A MODEL TO ENHANCE JOB SATISFACTION FOR RADIOGRAPHERS EMPLOYED AT THE SELECTED PUBLIC TERTIARY HOSPITALS IN THE GAUTENG PROVINCE, SOUTH AFRICA

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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is entirely my own and not of any other person, unless explicitly acknowledged (including citation of published and unpublished sources).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.

_____ _____

Signature of student Date

Approved for final submission

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Abstract

Background

In South Africa, there is maldistribution of health care professionals between the public and the private sector and between rural and urban areas. Radiographers are no exception to this maldistribution as only 29% are employed by the public sector and 70% are employed by the private sector. Therefore, there is a need to attract and retain radiographers in the public sector to deliver efficient imaging and therapeutic services. Hence, job satisfaction has been identified as one of the important factors in attracting and retaining health care professionals.

Aim

The aim of this study was to explore the role of intrinsic and extrinsic factors of job satisfaction amongst radiographers employed by public tertiary hospitals in the Gauteng province and develop a model to enhance job satisfaction and improve retention in the public sector.

Methodology

Exploratory sequential mixed methods design was used to conduct this study in two phases. Phase 1 was conducted through focus group discussions with five purposefully selected radiographers employed by public tertiary hospitals in the Gauteng province. The findings of Phase 1 were used to develop a questionnaire for conducting a survey in Phase 2 of the study. A self-administered questionnaire was used to collect data from participants in four selected public tertiary hospitals. A total of 182 questionnaires were completed, returned and analysed. The results of the two phases were integrated. Thematic analysis of data was used to identify themes from qualitative data. SPSS, version 23 and statistical analysis tests were used to analyse quantitative data.

Findings

The results from the two phases of data collection showed that the lack of career pathing was the intrinsic factor that affected job satisfaction. There were four extrinsic factors that affected job satisfaction, namely, government policies, unsatisfactory remuneration, working conditions and the inefficiency of the human relations department. The factors that were identified by participants as having a negative effect on job satisfaction were associated with a greater intent to leave and those that had a positive effect were associated with organizational commitment. The outcome of the study led to the development of a model to enhance job satisfaction for radiographers.

Key words: Extrinsic factors, intrinsic factors, job satisfaction, radiographers.

Dedication

This study is dedicated to my family and friends who have shown enormous support during this very daunting journey of PhD studies. To my late grandparents, Mr Mthilo Khoza, a security guard and Ms Lindeni Kubheka, a domestic worker, who entrenched the value of education at an early age which has guided me to this point. To both sets of parents, Mr and Mrs. Khoza and Mr and Mrs. Mdakane who have continuously motivated me to improve myself and taught me that nothing was impossible. To my surviving grandmother, maMthabela Khoza. Thank you.

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Glossary of terms

Autonomy: refers to freedom provided to employees to take decisions in their workplace or that affect their work (Human Resources Dictionary 2019: 1).

Career development: refers to a series of activities that are used to develop an employee's career in any organisation. This development can either be inter-organizational or intra-organizational, but must involve acquiring new skills, increased responsibility and it is directly linked to an employee's goals (Human Resources Terms 2018: 1).

Extrinsic factors: are the elements of job satisfaction that are affected by outside forces and if not properly monitored results in job dissatisfaction (McGrath and Bates 2013: 66).

Infrastructure: the basic physical or organisational structures needed for operations of an enterprise (Oxford Dictionary 2010: 599).

Intrinsic factors: the elements of job satisfaction that originate within an employee and it is known to enhance motivation (McGrath and Bates 2013: 66).

Job satisfaction: is a positive emotional state resulting from recognition in an individual's job (Suarez *et al*. 2017: 31).

Maldistribution: uneven or inefficient distribution (Oxford Dictionary 2010: 875). In this study the term maldistribution would be used for the uneven distribution of radiographers between the public and the private sector.

Private sector: a business that is managed by independent companies rather than the government (Oxford Dictionary 2010: 937). In this study, the term private sector was used to describe the private hospitals.

Public sector: the part the economy that is controlled by the state (Oxford Dictionary 2010: 937). In this study, the term public sector was used to describe the hospitals that are run by the government.

Radiographer: for the purposes of this study, the term radiographer was used to describe any person employed for medical imaging purposes such as diagnostic radiography, radiation therapist, nuclear medicine, mammography and ultrasonography.

Remuneration: is the pay that is received by an employee in an organisation for the work done for that particular organisation (Oxford Dictionary 2010: 1371).

Working conditions: working conditions are considered to be the core of paid work which include working hours, lunch breaks, salaries, physical conditions and mental strength required to complete the task (International Labour Organization 2018:1). For the purpose of this study, working conditions referred to the physical conditions at work.

Working hours: the period of the day or night during which work is done by employees in any organization (Oxford Dictionary 2010: 937).

Workload: the work done by an employee in any organisation (Oxford Dictionary 2010: 937).

List of acronyms

Acronym	Full word/sentence
CHBAH	Chris Hani Baragwanath Academic Hospital
CMJAH	Charlotte Maxeke Johannesburg Academic Hospital
CPD	Continued Professional Development
DR	Diagnostic Radiographer
DGMAH	Dr George Mukhari Academic Hospital
FGDs	Focus Group Discussions
GDH	Gauteng Department of Health
GDP	Gross Domestic Product
GP	Gauteng Province
GOV	Government
GR	Group
HIV	Human Immunodeficiency Virus
HR	Human Resources
HRH	Human Resources for Health
ITL	Intention to leave
KZN	KwaZulu-Natal
MM	Mammography Radiographer
NCS	National Core Standards
NHI	National Health Insurance
NMR	Nuclear Medicine Radiographer
OECD	Organisation for Economic Cooperation and Development
OSD	Occupational Specific Dispensation
PHSDSBC	Public Health and Social Development Sectoral Bargaining Council
PHC	Primary Health Care
PMDS	Performance Management and Development System
RT	Radiation Therapist

Acronym	Full word/sentence
RWOPS	Remuneration Work Outside Public Service
SBAH	Steve Biko Academic Hospital
SDGs	Sustainable Development Goals
TH	Tertiary hospital
UK	United Kingdom
US	Ultra-sonographer
USA	United States of America
WHO	World Health Organization

CHAPTER 1: OVERVIEW OF THE STUDY

1.1 INTRODUCTION AND BACKGROUND TO THE STUDY

Currently, South Africa has an estimated population of 55 million citizens, with an estimated unemployment rate of 27% (Department of Labour 2016: 3). Consequently, 80% of the population rely on the public sector for their health care needs (Kalipeni, Semu and Mbilizi 2012: 155). However, the distribution of health care professionals and the distribution of the gross domestic product (GDP) is not aligned to the needs of the majority of citizens. For example, the private sector has a higher percentage of health care professionals than the public sector (Coetzee *et al*. 2013: 164). An estimated 38% of general practitioners, 55% of medical specialists and 41% of registered nurses were employed by the private sector (Coetzee *et al*. 2013: 164). Statistics indicate that the Gauteng province has the highest number of private hospitals than any other province in the country (Matsebula and Willie 2006: 32). Therefore, the maldistribution of health care professionals between the public and private sectors is more prominent in this province. Currently, there is a maldistribution of radiographers between the public sector (29%) and the private sector (70%) (Department of Health 2011: 31).

The maldistribution of health care professionals between the public and private sectors, and between the urban and rural areas has been acknowledged by the Department of Health (Department of Health 2017: 13). The highest percentage of radiographers were reported to have left the public sector for the private sector in the Gauteng province (Khoza 2017: 58). The shortage of radiographers in the public sector has resulted in longer waiting time for patients to receive medical attention (Department of Health 2010: 3). Health care professionals employed by the public sector have also reported heavier workloads resulting from shortage of staff (Mokoka *et al*. 2010: 4; Coetzee *et al*. 2013: 164).

