledge is very minimal. An easy route to get information about these courses will help." (Participant #1).

"If I had to proceed with my masters, I wouldn't know who to go to, to ask for supervisory experience in terms of my masters. There's no, I feel there needs to be more open communication. There needs to be something that promotes the students from B. Tech to masters." (Participant #16).

"I applied for that and I told you and it took them like over two and a half weeks to respond to me to just say you need to do the concept paper, so I don't understand why, even with the concept paper, why do you have to submit that before you even get accepted. University B needs to provide more information and support." (Participant #4).

"Not really heard anything about masters." (Participant #18).

4.9.2 Sub-theme 6.2: Encouragement to study

Similar views were expressed by the research participants regarding the need for encouragement towards studying. The responses below highlight the need for encouragement beginning at undergraduate level to pursue PG programmes:

"I think that more knowledge being available regarding a master's course would help.' 'Institution needs to promote the postgrad qualifications more. And push the students to want to study further." (Participant #8).

"I would like to say that I believe all newly qualified radiographers need to be encouraged to up and further their studies purely not just for the well-being of the department but for the personal growth of the individual whereby everybody can come together the in the interest of the patient." (Participant #9).

"There needs to be something that promotes the students from B. Tech to masters. Say listen here, we will offer you the masters and we will provide the supervisory experience that you require in order for you to complete your masters. So come do your masters with us, so we can publish your data." (Participant #16).

4.9.3 Sub-theme 6.3: Support

It is important to provide PG students with support to reduce their personal stresses and conflicts. However, the responses below indicate that the research participants are unaware of the exact extent of support that they would receive:

"Support is important. We don't know much about what support we might get. In terms of lecturers, institutions, companies." (Participant #1).

"And they need to have more lecture mentoring in place. Lack of lecturers and senior staff members to mentor the students." (Participant #16).

"And having a support system would also be beneficial as well. From all round, you need your managers to be supportive in terms of having to take an afternoon off to

go complete your research, going home siting with your assignments and stuff, you need that. And then obviously the support system at home, your spouse." (Participant #20).

One participant de-registered from the master's qualification due to family commitments and had the following to say:

"I believe that I did have sufficient assistance from University B but I also believe that with additional assistance, I probably would have stayed on." (Participant #9).

4.10 THEME 7: PARTICIPATION

From the data gathered, the consensus is that radiographers need appropriate incentives to pursue their PG qualifications. One participant had the following to say:

"If more incentives were given then more people would pursue a masters." (Participant #1).

Two sub-themes were identified regarding these incentives to participation: Sub-theme 7.1: Monetary incentives and Sub-theme 7.2: Incentives via subsidy.

4.10.1 Sub-theme 7.1: Monetary incentives

The data indicate that monetary incentives w identified were required to pursue a PG programme. The responses below emphasize that these participants need to be recognized for their achievement through an incentive that would improve their financial well-being:

"Given the incentive to study and if there is a monetary value added to that. Then I can say yes. It's worth pursuing my studies.' 'It's got to come with some sort of incentive." (Participant #7).

"You need to have a reason to do masters. Like from my perspective, if I was still an employee and they told me do your masters and you going to get paid x amount, compared to what you getting now, that will be a big motivation, but in this country there is no motivation for it." (Participant #5).

"If they want us to study further, they need to give us incentive to do so. We can't be studying further for nothing. If I will be spending R20000 on doing a masters. I got to get something back. I need something in my pocket." (Participant #8).

"I just think that ultimately, there should be a law available where every time you up your qualification, government should be allowing people to be paid extra for that." (Participant #9).

"I think lots of people would do their masters and doctorate if they were going to get paid a higher salary. Now imagine you're a doctor, you're still a radiographer but you're a doctor, got your doctorate and earn what we earn." (Participant #17).

"Changes in legislature such as financial reward for qualifications will promote me to pursue these qualifications as it will be a return on my investment." (Participant #2).

"Money, obviously. So I have all those specialties that took my money and is not doing anything for me, so what was the point, you see. So I think that's one thing that demotivates a lot of people. And actually our colleagues laugh at us hey. You wasted your money. Like what do you have to show for it? It's just a fancy title or something nice to brag about, but…." (Participant #19).

"And you know what, I always believe your employers, they need to recognise your education. Ideally I feel the higher you qualification the more you should pay your workers. That's just my opinion." (Participant #20).

4.10.2 Sub-theme 7.2: Incentives via subsidy

Most of the participants did not know the exact cost of a PG programme. They all believed that it would be very expensive. Therefore, the responses below express that a subsidy would be a positive incentive in influencing these research participants' decisions regarding PG programmes:

"At the moment, me outlaying so much of money and putting myself into a financial situation without any sort of compensation doesn't really make much sense to me." (Participant #7).

"Initially, I would have considered a masters, I did hear at some stage that University B were paying for masters. Considering that there won't be any financial benefits for me in my company, I thought that if University B was paying for it then it would have been something I would have considered. I have heard that that has changed." (Participant #2).

"No subsidies are given for studying further with government and private, from what I know. That is a huge hindrance. A subsidy would help greatly." (Participant #8).
"I think that if one is doing a masters or any tertiary level of education outside ones basic diploma or national higher diploma, it would be ideal that if the university actually sponsored them or if there was some sort of arrangement made between the department of health and the university, whereby a subsidy was put in to place so as to alleviate the financial burden the student experiences." (Participant #9).

"So people do….., especially with like work, trying to work, earn a salary and then pay for an education. It's hard. And I know a couple of my friends who are doing that currently and they are finding it very hard." (Participant #3).

4.11 SUMMARY OF THE CHAPTER

The findings from the collected data were presented in this chapter. A description of the themes and sub-themes that extracted from the data was provided using verbatim responses of the participants. In the chapter to follow, these findings will be discussed with reference to the literature.

CHAPTER 5: DISCUSSION OF FINDINGS

5.1 INTRODUCTION

The previous chapter reported the findings of the research study. This chapter presents the discussion of the findings by referring to the literature that either support or refute the findings. The relevance of the theoretical framework used to provide this study with direction and focus will be discussed in relation to the findings.