The South African government has introduced various policies to address concerns raised by patients and challenges faced by health care professionals. For health care professionals, the Department of Health introduced the Occupational Specific Dispensation (OSD) in different stages. It was introduced in 2007 for nurses, and in 2010 for allied health care professionals. The objectives of the OSD were to introduce career pathing opportunities based on competencies, experience and performance (Public Health and Social Development Sectoral Bargaining Council 2010:3). Existence of a clear career

structure is known to enhance employee commitment because it helps employees reach their career goals, acquire new skills and offer financial incentives (Weng *et al.* 2010: 392). Therefore, the introduction of OSD should have enhanced organizational commitment amongst radiographers employed by public hospitals.

To address issues such as long waiting times raised by patients, the Department of Health introduced the National Core Standards (NCS) for Health Establishment in South Africa in 2011. Domain number three of the National Core relates to clinical support services and requires managers of x-ray departments to monitor waiting times and provide diagnostic x-rays within agreed times (Department of Health 2011: 27). The NCS are aimed at improving the quality of health care services in South Africa. They would have achieved this by developing a common definition for quality of care and through the assessments of health institutions to identify gaps and to recognise their strengths (Department of Health 2011: 8).

The NCS are divided into seven domains that address different dimensions of delivering quality of care. These domains are: 1. Patient Rights; 2. Patient Safety, Clinical Governance and Care; 3. Clinical Support Services; 4. Public Health; 4. Leadership and Corporate Governance; 5. Operational Management; 7. Facilities and Infrastructure (Department of Health 2011:10).

In addition, the Department of Health is in the process of implementing National Health Insurance (NHI). The aim of the NHI is to reduce inequalities and challenges caused by funding and provision of health services in both the public and private sectors, improve access to quality health care and better health outcomes across all socio-economic groups through improved coverage (Department of Health 2017: 19). Hence, the aim of this research was to develop a model which can be used to retain radiographers in public tertiary hospitals in the Gauteng province, to address maldistribution and inefficiencies.

Models to enhance job satisfaction with the aim of retaining health care professionals have been developed in countries such as North America and the United Kingdom (UK) (Cowin *et al*. 2008; Probst and Griffiths 2009). In South Africa, there is no such model developed for health care professionals in the radiography profession. The current study will bridge this gap by developing a model to enhance job satisfaction for radiographers employed by public tertiary hospitals and help in reducing the maldistribution.

The radiography profession has five disciplines whose role is to provide imaging and therapeutic needs of patients in any hospital. The five disciplines are diagnostic radiography, radiation therapy, nuclear medicine radiographers, mammography radiography and ultra-sonographers. The role of diagnostic radiographers is to provide a variety of diagnostic imaging procedures such as computed tomography, general x-rays and magnetic resonance imaging. Whereas radiation therapists roles entails developing treatment plans and overseeing the administration of radiotherapy for patients. In performing their duties, radiographers collaborate with oncologists to plan radiotherapy treatment for cancer patients. Similarly, nuclear medicine radiographers work with radiologists in administering radioactive pharmaceuticals to therapeutic and diagnostic imaging purposes. The mammography radiographers are at the forefront of imaging breasts to identify various pathologies that could occur within the breast. Lastly, ultra-sonography is the only discipline that does not use radiation, rather sound waves to provide diagnostic imaging for patients with various pathologies.

1.2 PROBLEM STATEMENT

With regard to the maldistribution of health care professionals, the WHO in 2015 introduced the Global Strategy on Human Resources for Health (HRH): 2030. The strategy has four objectives which had to be achieved by 2030. The first objective was to maximize performance, quality and impact of the health workforce through evidence-informed policies on HRH, contributing to healthy lives and well-being, effective health coverage, resilience and strengthened health systems at all levels (WHO 2015: 15). The set targets were that all countries should have established accreditation mechanism for health institutions by 2020. In 2030 the countries should have progressed to address the inequalities of health care professionals. The last target was that all the countries should have improved success rates in medical and nursing schools (WHO 2015: 15).

The second objective was to ensure that adequate investment is made in the HRH, so that the current and future needs of the population are covered to address shortages and maldistribution and improve health outcomes (WHO 2015: 23). The set target for 2030 is that all countries should reduce their dependence on foreign trained health care professionals and mutual agreements would have increased the support in educational development. The Sustainable Development Goals (SDGs) would have reduced barriers in access to health care, increased financing of health care, increased retention and recruitment of health care professionals.

The third objective was to ensure that health institutions at subnational, national, regional and global level have policies to ensure effective leadership and governance (WHO 2015: 29). The set target for this objective by 2020 was that all countries should have HRH responsible for developing and monitoring policies and regulatory mechanisms to promote patient safety and adequate oversight of the private sector (WHO 2015: 29).

The fourth objective of the HRH strategy was designed to strengthen data on the human resources for health for monitoring and accountability of national and regional strategies (WHO 2015: 33). The set target for 2020 was that all countries would have made progress to establish registries to track health workforce stock, education, distribution, flows, demands, capacity and remuneration of health care professionals. Furthermore, that all countries should share human resources for health data through national health work force accounts and submitting the results to the World Health Organisation (WHO 2015: 33). The requirement for this by national governments was to have policies to collect, report, analyse and use reliable workforce data to inform transparency and accountability and to enable public access to different levels of decision making (WHO 2015: 35).

According to this strategy, health workers are inadequate unless they are equitably distributed and accessible by the population, possess the relevant competency, are motivated to deliver quality care and adequately supported by the health system (WHO 2015: 1). Hence, the WHO has recommended that policy makers in respective countries develop policies to shape the health labour markets. The following policies are recommended by the World Health Organization (WHO 2015: 13):

- *Policy to regulate the private sector that will assist in managing dual practice, improve quality of training and to enhance service delivery.*
- *Policy on production that will ensure the enrolment of students in the health sector, training of teaching staff and the availability of infrastructure and material.*
- *Policy to address inflows and outflows of health care professionals which will address migration and emigration, to attract unemployed health care professionals and finally to bring back health care professionals into the health care sector.*
- *Policy to address maldistribution and inefficiencies which will assist in improving productivity and performance, improve the skill mix composition and finally retain health care professionals in underserved areas*.

According to the WHO (2015: 1), health workers are equitably distributed and accessible by the population if they possess the relevant competency, are motivated to deliver quality care and adequately supported by the health system. Thus, healthcare professionals can be retained if they are satisfied in their job (Klopper *et al.* 2012: 693). Currently, there is a maldistribution of radiographers between the public and the private sector in South Africa. Therefore, the South African National Department of Health is not yet aligned with the WHO's Global Strategy on Human Resources for Health (HRH): 2030. Hence, the need to develop a model to enhance job satisfaction for radiographers.

1.3 AIM OF THE STUDY

The aim of this study was to explore the role of intrinsic and extrinsic factors of job satisfaction amongst radiographers employed by public tertiary hospitals in the Gauteng province to develop a model to enhance job satisfaction and ultimately improve retention in the public sector.

1.4 OBJECTIVES OF THE STUDY

The objectives of the study were to:

- Determine the pattern of job satisfaction among radiographers.
- Identify the role of the working environment on job satisfaction.
- Explore the influence of human factors on job satisfaction.
- Evaluate the role of current policies introduced by the Department of Health on job satisfaction.
- Explore the effect of intrinsic and extrinsic factors on job satisfaction.
- Develop a model to be used by tertiary hospitals to enhance job satisfaction for radiographers.

1.5 RESEARCH QUESTIONS

The study was guided by the following questions:

1.5.1 Primary question

What are the intrinsic and extrinsic factors that influence job satisfaction for radiographers employed by public tertiary hospitals?

1.5.2 Secondary questions

- How do intrinsic and extrinsic factors affect job satisfaction?
- How do the policies recently introduced by the Department of Health contribute to job satisfaction for radiographers?

- How does the working environment contribute to job satisfaction?
- How does the human factor, such as management and colleagues, affect job satisfaction for radiographers?

1.6 SIGNIFICANCE OF THE STUDY

Based on the findings of the study, a model of job satisfaction for radiographers will be developed. This model will contribute to the current literature on improving human resources for health in areas where there is a shortage or maldistribution, as recommended by the WHO. New knowledge will be generated for radiographers employed by tertiary hospitals through the qualitative phase and the results of the quantitative phase would ensure that results can be generalized to other hospital settings. The qualitative component will be used to generate new themes of job satisfaction amongst radiographers, while the quantitative component would be used to generalize the findings. Currently, there is known maldistribution of radiographers between the public and private sectors, but the reasons have been assumed from reports of health care professionals in the existing literature. However, the core functions and role of radiographers within any hospital is not identical to any other profession, which could result in different factors that contribute to their job satisfaction. Furthermore, management in hospitals have been reported to lack knowledge on the role of allied health care professionals within the health care system, which could result in their being overlooked when it comes to matters that could improve their job satisfaction.

The developed model will be shared with heads of departments and policy makers for consideration which could reduce the number of radiographers leaving the public sector for the private sector in search of enhanced job satisfaction. Employees who are satisfied with their job are less likely to voluntarily vacate their post at their respective place of employment. This will result in retention of staff, assisting in the reduction of the long waiting times noted by patients when attending public hospitals. Most importantly, it could help achieve the WHO's objective of addressing maldistribution and inefficiencies noted in underserved areas.

1.7 STRUCTURE OF THE THESIS

Table 1.1: Outline of the thesis

Chapter	Topic	Content description
Chapter 1	Overview of the study.	Provides an introduction and background of the study.
Chapter 2	Literature review.	Provides an in-depth review of literature related to job satisfaction.
Chapter 3	Theoretical framework.	Provides a rationale for the chosen theory that was used to guide the study.
Chapter 4	Research design and methodology.	Justifies the research design and methods that were used to guide the study.
Chapter 5	Chapter 5: Presentation of results: Phase 1 (qualitative data).	Presents the results of Phase 1 of the study.
Chapter 6	Chapter 6: Presentation of findings: Phase 2 (quantitative data).	Presents the results of Phase 2 of the study.
Chapter 7	Integration of findings from phase 1 and phase 2.	Presents the integrated results from both phases of the study.
Chapter 8	Discussion of findings.	Presents the discussion of the results.
Chapter 9	A model to enhance job satisfaction for radiographers employed at the selected public tertiary hospitals in the Gauteng Province, South Africa.	Presents the model that was developed.
Chapter 10	Conclusion, limitations and recommendations	Concluding remarks, limitations and recommendations for future research.

1.8 SUMMARY OF THE CHAPTER

Maldistribution of health care professionals exists between the public and the private sectors. In economically developing countries, it has been found that majority of health care professionals are employed by the private sector despite the fact that the majority of citizens rely on the government to provide health care. Hence, the aim of the study to look at the role of job satisfaction as the cause of the maldistribution. The research objectives and questions were designed to address the role of job satisfaction in retention of radiographers. Retention of radiographers is aligned to the WHO Global Strategy on HRH: 2030. This strategy requires governments in each country to retain health care professionals in underserved areas. The public sector in South Africa is underserved and this has resulted in longer waiting times for patients to receive medical attention and increased workload for health care professionals. In Chapter 2, the existing literature on job satisfaction will be reviewed.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

This chapter focuses on the literature reviewed on intrinsic and extrinsic factors that affect job satisfaction amongst health care professionals. These factors were explored globally, within the African context and in South Africa. This chapter is also used to discuss previous methodologies and theories that were used to address job satisfaction.

2.2 PROCESS OF REVIEWING THE LITERATURE

An online review of the literature was conducted to identify the factors that could affect job satisfaction of radiographers. The initial search was confined to job satisfaction of radiographers in South Africa, followed by Africa and then in any other continent. Thereafter, the literature search was extended to include allied health care professionals to obtain a wider view on job satisfaction for these professionals. Since there was inadequate information regarding these professionals, the literature review was extended to identify the factors known to affect job satisfaction for health care professionals working in different countries, namely, the extrinsic and extrinsic factors of job satisfaction which will be discussed in the next section.

Different data bases were accessed to conduct searches, namely, CINAHL, Pubmed, Science Direct, Nexus, Google Scholar and Web of Science. The keywords used in these search engines included radiographers, job satisfaction, retention model, job satisfaction of health care professionals, South African radiographer, working conditions, salary of health care professionals, workload, occupational specific dispensation, motivation theories, theories on retention, and the World Health Organisation.

2.3 JOB SATISFACTION

Job satisfaction is a positive emotional state resulting from recognition in an individual's job (Suarez *et al*. 2017: 31). It is also considered to be an aggregate of feelings felt by an individual in relation to their job and the attitude arising when those feelings are well balanced (Kim, Kim and Kim, 2011: 203). Job satisfaction can also be viewed globally which relates to general satisfaction or it can be viewed dimensionally, which relates to specific aspects of the job (Blaauw *et al*. 2013: 129). Hence, job satisfaction has been identified as one of the important factors in retaining health care professionals (Klopper *et al.* 2012: 693).

Job satisfaction is a phenomenon with multiple studies that have been conducted globally, within the African continent and in South Africa. Different researchers have identified multiple factors that are known to either negatively or positively affect job satisfaction and these are: supervisor effectiveness (Coomber and Barriball 2006); staff shortages (Verrier and Harvey 2010; Weng *et al*. 2010); interpersonal relations at work (Nassar *et al.* 2011); heavy work load (Coetzee *et al*. 2013); working hours (Jones *et al.* 2013); pay (Netshiswinzhe *et al.* 2015); safe environment (Khamisa *et al.* 2017) and burn out (Suarez *et al*. 2017). These factors are further broken down into intrinsic factors (motivating) results in job satisfaction, whereas extrinsic factors (hygiene) results in job dissatisfaction (McGrath *et al*. 2013: 66).

The inadequacy of any of these factors results in health care professionals wanting to voluntarily leave their post (Aiken *et al.* 2013: 164). This has been evident with the migration of health care professionals from Africa to economically developed countries, known as brain drain (Kalipeni *et al*. 2012: 162). In addition, health care professionals are known to leave the public sector for the private sector, since it is well-resourced and can pay better salaries (Yokovlev *et al.* 2014: 103). All the mentioned factors will be discussed in detail in the global, African and South African contexts with a view to determine the effect they could have on job satisfaction and the retention of radiographers within public tertiary hospitals in the Gauteng province.

2.4 GLOBAL VIEW

Economically developed countries have a higher ratio of health care professionals to patient than economically developing countries. The contributing factors are better training output and benefiting from the emigration of health care professionals (WHO 2015: 44). However, health care professionals in these regions still experience some level of job dissatisfaction due to various factors. These factors are categorised into intrinsic and extrinsic factors which are discussed below.

2.4.1 Extrinsic factors

Hertzberg's Theory considers the extrinsic factors to be hygienic in nature which results in job dissatisfaction if they are maintained at acceptable levels. The extrinsic factors are pay, company policies, relationship with supervisors, working conditions and feelings associated with lack of status or security (McGrath *et al*. 2013: 64). This theory will be explained further in chapter 3, under the theoretical framework.

2.4.1.1 Working hours

In a multidisciplinary study, which had nurse, doctors, physicist, physiotherapists, pharmacists, occupational therapist and social workers conducted in an oncology department in the UK, radiation therapists reported to have higher levels of job satisfaction (Jones *et al.* 2013: 52). This was attributed to the time off they received over the weekend (Jones *et al*. 2013: 52). Similarly, radiation therapists preferred working additional hours per day in order to have an extended time off over the weekend (White *et al*. 2007: 219). This was consistent with findings that radiographers employed by public hospitals were likely to report high levels of stress due to being on call and working overtime (Raj 2006: 119). However, in another multidisciplinary study conducted in Australia there was no difference in work-related stress across health care professionals, although allied health care professionals worked less overtime (Bowden *et al.* 2015). Satisfaction with working hours was cited as an important predictor of job satisfaction for nurses employed in public hospitals in Spain (Platis *et al*. 2015: 482).