The aim of this research and its objectives were to explore the factors influencing radiographers' decision making with regard to PG education. This research was undertaken using Cross's Chain-of-Response Model as the theoretical framework to provide evidence to improve the enrolment and quality of PG education. The identified themes of the study were categorized in accordance with Cross's Chain-of-Response Model.

5.2 DISCUSSION OF THEMES

5.2.1 Self-perceptions

The findings of the current study revealed that the participants (100%) possess a high level of self-confidence. They firmly believe that they are capable of successfully complete PG programmes should they choose to pursue these programmes. According to the views expressed by Larson and Milana (2006: para. 9 line 4), self-perceptions are mainly based on the psychological mind-set of the adult. The findings of this study, which indicate that the participants possess a positive psychological mind-set, concur with this view.

Stanard (2013: 18-19) expresses the view that the self-perception of individuals centre around their self-esteem and confidence. He goes on to state that individuals who suffer from low confidence in their capabilities will avoid participation in education which may test their intellect. Considering these statements, the high self-esteem and confidence that radiographers exude regarding their capabilities

should ideally suggest that these participants would pursue these PG programmes. However, there may be other restraining factors that radiographers experience regarding PG programmes. This would align with the belief of Cathro (2011: 2) who states that restraining forces that prevail over driving forces negatively affect an individual's mind-set in this decision-making process. The restraining forces identified from the research data were external in nature. These external factors affected these participants mind-set to a certain degree but did not completely remove their belief in themselves and their own capabilities.

5.2.2 Attitudes towards education

The current study also found that the attitudes and beliefs of 75% these participants towards PG education in radiography were vastly negative. According to Cross's Model (cited in Boeren 2009: 159), adults with a negative learning experience in the past are less confident, enjoy learning less, have less self-esteem and thus develop a less positive attitude towards learning. From the data obtained, it was identified that a majority (55%) of the radiographers did experience a certain degree of negative educational experiences in the past, in the field of radiography. This would align with the model as outlined by Cross. However, of the 45% of radiographers who have had completely positive educational experiences in radiography in the past, 67% are still not interested in pursuing PG programmes. This meant that only 33% of the radiographers who had a positive educational experiences in the past were interested in PG programmes in radiography. From the entire sample (Participants with both positive and negative experiences), 35% had a future interest in pursuing PG education in radiography. These radiographers generally had positive educational experiences in radiography with minor grievances, if any. These findings concur with the views expressed by Türer and Kunt (2015: 166) who state that an individual's attitude, be it positive or negative, directly impacts the educational process.

From the collected data, it was clear that each individual thought process was different. Whether two or more participants' educational experiences were extremely similar, their outlook on education was still clearly different. For example, two participants who graduated outside of KZN both had extremely positive

educational experiences. Even with those positive experiences, one participant has no desire to pursue further education whilst the other participant has a great desire to continue his/her education.

5.2.3 Goals and expectations

This study revealed that the participants possess a wide range of career goals. These goals included becoming managers, application specialists, specialized radiographers within specific modalities such as MRI and mammogram, opening their own practices and entering the academic field. There were a minority (30%) who were content in their current roles and did not have any apparent goals within radiography. The data revealed that the consensus among these radiographers (85%) is that they do not expect PG programmes to assist them in achieving their goals, with the exception of entering the academic field. Cross's Model, (cited in Boeren 2009: 159) states that the value placed on adult education is related to the expectancy that education will be fruitful to one's expectations. This is compliant with the findings of this study which identified that these participants do not place a high value on PG education in radiography as they do not feel that they require these qualifications to achieve their goals.

The participants (15%) who exhibit aspirations to enter the academic field do value these qualifications because it is a requirement to achieve their goal and will therefore be 'fruitful' for their expectations. However, it was noticed that only one participant has actually made queries with an institution regarding pursuing their PG qualification. This suggests that entering the academic field is a goal that they envision themselves pursuing in the distant future, whereas the anecdotal evidence from the Department of Radiography University B suggests that there is a currently a need for appropriately qualified radiographers.

It also appears that radiographers in the government sector grow with their years of experience and not the qualification they possess. It is apparent that, for chief and management positions in the government sector, a diploma and years of experience is the minimum requirement. The process is similar in the private sector as radiographers grow with experience.

5.2.4 Life transitions

Merriam (2005: 3) states that transition periods are stages in an individual's life when change occurs. These transitions can have either positive or negative effects on the individual's self-esteem and self-confidence. The research data obtained correlates with these views to a certain degree. The data revealed that these participants possess a high level of self-confidence in their capabilities should they make the decision to pursue these qualifications. None of the participants believe that they have been through a transition that had a negative effect on their capabilities. They believe that if anything, transitions have improved their capabilities to successfully complete these programmes. However, transitions have hindered their mind-set to a degree because they do not believe they have the time to pursue these programmes due to work and family commitments. They believe that they would not have the time to add to their current work and family commitments and that it would be too stressful to add another commitment to their life at this stage. These factors are in keeping with the study by Heussi (2012: 1) who found that the difficulties that students experienced were related to both their external commitments and the university course itself. However, it was observed that the participants did feel, that along with these commitments, given the appropriate motivation, their mind-set would change in order to accommodate their new responsibility.

5.2.5 Opportunities and barriers

The findings from this study indicate that PG programmes in radiography provide individuals with two opportunities. Firstly, it functions as a gateway into the academic field, and secondly it allows individuals to gain personal satisfaction. Cross's Model, (cited in Boeren 2009: 160) states that enablers towards participation in education are factors that create prospects for the individual's future such as improved job prospects and increase in income. The results of this study support this statement because radiographers (15%) who were contemplating entering into the academic field, considered PG programmes as a means to improve their job prospects. According to Hoffman (2009: 14), self-actualisation,

improving social status and the expansion of knowledge were a few of the motivating factors for these individuals This concurs with the findings of this study where some of the participants (25%) indicated that they are considering pursuing PG programmes for personal growth and satisfaction. However, it was observed that these two criteria are associated with the minority of the participants. The majority of the participants comprised of participants who were not considering changes in their career paths nor in pursuing qualifications for self-gain. This suggests that PG education in radiography is not perceived as bearing any value in the clinical work environment.

A multitude of barriers were discovered in this study. These barriers ranged from the individual's personal situation to external institutional and dispositional factors. The barriers identified in this research were aligned to Cross's Model which states that these barriers can be divided into three main themes, namely, situational barriers, institutional barriers and dispositional barriers (Larson and Milana 2006: para. 9 line 6-10). These barriers negatively affected the participants' decision making process which corresponded with Larson and Milana (2006: para. 10 line 6) who argue that barriers can impede the path to participation.

The consensus of participants (75%) regarding situational barriers were the lack of time to add another commitment to their schedule which is occupied with managing work, family and friends. There are two types of stress that result from working on a dissertation, namely, the stress in the task and stress in the social sense (Myers 1999: 4). Stress in the social sense occurs when students are unable to socialize without the feeling of guilt that time could be better spent working on their studies, whilst stress in the task sense occurs when the time spent working on the studies makes them i feel that they are neglecting their friends and family (Myers 1999: 4).

Over half of the graduates who intend to pursue PG studies end up not doing so because lack of finances is the major obstacle (Anon 2015). This finding is supported by the results of this study where finance was identified as another situational barrier. 50% of the participants stated that it was too expensive to pursue PG programmes because they had to finance it themselves. They felt that their low

salaries would not allow them to add another expense to their lives. 20% of the participants were unsure about the cost involved and could not provide an informed decision on that aspect.

Regarding the above mentioned barriers, namely, lack of time and finances, it was perceived that these were generic responses that the participants believed would be barriers if they were considering to pursue a PG qualification. However, the majority of the participants were not considering pursuing a PG qualification, hence the true barriers may evolve upon the qualification being considered.

Regarding institutional and dispositional barriers, a multitude of barriers were identified regarding University B which manages the radiography programme in KZN. The barriers were identified from negative 'first-hand' experiences at the institution as well as negative comments from friends and colleagues. The barriers included problems with lecturers (45%), lack of communication (30%), negative past experiences (45%) at the institute and negative feelings towards the structure and curriculum (50%) of the courses. It was also found that unsupportive management (10%) in the work environment was a demotivating barrier and another barrier was the individual's own laziness (10%). The barriers experienced by radiographers were in accordance to Cross's Model which states that institutional barriers occur as a result of discouraging rules and practices created by educational institutions and dispositional barriers influencing their confidence towards success (Cross 1981, cited in Boeren 2009: 160). These barriers experienced are also consistent with the findings of Chopra *et al.* (2015: 222) who state that other apparent restraining forces perceived are insufficient mentoring and training, absence of free time and flexibility to satisfy family needs (Chopra *et al*. 2015: 222). The institutional barriers observed were noticed to vary inconsistently amongst the participants with only 15% of the participants experiencing enough negative feelings that if they were to pursue a PG qualification, they would prefer to do so at an institution outside of KZN. This suggests that the negative experiences varied between the participants with common grievances ranging between 30% to 50% of the participants.

5.2.6 Information

It is evident from the data that the participants' knowledge regarding the requirements and procedures of a PG programme in radiography is extremely minimal. The knowledge that they have is from negative word-of-mouth experiences (70%) from other individuals. It is evident that radiographers (40%) require transparent, comprehensible and easily accessible information regarding the structure, cost and support of a PG programme. These requirements are supported by Cross's Model which states that information on current education systems, support and services offered by the educational institutes are powerful in influencing the enablers and barriers experienced by individuals with regard to their decision-making process (Cross 1981, cited in Boeren 2009: 160). Additionally, this is in keeping with the findings of Glover *et al*. (2009: 14), who found that the potential participants required more information regarding the characteristics of a PG qualification to be readily available. The authors also found that the availability of early support strategies were also required by these potential students to assist in enhancing their confidence towards further education. It can be concluded that adult learners require constructive reasons behind instructions and not just instructions themselves. The results of this study also indicate that encouragement towards PG education is necessary at the undergraduate level.

5.2.7 Participation

Cross's Model states that participation may or may not occur depending on the answers to the previous factors (Cross 1981, cited in Boeren 2009: 160). This is evident from the data because a majority of the participants have a negative perception towards one or more of these factors. The participants (65%), who have no desire to pursue PG programmes in radiography currently or in the future, have a negative perception of the majority, if not all, of the factors in Cross's Model. The participants who do aspire to pursue PG programmes have difficulty with a few of Cross's factors which may change at a later stage and provide them with their desired capacity to pursue these programmes. It is apparent that all of Cross's factors, as illustrated in figure 1 and explained in steps A-G, aligned themselves

and provided the research participant who completed his/her doctorate with the desired foundation and motivation at the time to pursue their qualification.

The participants (95%) expressed that they require some sort of incentive to pursue PG programmes. The common incentives identified were an increase in salary (95%), potential growth (65%) within the field and the availability of a subsidy (35%). These findings align with the findings of a study carried out in the Edo and Lagos states of Nigeria which found that radiographers require remuneration and sponsorship as incentives to enrol in PG studies (Eze, Abonyi, Njoku, and Okurie 2012: 25). These incentives are also similar to those provided in another study performed in Nigeria where the health workers' salary is vastly dependent on their academic qualifications, particularly in the public sector (Ugwe *et al*. 2012: 118). The participants state that there are no incentives in radiography. The participants believe that in clinical radiography, salary improvement and growth can be achieved with an undergraduate qualification and years of experience only. This implies that these PG programmes will not improve their professional status. Contrary to this finding is the view of Pitout (2014: 1) who expresses that research encompasses the need for scientific evidence on which to create, improve or keep abreast of clinical practices and to raise an individual's professional status (Pitout 2014: 1). Other incentives recognized were academic field goals (15%) and personal gain or growth (25%). It is believed that a PG programme in radiography does provide these incentives and these goals can be achieved.