2.4.1.2 Remuneration

The inadequacy of salaries has resulted in increased migration of health care professionals from African countries to economically developed countries for higher salaries (Groenhout 2012: 6). Similarly, doctors from Romania have cited that their country of choice was influenced by the salaries offered whenever they decided to migrate (Boncea 2014: 72). Conversely, in a cross-sectional survey conducted amongst nurses in Australia, salaries were identified to have a lower correlation to job satisfaction (Hayes *et al.* 2014: 2902). Salaries were also identified as a lower contributing factor to job satisfaction and had no relation to retention of nurses in a longitudinal survey study conducted in Wales (Cowin *et al*. 2008: 1454). Furthermore, salaries were identified as an insignificant factor on intention to leave amongst these newly graduate nurses (Coomber and Barriball 2007: 307).

Contrarily, nurses across 12 countries in Europe cited low salaries as their source of job dissatisfaction and ultimate intention to leave (Aiken *et al*. 2013: 146). Similarly, in Pakistan, health care professionals employed by the public sector cited lower salaries as a contributing factor to their lower levels of job satisfaction (Kumar et *al.* 2013: 2). These contrasting views on the role of salaries on job satisfaction would require additional research. Hence Watson *et al*. (2008:120) recommended that health care institutions should consider using other strategies to enhance job satisfaction and to improve retention amongst radiographers in America. Literature from other countries present contradicting views on the role of salaries in job satisfaction and retention of health care professionals. The current

study seeks to identify the role of salaries in job satisfaction amongst radiographers and ultimately the maldistribution that exists between the public and the private sector.

2.4.1.3 Leadership

Raj (2006: 118) cites leadership style as one of the occupational stressors for radiographers. The leadership traits that were identified to induce stress amongst radiographers were inconsistent management decision, poor management communication and lack of support (Raj 2006: 114). Coomber and Barriball (2007: 31) break it down further and look at the role played by immediate supervisors in job satisfaction. The negative traits associated with immediate supervisors were the lack of physical presence and the failure to address staffing issues (Coomber and Barriball 2007: 301). In a survey that was conducted across 12 countries in Europe amongst nurses, their major concern was that management did not listen, nor did they respond to the nurses' concerns (Aiken *et al*. 2013: 151).

Age has also been identified to impact on satisfaction with leadership style or management. This was evident in a study conducted amongst North American nurses to determine the relationship between supervisor-nurse relationship, teamwork, wellbeing, affective commitment and retention. The study identified Baby Boomers to have higher levels of satisfaction with their supervisor-subordinate relationship, teamwork, affective commitment and lower intentions to vacate their post in comparison to Generation X and Y (Brunetto *et al.* 2013: 833). They also state that Generation Y have the greatest intention to leave their posts, and Baby Boomers, those born between 1946-1964, are considered to be team oriented in the work place and are uncomfortable with conflict (United Nations Joint Pension Fund 2013: 4). Generation Y, who are born between 1981-2000, are considered to lack the skills of dealing with difficult people but are very confident individuals (United Nations Joint Pension Fund 2013: 4). In addition, Generation Y prefer building multiple parallel careers and have more than one job at a time, which in turn makes inter-organizational transfer easy (United Nations Joint Pension Fund 2013: 5). A limitation of the Brunetto study, as cited, was that the study was only conducted in the private sector. Therefore, they could not generalize the findings to the public sector, although they acknowledged the importance of the supervisor-nurse relationship in retention (Brunetto *et al.* 2013: 835).

Furthermore, allied professionals, a category of health care professionals where radiographers belong, have cited that management do not understand their role within the health care system (O'Toole *et al*. 2010: 68); thus, a possibility of

management failing to effectively address their work-related problems. Leadership effectiveness is considered to affect job satisfaction and ultimately influences job commitment (Watson 2008:114). Management could also be failing to effectively address challenges faced by radiographers, thus negatively affecting their retention within the public sector.

2.4.1.4 Working conditions

Working conditions have been identified to affect job satisfaction and ultimately retention negatively. In this regard, a structured model with standardized coefficients was developed for haemodialysis nurses (Hayes *et al.* 2014: 2904). The study was conducted in Australia, using an online survey. This model illustrated that nurses' perception of the work environment had a direct positive impact on job satisfaction, indicating that greater job satisfaction predicted lower job stress and increase in the retention rate. The model further indicated that job satisfaction had an indirect effect on emotional exhaustion through job stress, and no direct link between job satisfaction and emotional exhaustion. Noting in their limitations of the study was the use of generic measuring tools, which might not fully address the complexity of any population under study (Hayes *et al.* 2014: 2905). In addition, they state that an additional component that is known to reduce occupational stress is the presence of a positive work environment.

2.4.1.5 Workload

Factors that have been highlighted to hinder a positive work environment amongst radiographers in UK were heavy workload, patient volume, staff shortages and inadequate facilities (Verrier and Harvey 2010: 119). A similar trend of nurse and support staff shortage was noted amongst nurses across different countries in Europe and it was associated with greater intent to leave (Aiken *et al*. 2013: 164). Furthermore, the reported shortage of radiation therapists has resulted in increased number radiotherapy errors which put patients' lives at risk (Probst and Griffiths 2009: 156). This heavy workload caused by staff shortages could result in burnout amongst health care professionals in any institution. Nurses who report burnout are most likely to resign from their position or even leave the profession (Hayes *et al.* 2014: 2905). The challenge associated with health care professionals vacating their posts voluntarily is the time taken to train new ones and the costs associated with training (Nassar *et al.* 2011: 244).

Heavy workload which results in high work pressure has also been identified to negatively affect job satisfaction (Suarez *et al*. 2017: 34). This was evident amongst American radiographers who rated a manageable workload as an important aspect of their job (Watson 2008: 114). In addition, heavy workloads

prevented radiation therapists from applying their skills, which has been associated with decreased level of job satisfaction (Probst and Griffiths 2009: 155).

2.4.2 Intrinsic factors

Hertzberg's Theory suggests that intrinsic factors can motivate employees, thus increasing their productivity. Intrinsic factors are recognition, achievement, advancement, nature of the work undertaken and the responsibility (McGrath *et al*. 2013: 64). The intrinsic factors that will be discussed below are career development, task function and autonomy these themes were chosen on their prominence in literature and their significant link to job satisfaction amongst health care professionals.

2.4.2.1 Career development

Organisations could enhance employee commitment by helping employees to reach their career goals, acquiring new skills and offering financial incentives for their efforts (Weng *et al.* 2010: 392). Organisational commitment can be categorized into normative, affective and continuance which is also directly linked to career growth (Weng *et al*. 2010: 392). Affective commitment refers to employees' psychological attachment to the organisation. They want to remain in that organisation because the objectives of the organisation are aligned to their needs. Affective commitment can be achieved by allowing employees to experience career growth (Weng *et al*. 2010: 392).

Continuance commitment refers to employees who remain in an organisation for fear of losing their benefits or not being able to find a similar position in a different organisation (Weng *et al*. 2010: 392). However, continuance commitment is associated with negative patient outcomes which is not ideal for health organisations (Ellenbecker and Cushman 2012: 1890). The last type of commitment is normative, which is a moral obligation by employees to pay back the organisation for benefits previously received. Organisations can achieve this type of commitment by providing good career platforms, help employees achieve their career goals and reward them through promotions and good remuneration (Weng *et al.* 2010: 392).