The findings of this study reveal that individuals require incentives to pursue PG programmes. In Nigeria, there has been an increase in the number of radiographers pursuing PG programmes because there have been modifications to the professional structure of radiography practice (Ugwe *et al*. 2012; 119). Some examples of the modifications include role extension, increased employment prospects and remuneration. These findings are in keeping with the results of this study which highlights the factors that are required to influence radiographers' decision making towards PG education in KZN. These positive results seen in Nigeria indicate that it is possible to generate changes to positively influence radiographers into pursuing PG programmes.

5.3 APPLICATION OF THE THEORETICAL FRAMEWORK

Cross's Chain-of-Response Model was theoretical framework chosen to gain an in-depth understanding of the problem regarding PG education in radiography. This model was utilized to identify the factors that influence radiographers' decision making with regard to PG education. Cross's Model was considered appropriate for this study because it is aimed at clarifying what drives certain people to participate in adult education and others not to participate (Larson and Milana 2006: para. 10 line 1). Boeren (2009: 154) states that the Chain-of-Response Model by Patricia Cross (1981) shows the complexity of the decision-making process endured before the final choice is made towards adult education.

As depicted in Figure 1, Cross's (1981) Chain-of-Response Model is a *'psychological framework/cycle which begins with an adult's self-evaluation and attitudes about education, considers his or her life transitions and the importance of goals and expectations for education to meet them, and concludes with the barriers and opportunities to be encountered as well as the information needed to proceed.'* (Ginsberg and Wlodkowski 2010: 31).

The steps in the cycle produced by Cross's Model were utilized as the framework behind the research questions formulated. These questions aimed to create an understanding of the participants' viewpoints regarding PG education while considering their past experiences, self-confidence, life transitions, information and goals and expectations.

The findings of this study were in keeping with the steps established in Cross's Model. The primary areas of concern highlighted in this study were the past negative educational experiences of the participants as well as the lack of opportunities that PG qualifications provide. Secondary areas of concern were identified from the participants' personal capacity. These were the lack of time, finance, support and family commitments which hindered them from pursuing these PG programmes. All these factors had a significant impact on radiographers'

decision-making with regard to PG education. The study also concurred with Cross's Model in highlighting that the decision-making process of adults regarding PG programmes is a psychological process. This psychological process highlights the fact that there are various steps and requirements to align with adults', needs and expectations to make a positive decision.

5.4 SUMMARY OF THE CHAPTER

In Chapter 5, the findings of the study on the factors that influence radiographers' decision-making with regard to PG education was discussed with reference to literature that either supported or refuted the study findings, and the relevance of the selected theoretical model to the findings. In the next chapter, the strengths and limitations of the study will be presented together with the recommendations and conclusions.

CHAPTER 6: CONCLUSION, LIMITATIONS AND RECOMMENDATIONS OF THE STUDY

6.1 INTRODUCTION

The aim of this study was to explore the factors influencing radiographers' decision-making with regard to PG education. This was achieved using Cross's Chain-of-Response Model as the theoretical framework. In this final chapter, the conclusions, limitations and recommendations from the findings of the study will be presented.

6.2 CONCLUSIONS

The study identified that the practicing radiographers in KZN exhibit high self-perceptions in their capabilities towards successfully completing PG programmes in radiography. However, many of the participants demonstrate little to no interest in pursuing these programmes. Their attitude and decision-making towards pursuing these programmes are negatively influenced by a multitude of factors such as:

- Enduring a negative learning experience in the past or have heard of negative learning experiences from friends and colleagues.
- The belief that PG qualifications in radiography will not result in career growth.
- A lack of time and family commitments.
- It would be a financial burden to outlay the funds required with no financial gain.
- A negative attitude towards the institution managing the radiography programme in KZN.

The findings revealed that the participants consider PG programmes in radiography to provide two opportunities. Firstly, it serves as a gateway into the academic field, and secondly, it provides the platform to allow radiographers to achieve personal growth and satisfaction. It was ascertained that incentives such as a monetary gain and/or a subsidy would be the strongest motivating factor to influence

radiographers' decision-making towards PG education. Improvements at the institutions managing the radiography programmes in KZN would reduce the participants' negativity towards these institutions and positively influence their decisions.

6.3 LIMITATIONS

The sample of the study was limited to three provincial hospitals and three private facilities in the eThekwini district and excluded facilities in the outlying areas of KZN. The study population was limited to qualified radiographers which excluded the experiences or beliefs of student radiographers, community service radiographers and qualified radiographers who are currently studying. The findings regarding educational experiences and work environment are specific to those individual experiences at the selected research settings and cannot be generalized to other settings regionally or nationally. Other regional and national settings may involve a different set of rules and regulations resulting in different experiences.

The smaller disciplines such as ultrasound and radiotherapy may not have been accurately represented in this study as only one participant volunteered in each field from the participating facilities. Confirmability was ensured by the researcher, however, the transcribed data has not been verified by an outside source which could reduce the confirmability of the study.

6.4 RECOMMENDATIONS

Based on the findings of this study, the following are recommendations to positively influence participants' decision-making towards PG education in radiography.

6.4.1 Legislation and policy

It is evident that the greatest barrier towards PG education in radiography is the lack of incentives. It is recommended that to have a positive influence on the decision-making process towards PG programmes in radiography, the legislation and policies guiding the management of the field of radiography should be reviewed. The changes that would strongly influence radiographers to pursue PG

programmes are the addition of incentives in legislation and policies. The two major incentives highlighted in this study are monetary incentives and the availability of subsidies. Considering that PG programmes do not result in career growth in the clinical field, a monetary reward such as an increase in salary would be viewed as growth in their careers. Therefore, it is recommended that amending the legislation and policies to include a monetary incentive would positively influence many radiographers to pursue PG degrees and enhance their future prospects. This change is achievable and has already occurred in other African countries as mentioned in the literature review.

Considering that individuals are not entirely aware of the cost of a PG qualification but they do believe that it is expensive, it would be difficult to understand the reason behind investing a large amount of money towards a PG qualification that is not going to result in a reward for their investment. Therefore, it is recommended that the legislation and policies be reviewed to include a subsidy for these programmes. This would positively influence academically inclined individuals to pursue these programmes for personal growth and achievement.

Pursuing a PG qualification is time consuming and must be added to busy work and family schedule. Therefore, it is recommended that study leave be granted to individuals to conduct their research. If there is no study leave, radiographers will have to take their annual leave which reduces time with family time.

6.4.2 Institutional

This study revealed that the experiences and beliefs of radiographers regarding the institution managing the radiography programmes in KZN were significantly negative. It was evident that the institution has played a major role in negatively influencing individuals' decision- making towards PG programmes. Therefore, it is recommended that the management of the institution acknowledge the findings of this study and investigate the source of these claims. The researcher believes that the negativities raised are legitimate because of the similarity of responses of participants from different departments. It is highly recommended that the findings

of this study should not be ignored but rather given serious consideration. The concerns brought to light from the findings of this study are believed to be resolvable. Improvements regarding the following are recommended:

- The institution's communication with students and potential students: timeous and clear communication is required.
- The availability of information regarding all programmes: provide in-depth and understandable information on programmes. A course guide providing detailed information on the requirements for a PG programme in radiography.
- The manner in which information is communicated: improve professionalism when communicating information. It must be remembered that the target students, who essentially are their clients, are adults and professionals in their field and would expect the same professionalism. This expectation would defer from undergraduate students who are enrolling straight from matric and who would be more 'childish' in their mannerisms.
- Lecturer stability: although difficult to control, improving the stability of lecturers is vital in positively influencing decision making.
- Improved support from the lecturers: a potential PG student would be an adult student who has a full time job and family responsibilities. Considering that a PG programme in radiography is a self-taught programme, it is recommended that these students be provided with the appropriate support necessary to guide them through this process. This aspect links with information improvement. The type of support offered is required to be transparent. This would ensure that the student understands the role of a supervisor. This could be a part of the course guide.
- Improved course structure planning: change during a programme results in a negative perception of an institution which resonates with individuals when they need to make a decision about further studies. Although unforeseen situations do arise, it is recommended that the planning of these programmes be improved. The current process within the institution is not known; however, it is recommended that these processes be reviewed for improvements.

6.4.3 Further research

Further exploratory qualitative studies, followed by quantitative studies with a questionnaire developed from the findings of the qualitative study, should be conducted. These quantitative studies would provide a reasonable means to reach the outlying facilities in KZN which would improve the knowledge and understanding of this phenomenon by creating a large scale sample population.

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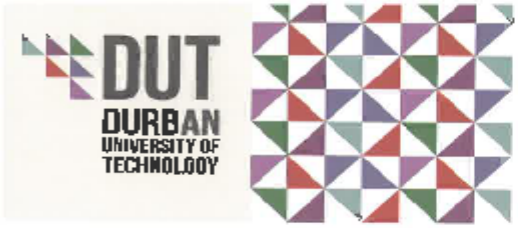
APPENDICES

Appendix 1: University ethics clearance certificate



Institutional Research Ethics Committee
Research and Postgraduate Support Directorate
1st Floor, Berwyn Centre
Gate 1, Steve Biko Campus
Durban University of Technology

PO Box 1334, Durban, South Africa, 4000

Tel: 031 373 2375
Email: [illegible]
http://www.dut.ac.za/research/institutional_research_ethics

www.dut.ac.za

30 April 2019

Mr I Mohabir
Flat 09, Castle Rock
97 Bristow Crescent
Mayville
4091

Dear Mr Mohabir

Factors influencing radiographer's decision making in relation to post graduate education.
Ethical Clearance number: IREC 033/19

The Institutional Research Ethics Committee acknowledges receipr of your gatekeeper permission letter.

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: Permission letter to the District Manager

83 Jan Smuts Highway
Mayville
Durban
4091

Dear Sir/Madam

REQUEST FOR PERMISSION TO CONDUCT STUDY

I am currently registered as a student for Master of Health Sciences in Radiography at the Durban University of Technology in the Department of Radiography. I would like to carry out a research project towards a Masters Degree in Radiography.

The proposed title of my project is: Factors influencing radiographer's decision making in relation to postgraduate education.

The primary state hospitals intended for data collection are Inkosi Albert Luthuli Hospital, King Edward Hospital and Addington hospital. Permission will also be requested to collect data from private practices such as Lakesmit and Partners and Drs Jackpersad and Partners. One-on-one in-depth interview method will be used to obtain data. One-on-one in-depth interview method will be used to obtain data. The obtained data will be transcribed and the transcribed data will then be analysed to identify themes and concepts. This study is not structured to alter the daily workflow in any way. I intend to attain the rationale behind the shortage of postgraduate registrations in radiography. This will be of immense value in order to create credible knowledge on the subject in order to possibly improve on the number of future postgraduate registrations.

My research proposal is attached for your perusal. Your support and permission (in writing) to perform this study at KwaZulu-Natal hospital facilities will be highly appreciated.

Yours sincerely

ISHAN MOHABIR

Student Details
Email: ishan.mohabir@gmail.com
Cell: 0837932357

Mrs S Naidoo
Email: nalenen@dut.ac.za
Work: 031-373 2875

Appendix 2b: Approval letter from the District Manager of eThekwini Health District

health
Department:
Health
PROVINCE OF KWAZULU-NATAL

DIRECTORATE: CORPORATE SERVICES

83 King Cetshwayo Highway
Mayville, Durban, 4001
Tel: 031 240 5455 Email:
www.kznhealth.gov.za

ETHEKWINI HEALTH DISTRICT OFFICE

27th March 2019

Dear
Re: Permission To Conduct Research at eThekwini District Facilities.

This letter serves to confirm that your application to conduct the research study titled, "**Factors influencing radiographer's decision making in relation to post graduate education"** in the eThekwini district at the following health care facilities has been recommended:

1. Inkosi Albert Luthuli Hospital,
2. King Edward Hospital and
3. Addington hospital

Kindly upload this letter together with your application as required to the Health Research and Knowledge Unit for the KZN Department of Health for Approval.