2.4.2.2 Task function

With regards to job satisfaction and job content Probst and Griffiths (2009: 147) used unstructured interviews to explore the impact of role development in job satisfaction for radiation therapists in the UK. The study concluded by developing a multi-dimensional model of the factors influencing job satisfaction and propensity

to leave (Figure 2.2) (Probst and Griffiths 2009: 155). The three main pillars of the model were job characteristics, leadership and organisational governance, stress and burnout. These pillars had a different impact on job satisfaction for radiation therapists at different stages of their careers and they changed over time. Radiation therapists were reported to have higher levels of enthusiasm for their job immediately after qualification and the same level of enthusiasm is maintained when they get promoted to a senior post or to a specialist post.

Job characteristics that were noted to enhance job satisfaction for junior radiation therapists were learning new techniques, complexities of the job and taking on new responsibilities. Similarly, in Australia, higher levels of job satisfaction were found amongst emergency medical personnel who had an option to rotate amongst patients who required different levels of care (Suarez *et al*. 2017: 33). When the new knowledge gained became monotonous due to heavy workload and the inequalities in the application of policies, it resulted in decreased job satisfaction (Probst and Griffiths 2009: 155). Senior radiation therapists who could not use their skills due to burnout had decreased job satisfaction, although the specialist post is associated with greater recognition and control over work, which increases job satisfaction.

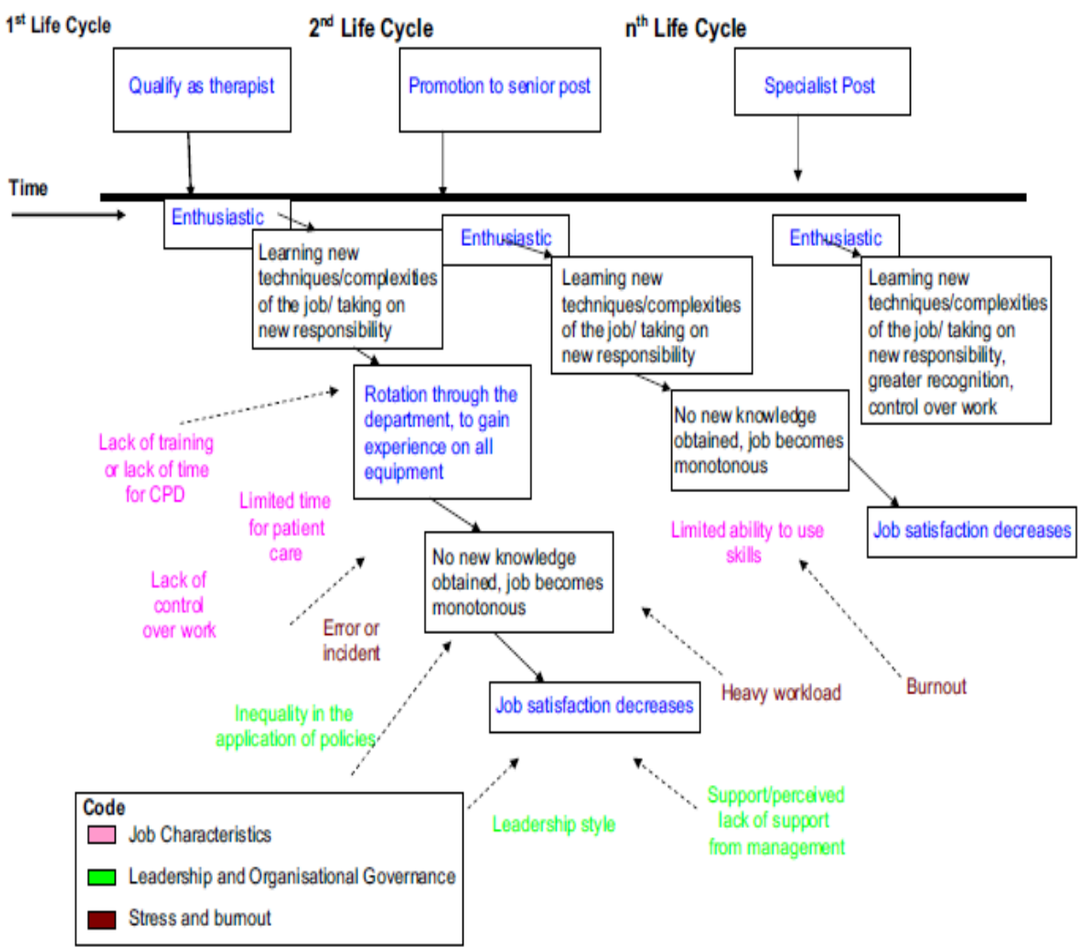

Figure 2.1: A multi-dimensional model of the factors influencing job satisfaction and propensity to leave (Probst and Griffiths 2009: 155)

2.4.2.3 Autonomy

With regards to retention of nurses Ellenbecker and Cushman (2011: 1884) conducted a literature review on home healthcare nurse retention. Ellenbecker and Cushman (2011: 1882) concluded that job satisfaction is a predictor for retention of nurses and has a direct and indirect effect on retention of nurses. Contrarily, Cowin *et al.* (2008: 1454), described job satisfaction as a weaker measure in predicting retention, rather self-concept was a predictor for retention amongst nurses in Australia. The strategies that were effective in retaining nurses were competitive benefits, enhanced workplace safety, shared decision making, employee recognition programmes, flexible work schedules, over-time opportunities, opportunities for growth and efforts to reduce job demands (Ellenbecker and Cushman 2011: 1883). The authors further clarify that shared decision making was associated with greater levels of job satisfaction. A nurse retention and patient outcome model was proposed. The proposed model suggests that nurse, agency and area characteristics are directly related to job satisfaction and directly and indirectly related to intention to stay and retention.

Additional components to the model were affective and continuance organizational commitment and patient care outcomes and agency performance. While affective commitment is positively and directly related to job satisfaction, intent to stay and retention are indirectly and positively related to patient outcomes and agency performance. Continuance commitment is considered to have a positive direct relationship on intent to stay and retention and conversely an indirect negative effect on patient care outcomes in any hospital setting. Furthermore, there is a direct relationship between job satisfaction and patient outcome. Conversely, there is a direct relationship between job satisfaction, intent to stay and retention (Ellenbecker and Cushman 2011: 1882). The model also clarifies that some nurses remain in the field due to the lack of jobs in other hospitals or are waiting for retirement. Retaining employees with continuance commitment is not ideal for any organisation, since it negatively affects patient care.

Similarly, Cowin *et al*. (2008: 1454) explored the relationships between the multiple facets of a nurse's professional identity also referred to as self-concept, job satisfaction and retention plans. A descriptive correlation study was used and data collected from 332 Australian nurses. Data was collected using a nurse's self-concept questionnaire, index of worker satisfaction and nurse retention index. The self-concept factors were the nurse's general self-concept (self-confidence, and positive feelings regarding their nursing abilities), caring, staff relations, communications, knowledge and leadership (Cowin *et al.* 2008: 1452). The results indicated that professional status, autonomy and interactions are positively related

to all the factors in the nurse's self-concept questionnaire. This demonstrates the strength of the relationship between nurses' self-concept and their job satisfaction. The Nurse Self-Concept Model presents a stronger result than the nurse job satisfaction model. The contributing weightings are staff relations .91, care and communications .84, nurse's self-concept and autonomy .91 and interactions .61. Conversely, job satisfaction was described as a weaker measure in predicting retention. The researchers note that the failure to generalize the results is a limitation due to the low response rate.

2.5 AFRICAN CONTEXT

Job satisfaction in Africa has been negatively affected by the severe shortage of health care professionals and their migration to economically developed countries. This section focuses on the intrinsic and extrinsic factors of job satisfaction within the African context.

2.5.1 Extrinsic factors

Within the African context, limited studies have been conducted to address the phenomenon of job satisfaction. Infrastructure and staff shortages are amongst the well-researched extrinsic factors.