Please also note the following:

1. This research project should only commence after final approval by the KwaZulu-Natal Health Research and Knowledge Unit, and full ethical approval, has been granted,
2. That you adhere to all the policies, procedures, protocols and guidelines of the Department of Health with regards to this research.
3. All research activities must be conducted in a manner that does not interrupt clinical care at the health care facility,
4. Ensure that this office is informed before you commence your research
5. The District Office/Facility will not provide any resources for this research
6. All logistical details must be arranged with the CEO/medical manager /operational manager of the facility,
7. You will be expected to provide feedback on your findings to the District Office/Facility

Yours sincerely

_____
Dr N Green(District Research Coordinator)
Pp Ms. T. P. Msimango
Chief Director (Acting)
eThekwini Health District

Appendix 3a: Letter of permission to the KZN Department of Health

Department of Health KwaZulu-Natal
333 Langalibalele Street
Pietermaritzburg
3200

Dear Sir/Madam

REQUEST FOR PERMISSION TO CONDUCT STUDY

I am currently registered as a student for Master of Health Sciences in Radiography at the Durban University of Technology in the Department of Radiography. I would like to carry out a research project towards a Masters Degree in Radiography.

The proposed title of my project is: Factors influencing radiographer's decision making in relation to postgraduate education.

The primary state hospital intended for data collection are Inkosi Albert Luthuli Hospital. Permission will also be requested to collect data from private practices such as Lakesmit and Partners and Drs Jackpersad and Partners. One-on-one in-depth interview method will be used to obtain data. One-on-one in-depth interview method will be used to obtain data. The obtained data will be transcribed and the transcribed data will then be analysed to identify themes and concepts. This study is not structured to alter the daily workflow in any way. I intend to attain the rationale behind the shortage of postgraduate registrations in radiography. This will be of immense value in order to create credible knowledge on the subject in order to possibly improve on the number of future postgraduate registrations.

My research proposal is attached for your perusal. Your support and permission (in writing) to perform this study at KwaZulu-Natal hospital facilities will be highly appreciated.

Yours sincerely

ISHAN MOHABIR

Student Details
Email: ishan.mohabir@gmail.com
Cell: 0837932357

Mrs S Naidoo
Email: nalenen@dut.ac.za
Work: 031-373 2875

Appendix 3b: Approval letter from the KZN Department of Health

health
Department:
Health
PROVINCE OF KWAZULU-NATAL

Physical Address: 330 Langalibalele Street, Pietermaritburg
Postal Address: Private Bag X9051
Tel: 033 395 2805/ 3189/ 3123 Fax: 033 394 3782
Email: [illegible]
www.kznhealth.gov.za

DIRECTORATE:
Health Research & Knowledge Management

NHRD Ref: KZ_201903_036

Dear Mr I Mohabir
DUT

Approval of research

1. The research proposal titled **'Factor's influencing radiographer's decision making in relation to post graduate education'** was reviewed by the KwaZulu-Natal Department of Health.

   The proposal is hereby **approved** for research to be undertaken at Addington, King Edward VIII and Inkosi Albert Luthuli Central Hospital.

2. You are requested to take note of the following:
   a. Kindly liaise with the facility manager BEFORE your research begins in order to ensure that conditions in the facility are conducive to the conduct of your research. These include, but are not limited to, an assurance that the numbers of patients attending the facility are sufficient to support your sample size requirements, and that the space and physical infrastructure of the facility can accommodate the research team and any additional equipment required for the research.
   b. Please ensure that you provide your letter of ethics re-certification to this unit, when the current approval expires.
   c. Provide an interim progress report and final report (electronic and hard copies) when your research is complete to **HEALTH RESEARCH AND KNOWLEDGE MANAGEMENT, 10-102, PRIVATE BAG X9051, PIETERMARITZBURG, 3200** and e-mail an electronic copy to hrkm@kznhealth.gov.za

For any additional information please contact Mr X. Xaba on 033-395 2805.

Yours Sincerely

Dr E Lutge
Chairperson, Health Research Committee
Date: 10/04/19

Fighting Disease, Fighting Poverty, Giving Hope

Appendix 4a: Letter of permission to the CEO of the Hospital

The CEO
XXXX Hospital

Dear Sir/Madam

REQUEST FOR PERMISSION TO CONDUCT STUDY

I am currently registered as a student for Master of Health Sciences in Radiography at the Durban University of Technology in the Department of Radiography. I would like to carry out a research project towards a Masters Degree in Radiography.

The proposed title of my project is: Factors influencing radiographer's decision making in relation to postgraduate education.

Permission is sought to collect data from your facility. One-on-one in-depth interview method will be used to obtain data. The obtained data will be transcribed and the transcribed data will then be analysed to identify themes and concepts. This study is not structured to alter the daily workflow in any way. I intend to attain the rationale behind the shortage of postgraduate registrations in radiography. This will be of immense value in order to create credible knowledge on the subject in order to possibly improve on the number of future postgraduate registrations.

My research proposal is attached for your perusal. Your support and permission (in writing) to perform this study at KwaZulu-Natal hospital facilities will be highly appreciated.

Yours sincerely

ISHAN MOHABIR

Student Details
Email: ishan.mohabir@gmail.com
Cell: 0837932357

Mrs S Naidoo
Email: nalenen@dut.ac.za
Work: 031-373 2875

Appendix 4b: Approval letter from the CEO of the Addington Hospital

health
Department:
Health
PROVINCE OF KWAZULU-NATAL

ADDINGTON HOSPITAL

P.O. BOX 977
DURBAN
4000
Tel: 031-327-2970 Email: reshma.boodhai@kznhealth.gov.za
www.kznhealth.gov.za

OFFICE OF THE CHIEF EXECUTIVE OFFICER

Reference: *9/2/3/R*

Date: 28th March 2019

Principal Investigator:
- **Mr I Mohabir**

PERMISSION TO CONDUCT RESEARCH AT ADDINGTON HOSPITAL: "FACTORS INFLUENCING RADIOGRAPHER'S DECISION MAKING IN RELATION TO POST GRADUATE EDUCATION"

I have pleasure in informing you that permission has been granted to you by Addington Hospital Management to conduct the above research.