2.5.1.1 Shortage of health care professionals

Economically developed countries have a higher ratio of health care professionals per patient in contrast to developing countries (Mills *et al*. 2008: 685). The rationale for this is the inadequacy of the training output and the migration of health care professionals to economically developed countries (WHO 2015: 25). According to the WHO, the sub-Saharan region has a gross shortage of health care professionals consisting of only 11% of the world's population. The region also has an estimated 24% of the world's burden of disease but with only 3% of the world's health care professionals (WHO 2006: 1). In this regard, in 2015, the WHO introduced a Global Strategy on Human Resources for Health: Workforce 2030 (WHO 2015: 13). The strategy was developed to address maldistribution and inefficiencies in order to retain health care professionals in underserved areas. According to this strategy, health care professionals are inadequate unless they are equitably distributed and accessible by the population, possess the relevant competency, are motivated to deliver quality care and adequately supported by the health system (WHO 2015: 1).

However, it is worth noting that South Africa has a better ratio of health care professionals in comparison to other countries in the sub-Saharan region (Mills *et al.* 2008:687). Neighbouring countries, such as Swaziland, have similar health care professional shortages in the public sector; 44% doctors, 19% professional nurses and 17% nursing assistance (Kober *et al.* 2006: 5). Shortage of health care professionals does not only affect the sub-Saharan region but also Africa as a continent. The African continent falls far below the recommended benchmark ratio of 2.3 health care professionals per population of 100 000 (WHO 2015: 41). Currently Africa has a ratio of 0.2 health care professionals per population of 100 000, while economically developed continents such as Europe have a ratio of 2.9 and the Western Pacific with a ratio of 2.7 (WHO 2015: 41). A negative impact associated with staff shortage is the health care professionals' intention to leave amongst, as was the case amongst Ghanaian doctors (Naicker and Tutt 2009: 61). The rationale for this negative impact is the inadequacy of the training output, career changes among health care professionals, premature retirement, morbidity and the migration of health care professionals to economically developed countries (WHO 2015: 25; Kinfu *et al*. 2009: 1).

2.5.1.2 Infrastructure

In a study that consisted of auxiliary nurses, registered nurses, medical assistant, medical officers and specialist, allied health professionals and had 2335 participants across three countries, there were different levels of job satisfaction. South African health care professionals were reported to have lower levels of job satisfaction and greater intention to leave in a comparative study that included two other countries in the sub-Saharan region, Malawi and Tanzania (Blaauw *et al*. 2012: 127). South Africa has a higher GDP than the other two countries and has higher percentage of health care professionals per population, which could translate to better infrastructure (ECONEX 2013: 11). ECONEX concluded that higher levels of job satisfaction in the other two countries could be attributed to health care professional expectations, their culture, organizational culture, labour market and the militancy of the health care professionals. The common cause of job dissatisfaction in all countries was the shortage of medical supplies and faulty medical equipment.

In contrast to a similar study that explored the relationship between job satisfaction and the stigma of human immunodeficiency virus (HIV) amongst nurses, nurses in South Africa and Tanzania expressed higher levels of job satisfaction (Chirwa *et al*. 2009: 18). The contributing factors for the higher level of job satisfaction were feeling healthier, unmarried, higher levels of education and working in urban areas. South Africa has only 39% of its population in rural areas, while Malawi has 81%

living in rural areas (Blaauw *et al.* 2012: 128). Hence, higher levels of job satisfaction among South African nurses. Health care professionals who had lower levels of job satisfaction and motivation had the greatest intention to vacate their posts (Bonenberger *et al.* 2014: 6). The concern was that married female nurses were less satisfied with their jobs in contrast to their male counterparts and that the majority of the nursing work force is female (Chirwa *et al*. 2009: 18). In addition, the majority of health care professionals who wanted to quit their jobs were young and working for the public sector (Blaauw *et al*. 2012: 127 and Bonenberger *et al.* 2014: 6).

For this reason, McCoy *et al*. (2008: 680) has recommended that governments in the sub-Saharan region need to consider non-financial incentives to increase retention and motivation of health care professionals. These should include job security, the availability of good schools in rural areas and improving the structure of management. Health care professionals who lived away from their families and worked in primary health care centres were more likely to leave their jobs (Bonenberger *et al.* 2014: 6). Consequently, the government in Ghana introduced car subsidies and fellowships for continuing professional development to reduce the migration of health care professionals (Antwi and Phillips 2013: 107). In addition, the government requires nurses, who were trained by the state, to complete a term of public service or pay back the loan before they receive approval to migrate. These initiatives have seen a decrease in the number of health care professionals who migrate to economically developed countries (Antwi and Phillips 2013: 114).

2.5.2 Intrinsic factors

The most prominent intrinsic factor that has been explored within the African context is leadership.

2.5.2.1 Leadership

Nassar *et al.* (2011: 244) state that retention of health care professionals could be facilitated through effective management and suggest that the retention process should be continuous from the time of employment until resignation. Leadership style adopted by management could positively or negatively affect the retention of health care professionals in any hospital setting. This was evident in a comparative study of three hospitals in Egypt where authoritative, consultative and participatory leadership styles were explored. The use of authoritative leadership style was amongst the leading reasons for nurses to vacate their posts (Nassar *et al*. 2011: 248). Conversely, the use of consultative leadership was associated with greater

satisfaction amongst nurses in this study, which could translate to retention (Nassar *et al*. 2011:247).

2.6 SOUTH AFRICAN CONTEXT

South Africa, unlike its counterparts within the African context, have a bilateral health care system, comprising the private sector and the public sector, which has resulted in the maldistribution of health care professionals. Within the South African context, the literature review focuses on the structure of the health care system and the intrinsic and extrinsic factors of job satisfaction. The next section focuses on the structure of the health care system in South Africa.

2.6.1 Structure of the health care system

South Africa has three health care service providers, namely, the public sector, the private sector and non-governmental organisations (ECONEX 2013: 10). The difference between the public and private health care systems is in their funding model. Funding for the public sector is provided by the government, the private sector uses medical aid schemes and private donors fund the non-governmental organisations (ECONEX 2013: 6). It is reported that in the year 2012, South Africa's expenditure on health was 8.8 % of the GDP, which is higher than any other country in the sub-Saharan region (Blaauw *et al.* 2013: 127). However, it is below the average of 9.3% which is spent by the Organisation for Economic Cooperation and Development (OECD) countries (ECONEX 2013: 9). Furthermore, there is a difference in expenditure on health between the public and private sectors in comparison to the OECD countries. The private sector has 50% of health care funds which supports only 17% of the population, while the public sector caters for 83% of the population with only 47% of the health care funds (ECONEX 2013: 10). Hence, the National Department of Health introducing the NHI to address the inequalities within the health care system in South Africa.

The Department of Health has seen an increase in expenditure since 2012 and is currently at 14.1% and from this budget the Gauteng province receives the highest percentage at 22% (UNICEF 2017: 5). The rationale for this is that the Gauteng province has the highest population than any other province with 13.4 million citizens (Department of Labour 2016: 3). Furthermore, this province has the highest income per household, and the highest contribution to the GDP at 34.6% (Department of Labour 2016: 3). This explains why the Gauteng province has the highest number of private hospitals (ECONEX 2013: 24).

The bilateral health care system is not unique to South Africa. Economically developed countries such as the United States of America (USA) and the UK and Canada also have private and public healthcare systems (Discovery Health 2016: 1) which function differently. In Canada, the health care system is funded publicly through tax, but the health care is provided by the private sector. In the USA public health care is for the elderly and low-income families (ECONEX 2013: 7). The health care system which comprises a public and a private sector is known as the Bismarck model, where funding can be sourced privately or from the government (ECONEX 2013: 2). South Africa, like any economically developing country has an additional health care system known as the out-pocket model which is informal. In this model, patients pay from their pocket to see a doctor and this also includes traditional healers (ECONEX 2013: 3). Therefore, only those citizens who can afford medical aid schemes will attend the private hospitals for their health needs, while the rest of the population use the public sector.