Please note the following:

1. Please ensure that you adhere to all the policies, procedures, protocols and guidelines of the Department of Health with regards to this research.
2. This research will only commence once this office has received confirmation from the Provincial Health Research Committee in the KZN Department of Health.
3. Please ensure this office is informed before you commence your research.
4. Addington Hospital will not provide any resources for this research.
5. You will be expected to provide feedback on your findings to Addington Hospital.

DR M NDLANGISA
HOSPITAL MANAGER
ADDINGTON HOSPITAL

Appendix 4c: Approval letter from the CEO of Dr Jackpersad and Partners

JACKPERSAD
& PARTNERS INC.
SPECIALIST DIAGNOSTIC RADIOLOGISTS
DIAGNOSTIC 20yrs EXCELLENCE

3rd Floor Maxwell Centre
71/73 Ismail C Meer St (Lorne St), Durban
Tel : 031-365 2100
Fax : 086 272 1976
E-mail: info@jrp.co.za
www.jackpersad.co.za

25th OCTOBER 2019

THE SUPERVISOR
MRS S NAIDOO
HEALTH SCIENCES DEPARTMENT
NUCLEAR MEDICINE

RE: MASTERS PROGRAMME – PRACTICE PERMISSION LETTER FOR ISHAN MOHIBIR

Dear THUTU

This letter serves to confirm that Ishan Mohabir 8709125103083 ID Number is currently employed as a Nuclear Medicine Radiographer at Drs Jackpersad and Partners Inc, Westridge Xray Department.

Permission has been granted for Ishan Mohabir to conduct research on his research topic which is "Factors Influencing Radiographer Decision Making towards Post Graduate Education in Radiography" at Jackpersad and Partners Inc.

Yours Sincerely

Dr K Daji: Director

Appendix 4d: Approval letter from the CEO of Inkosi Albert Luthuli Central Hospital

Ursula A. John <Ursula.John@ialch.co.za> May 20, 2019, 10:55 AM

to me

Hi there

Your research has been approved.

Regards

Ursula

Appendix 4e: Approval letter from the CEO of King Edward VIII Hospital

health
Department:
Health
PROVINCE OF KWAZULU-NATAL

OFFICE OF THE HOSPITAL CEO
KING EDWARD VIII HOSPITAL

Private Bag X02, CONGELLA, 4013
Corner of Rick Turner (Francois Road) & Sydney Road
Tel: 031 3603853, Fax 031 2061457, Email: [illegible]
www.kznhealth.gov.za

Ref.: KE 2/7/1/ (28/2019
Enq.: Mrs. R. Sibiya
Research Programming

27 May 2019

Mr. I Mohabir
Flat 09 Castle Rock
97 Bristow Crescent
MAYVILLE
4091

Dear Mr. Mohabir

Protocol: "Factors Influencing Radiographers' decision making in relation to post graduate education"

Your request to conduct research at King Edward VIII Hospital has been approved.

Please ensure the following:

- That King Edward VIII Hospital receives full acknowledgment in the study on all publications and reports and also kindly present a copy of the publication or report on completion.

Before commencement:

- Discuss your research project with our relevant Clinical Head/Assistant Nursing Manager
- Sign an indemnity form at Room8, CEO's Complex, Admin. Block.

The Management of King Edward VIII Hospital reserves the right to terminate the permission for the study should circumstances so dictate.

Yours faithfully

SUPPORTED/NOT SUPPORTED

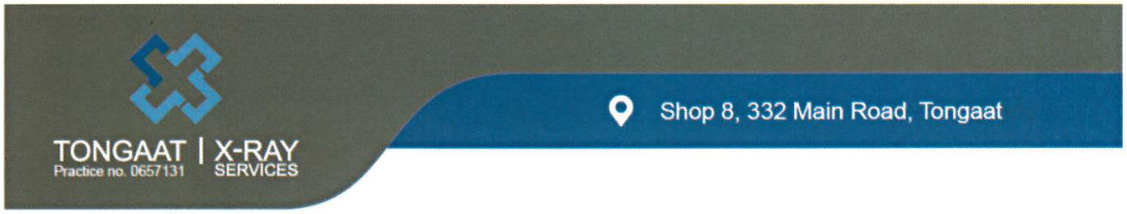
24/5/2019

DR. S. RAMJI
ACTING MEDICAL MANAGER

DATE

Fighting Disease, Fighting Poverty, Giving Hope

Appendix 4f: Approval letter from the CEO of Tongaat X-ray Services



14 August 2019

Good day

I Kuben Munsamy give consent to Mr Ishan Mohabir(student no: 20430918) to do research at Tongaat X-ray Services.

Kuben Munsamy

Kuben Munsamy
Director

kuben@tongaatxrayservices.co.za
081 553 4076 / 084 8151 463
www.tongaatxrayservices.co.za

Appendix 5: Letter of information for the interview participants

Thank you for agreeing to participate in this study.

Title of the Research Study: Factors influencing radiographer's decision making in relation to postgraduate education.

Principal Investigator/s/researcher: Mr Ishan Mohabir (B: Tech: Radiography).

Co-Investigator/s/supervisor/s: Supervisor: Mrs S. Naidoo (Master of Applied Science), Co-supervisor: Prof M.N. Sibiya (D Tech: Nursing).

Brief Introduction and Purpose of the Study: There is scarcity of postgraduate individuals in radiography in KwaZulu-Natal (KZN). This results in a deficiency of appropriately qualified individuals who are required for the training and education of students both at the Durban University of Technology and in the clinical environment, especially for the BHSc in Radiography which is a four-year degree qualification. A consequence of not finding solutions for this situation could be a deficiency in the professional and economic growth of the field of radiography in this country. Therefore, the aim of this study is to utilize Cross's chain of response theoretical framework to explore the factors influencing radiographer's decision making in relation to postgraduate education.

Outline of the Procedures: You are kindly requested to participate in an interview session that will be conducted by the researcher. The interview will be undertaken at the place and time that is convenient to you. The interview session will take between 20 minutes to 30 minutes. Permission is sought to record the interview for record purposes.

Risks or Discomforts to the Participant: There are no foreseeable risks or discomfort by participating in this study.

Benefits: This study will add new knowledge regarding PG education in radiography in order to create awareness to the relevant stakeholders regarding the barriers experienced by radiographers regarding PG education in radiography.

Reason/s why the Participant May Be Withdrawn from the Study: You are free to withdraw for the study at any given time without any form of penalty.

Remuneration: There is no remuneration for participating in the study.
Costs of the Study: There is no cost associated with participating in the study.

Confidentiality: You are assured that your responses during the interview sessions will be kept confidential. The informed consent form, demographic data and interview answers will be kept in separate sealed boxes; therefore, will not be linked to your responses.

Research-related Injury: There is no anticipated risk of injury.

Persons to Contact in the Event of Any Problems or Queries: Please contact Mr I. Mohabir on (083 793 2357), Supervisor- Ms S. Naidoo on (031-373 2875) or the Institutional Research Ethics Administrator on 031-373 2375. Complaints can be reported to the Director: Research and Postgraduate Support, Prof Carin E Napier on 031-373 2326/2577 or carinn@dut.ac.za

Appendix 6: Template for informed consent

INSTITUTIONAL RESEARCH ETHICS COMMITTEE (IREC)
CONSENT

Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, I Mohabir about the nature, conduct, benefits and risks of this study.
- 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 / Right Thumbprint**

I, Ishan Mohabir herewith confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.

Ishan Mohabir

_____	_____	_____
Full Name of Researcher	**Date**	**Signature**

_____	_____	_____
Full Name of Witness	**Date**	**Signature**

Appendix 7a: Demographic data for the interview participants

SECTION A:						
A1	Please state your age in years and months?					
A2	Indicate you gender?				Female	Male
A3	Which Discipline do you belong to?	D	N/M		T	US
A4	Are you married?				Yes	No
A5	How many children do you have?					
A6	Do you currently work in public or private sector?				Public	Private
A7	What is your current highest level of qualification?					
A8	In which year did you complete this qualification?					

Appendix 7b: Interview guide

Grand tour question

What factors influence your decision making in relation to postgraduate education?

For those who have not completed a postgraduate course n radiography.

Probing questions

1.0 Can you describe what your educational experience in radiography has been like so far? After their response……If they have not responded sufficiently ……. follow up questions would be…. describe the positive and negative aspects of your experience at university and at the clinical training centers.

2.0Can you describe your ideal career goals in radiography? In your opinion, will a postgraduate course in radiography help you achieve these goals or can you achieve these goals without this course? Explain why?

3.0What have you heard from the experiences of your friends /colleagues in terms of the institutional barriers (inconvenient class schedules, too much work, too many assessments, rude lecturers, lecturers not competent, lack of support) that they have experienced

4.0Can you describe your self confidence in pursuing and succeeding in postgraduate education in radiography?

5.0In your view, describe the personal, institutional and legislative changes that will need to be implemented in order to influence you into pursuing a postgraduate education in radiography?

Any other relevant questions based on the participants' responses will be asked.

FOR THOSE WHO HAVE COMPLETED A POSTGRADUATE DEGREE IN RADIOGRAPHY.

1.0 Can you describe what your educational experience in radiography has been like so far? After their response……If they have not responded sufficiently ……. follow up questions would be…..how your undergraduate was and postgraduate learning experiences --- at university and at the clinical training centers. …. How did those experiences differ?

2.0 Can you describe your ideal career goals in radiography? … and in your opinion, has the postgraduate course that you completed in radiography allowed you to achieve these goals as yet or has it brought you closer to these goals or could you achieve these goals without? If no, explain why? If yes, describe how?

3.0 In your opinion and with your current experience regarding the current postgraduate education system and processes in radiography, can any improvements be made? If yes or no, explain.

4.0 In your view, describe the personal, institutional and legislative changes that will need to be implemented in order to influence you into pursuing a further postgraduate education in radiography?

Any other relevant questions based on the participants' responses will be asked.

Appendix 8: Certificate from the professional editor

EDIT A SHAH (PTY) LTD
REG. NO. 2018/353171/07

10 MAGENTA PLACE
CLARE ESTATE
4091
DURBAN
Tel: 0670937403
Cell: 0834637758
e-mail: tharadevishah@gmail.com

EDITING CERTIFICATE

FACTORS INFLUENCING RADIOGRAPHERS' DECISION-MAKING WITH REGARD TO POSTGRADUATE EDUCATION / ISHAN MOHABIR

I am a freelance editor specialising in proofreading and editing academic documents. I confirm that I have edited this dissertation and the references for clarity, language and layout. I used the track changes/review option in Microsoft Word. I returned the document to the author:

- Ensuring that spelling, grammar, punctuation, line spacing, and font is consistent and correct.
- Checking the List of References for consistency and style and checking entries against online databases to check accuracy of spelling and reference detail.
- Ensuring that all references in the text appear in the List of References and vice versa.

Resolving and accepting the changes in the text and references is the responsibility of the author.

My Qualifications and Experience:

- 30 years' experience as a research librarian at the University of KwaZulu-Natal and the Durban University of Technology.
- 16 years' experience in editing theses, research reports, teaching materials, journal articles, newsletters.
- Scribing, recording and transcriptions for workshops, seminars, debates.
- Facilitating and lecturing at Workers' College and Durban University of Technology.
- Master's in Library & Information Science, University of KwaZulu-Natal.
- B.Bibl.(Hons) in Library & Information Science, University of South Africa
- Higher Diploma in Education, University of South Africa.
- B.A. University of Durban-Westville

Thara Devi Shah (Director) 03 NOVEMBER 2019

Appendix 9: Plagiarism report