It is worth noting that South Africa has a higher ratio of health care professionals in comparison to other countries in the sub-Saharan region (Ashmore 2013: 1). A major challenge faced by this country is the maldistribution of healthcare professionals between the public and private sectors, as well as between rural and urban areas (Kalipeni, Semu and Mbilizi 2012: 155). The private sector and the urban areas have a higher ratio of health care professionals. Statistics indicate that 38% of general practitioners, 55% of medical specialists and 41% of professional nurses are employed by the private sector (Coetzee *et al*. 2013: 164).

2.6.2 Extrinsic factors

Health care professionals experience different levels of satisfaction with extrinsic factors between the public and private sectors, the private sector seemingly providing more satisfaction. The next section focuses on these extrinsic factors: working environment, government policies and shortage of health care professionals.

2.6.2.1 Work environment

In a quantitative study done by Pillay (2009: 6), nurses employed by the private sector experienced greater job satisfaction. The contributing factors for their satisfaction were patient care, relationships with colleagues and doctors and the sense of belonging within the community (Pillay 2009: 7). Similarly, in a comparative study, nurses employed by the private sector were more satisfied with their working environment, reported lower levels of burnout, higher levels of satisfaction with their jobs, felt safer at work and reported a lower percentage of intention to leave their job (Coetzee *et al.* 2013: 168). Medical specialists working

for the private sector expressed greater satisfaction with pay, availability of resources, career path, patients who are more compliant, relationships with other care professionals, simpler pathologies, technologically advanced practice and autonomy associated with working environment (Ashmore 2013: 11).

The shortage of health care professionals in the rural areas has resulted in researchers trying to figure out the contributing factors. These studies were conducted by Mokoka *et al*. (2010: 4) and Haskins *et al*. (2017: 183) who identified the following challenges with retaining health care professionals in rural areas. Working conditions, work relationships, lack of safety and resources were cited as reasons for poor staff retention in rural areas. One of the contributory factors is that the government has budgetary constraints, thus failing perform important upgrades in technology and equipment (Yakovlev and Steinkopf 2014: 103). Despite the challenges with working environment, higher levels of job satisfaction were experienced by nurses in rural areas (Haskins *et al.* 2017: 181). However, nurses who were not happy with the working environment had intentions of leaving the public sector for the private sector (Pillay 2009: 7).

2.6.2.2 Government policies

The National Department of Health introduced Occupational Specific Dispensation (OSD) for Nurses in 2007. In 2010, OSD was introduced for therapeutic, diagnostic and allied health professionals. The objectives of the OSD were: to introduce career pathing opportunities based on competencies, experience and performance; provide grade progressions within the limits of the relevant grades based on performance; recognition of appropriate experience for the purpose of grade progression; the recognition of performance for accelerated progression to higher grades and pay progression within a salary grade; and differentiated salary scales for identified categories of professionals based on a new remuneration structure.

The introduction of OSD resulted in incorporation of scarce skills allowance into a revised salary notch for radiographers. Scarce skill allowance was a payment of 10% that was paid to radiographers salaries for being in the profession. All these changes saw a substantial increase of salaries for health care professionals employed by the public sector in South Africa. This resulted in an increase in the number of nurses employed by the public sector (Coetzee *et al*. 2013: 164). Consequently, nurses with higher salary packages expressed a higher level satisfaction by (Netshiwinzhe and Mulaudzi 2015: 103).

Even though the introduction of OSD saw an increase of salaries for health care professionals employed by the public sector, salaries have not reached international standards (George and Rhodes 2012: 3). Nurses have expressed dissatisfaction with their salaries and promotion despite the introduction of OSD (Sojane *et al*. 2016: 4). Similarly, nurses in the North West province cited failures by the OSD to make improve nurse's salaries, thus failing to retain nurses in the public sector (Khunou and Maselesele 2016: 9). The authors' recommendations were that policy makers should review the grading system used to provide incentives and that a qualitative study should be conducted amongst nurses employed by the public sector in this regard.

Economically developed countries such as the UK, Australia, Canada, USA and Saudi Arabia are amongst the countries that offer higher salaries (George and Rhodes 2012: 3). This has become a leading factor for health care professionals migrating to these countries. In addition, factors such as job dissatisfaction, delayed salaries, delayed promotions and the lack of recognition compel health care professionals to migrate (George and Rhodes 2012: 6). The lack of recognition as an unfair implementation of OSD is also cited by nurses working for nursing colleges. Unfair implementation of OSD demoralised nurses who felt that they were demoted, since there were minimal changes to their salary (Netshiwinzhe and Mulaudzi 2015: 103). These authors also state that managers lacked transparency by failing to effectively communicate OSD information which also resulted in low morale and inhibited productivity.

The Department of Health has introduced a policy for Remuneration Work Outside the Public Service (RWOPS). The guidelines for RWOPS are: any state employee may apply; permission to perform RWOPS must be applied for in advance and may only be performed after permission has been granted; the kind of employment which an employee proposes to participate in must be provided; and finally RWOPS must not interfere with an employee's duties at their state employment in terms of time (Gauteng Department of Health 2004:8). Working outside the public sector, for the private sector, is a common trend amongst health care professionals for additional income, also known as moonlighting (Labonte *et al*. 2015: 5). Doctors have cited dissatisfaction with the process followed in obtaining permission to do RWOPS (George and Rhodes 2012: 6).

Health care professionals have cited dissatisfaction with working conditions in the public sector. Issues related to poor working environment caused by poor infrastructure could have been addressed with proper implementation of the NCS for Health Establishment in South Africa (NCS). The NCS were introduced in 2011 by the Department of Health to fast track or improve service delivery to patients.

The NCS are subdivided into seven domains and domain number seven focuses on facilities and infrastructure (Department of Health 2011: 10). Domain number seven requires that facilities and physical infrastructure should be clean, safe and secure, it also requires well managed hotel services and effective waste disposal (Department of Health 2011: 42). The required standard is that all buildings should meet all the application regulations, infrastructure should appropriately be used according to level of care and that buildings are safe and adequately maintained (Department of Health 2011: 42). Proper implementation of this domain and its required standards would not only benefit the patient but also the health care professionals working in that area.

2.6.2.3 Shortage of health care professionals

There is a challenge to retain health care professionals in rural areas due to job dissatisfaction. This was evident in a study by Delobelle *et al.* (2011: 379) where primary health care nurses intended to vacate their posts within two years. Their intended destinations were other public hospitals in urban areas; other options were migration and applying for a position in the private sector. Emigration to economically developed countries is associated with the positive pull and push factors. Poor job satisfaction was a great determinant of primary health care nurses wanting to leave their jobs. The contributing factors for the lower levels of job satisfaction were nature of work, supervision, working conditions, training, co-workers and pay (Delobelle *et al.* 2011: 379). The same authors suggest that younger and higher educated nurses with lower job satisfaction are more likely to vacate their posts.

2.6.2.4 Safety

The factors that could result in the push and pull of nurses away from primary health care nursing managers were also explored across the Gauteng and the Free State provinces by Munyewende *et al*. (2014: 4). Results from their study indicated the lack of personal safety while in the workplace which was caused by violence from patients, family members of patients and other colleagues (Munyewende *et al*. 2014: 4). The experience of violence by health care professionals, while on duty, is known as Type II violence and is associated with a high turnover rate (Pompeii *et al*. 2016: 853). Furthermore, nursing managers cited challenges relating to conditions which inhibited their ability to practice their skills and these included the lack of clinic maintenance.

2.6.2.5 Infrastructure

In a study conducted in KZN, different health care professionals employed by rural hospitals expressed high levels of job satisfaction despite multiple challenges faced by these hospitals (Haskins *et al.* 2017: 181). For instance, nurses in rural hospitals were more eager to return to work on a Monday morning than their counterparts employed in urban hospitals. Their reasons for intending to vacate their posts were personal, such as, being away from their family (Haskins *et al.* 2017: 177). The major challenges, as stated by health care professionals, were associated with hospital accommodation. Which failed to provide privacy, had inadequate space and was poorly maintained. The same authors recommend that policy makers should consider tailor made offers for different professionals, as doctors required improved accommodation while allied health care professionals wanted higher salaries.

2.6.3 Intrinsic factors

Intrinsic factors originate from an individual's feeling about his or her job which is directly affected by the type of task they perform and the leadership that recognizes the effort they put into their work.

2.6.3.1 Career development

Intrinsic factors are considered to be great motivational factors for health care professionals which can be used to enhance job satisfaction and ultimately improve retention. Studies conducted amongst different health care professionals employed by the public sector have indicated different factors that affect their job satisfaction. Radiation therapists in the Gauteng province have reported dissatisfaction associated with professional stagnation (Lawrence *et al.* 2011: 7). However, the qualitative nature of the study failed to capture the difference that could exist across gender, age and qualification (Lawrence *et al.* 2011: 7) Furthermore, medical specialists also cited dissatisfaction with the lack of career progression in the public sector (Ashmore 2013: 11), resulting in their intention to vacate their post in the public sector for the private sector. Nurses employed by the private sector had indicated dissatisfaction with career development structures (Pillay 2009: 7), despite the fact that career development structures are known to help improve professional satisfaction and increasing motivation, which in turn improves the quality of care and patient satisfaction (Sonmez and Yildrin 2009: 3470).

2.6.3.2 Leadership

Makanjee *et al*. (2006: 120) explored the role of organizational support in organizational commitment amongst radiographers employed in the Tshwane district, Gauteng. The findings of this study indicate that job satisfaction directly and positively influences affective and normative commitment and negatively influences continuance commitment (Makanjee *et al*. 2006: 120). The four factors that are considered to foster a favourable organizational commitment are fair treatment, supervisor support, organizational rewards and job conditions (Makanjee *et al.* 2006: 123). In their findings, the negative factors that were associated with job conditions were the x-ray rooms and the shortage of accessories such as drip stands, patient gowns and immobilization devices. Furthermore, there was unfairness in the application of the promotion process. Participants in that study also felt that management had no interest in the welfare of employees and blamed management were also blamed for not trying to improve working conditions (Makanjee *et al.* 2006: 122).

Similarly, radiation therapists in the Gauteng province and diagnostic radiographers in KwaZulu-Natal (KZN) expressed similar concerns of poor support from management (Lawrence *et al*. 2011: 5; Gam *et al*. 2015: 20). Challenges with management seem to be consistent across different provinces. Hence, recommendations were made by Makanjee *et al.* (2006: 125) for management to consider using participatory management styles to address these concerns. The participatory management style involves employees in decision making processes. This can be achieved through self-managing teams and increasing the level of responsibility of employees. The involvement of nurses in decision making had a positive impact on their job satisfaction (Ellenbecker and Cushman 2011: 1883).

Furthermore, nurses have cited dissatisfaction with the lack of recognition by management for their efforts (Wagner *et al*. 2015: 977). This is further fuelled by the perception that nursing managers lack problem solving skills and do not understand challenges faced by subordinates (Wagner *et al.* 2015: 979). Negative implications associated with dissatisfaction is the intention to leave, which could be leaving the public sector, leaving the profession or even leaving the country. In addition, job dissatisfaction is directly linked to high rates of absenteeism, nurse morale, productivity and clinical outcomes which negatively affects effectiveness and sustainability of the health care system (Pillay 2009:7). However, in a correlation survey study, nurses employed by the private and public sectors in the Free State and North West province had contrasting views. The majority of nurses (71%) in this study reported that they had support from their supervisors, while 75.7% agreed that their nursing managers were good leaders and 65.8%

supported nurses' decisions (Sojane *et al.* 2016: 4). However, some nursing managers of primary health care centres felt that they were not supported by their superiors and blamed them for any wrongdoing (Munyewede *et al*. 2014: 7).

2.7 PREVIOUS THEORIES AND METHODOLOGY

The literature review has identified job satisfaction as a phenomenon that has been studied across different health care professionals, but predominantly nursing. In developing their structured order model related to job satisfaction, Hays *et al*. (2014: 2905) used a standardized online survey. The limitation of the study was the standardized questionnaire which failed to address the complexities of the population under study, even though the results could be compared to studies that used a similar tool. Probst and Griffiths (2009: 155), used qualitative interviews in their development of the multi-dimensional model of factors influencing job satisfaction, thus failing to generalize the findings. Similarly, Cowin *et al*. (2008: 1457) failed to generalize their high order model on job satisfaction because it was limited to the private sector and had a low response rate. Hence, the researcher's need to mix methods in collecting data, so the results could be generalized beyond tertiary hospitals in the Gauteng province.

Multiple theories have been used to address the phenomenon of job satisfaction. Delobelle *et al.* (2011: 372) used the Herzberg's motivation and hygiene theory to assess trends of job satisfaction amongst primary health care nurses working in rural areas. The leading factors of job dissatisfaction were: nature of work, supervision, work conditions, training, co-workers and pay (Delobelle *et al.* 2011: 375). However, they acknowledged that the findings could only be generalized to nurses working under similar conditions, in rural areas. Ashmore (2013: 2) used Maslow's hierarchy of needs theory to determine the contributing factors for medical specialists leaving the public sector in the Western Cape. The Maslow's hierarchy of needs have five levels which are physiological needs; safety needs; belongingness and love; esteem needs and self-actualization. In this study, salaries were not identified as a major factor because the public sector had greater job stability and benefits (Ashmore 2013: 9). The salaries are categorized under basic needs for safety needs in the Maslow's hierarchy needs. Therefore, this means that medical specialists considered salaries as an important aspect. However, the qualitative nature of these findings limits the generalizability of these findings to radiographers. Furthermore, the difference in salary packages for medical specialists and radiographers is significant. Therefore, the factors that might attract radiographers and medical specialists to the private sector could be different.

These attracting factors are classified into “push and pull factors” by the Brain Drain Theory. The Brain Drain Theory has been used to identify the pull and push factors for health care professionals to emigrate from their country of origin. In most cases there is an overlap of the push and pull factors and the common ones are inadequate pay, poor working conditions and the lack of career opportunities (Yakovlev and Steinkopf 2014: 98). These factors have a negative impact on job satisfaction and affects the retention of health care professionals in any organisation.

The common factors that negatively affected job satisfaction amongst health care professionals were pay, workload, age, education level, gender, working conditions, leadership style, working hours, friendly colleagues and type of hospital (Blaauw *et al.* 2012: 135). However, studies that were conducted in African countries introduced new factors, such as the role of culture, the expectations of health care professionals and the militancy of health care professionals. Public hospitals were associated with higher levels of job dissatisfaction, resulting in health care professionals wanting to vacate their posts. Majority of health care professionals intended to look for positions in the private sector or emigrate to economically developed countries.

2.8 SUMMARY OF THE CHAPTER

In Chapter 2, the extrinsic and intrinsic factors of job satisfaction were discussed. These factors, theories and research methodologies that were used to study this phenomenon globally, within the African context and in South Africa were explained. The next chapter discusses the theoretical framework that guided the study.

CHAPTER 3: THEORETICAL FRAMEWORK

3.1 INTRODUCTION

The theoretical framework that was used to guide the study and the process followed in developing the conceptual framework is discussed in this chapter. Job satisfaction is a widely studied phenomenon with multiple theories on the topic. However, as identified in the previous chapter, the paucity of knowledge amongst radiographers employed by public tertiary hospitals in the Gauteng province and the maldistribution of radiographers led the researcher to combine two theories. This chapter also discusses how these theories will be applied in this study and these are the Herzberg's Motivation and Hygiene Theory and Brain Drain.

3.2 THEORETICAL FRAMEWORK USED AS A GUIDE

A theoretical framework is considered to be a set of propositional statements resulting from existing theory that has been proven (Brink 2007: 24). The significance of theory is that it guides the study, determining what variables will be measured and what statistical relationships will be assessed. A theoretical framework is used when there are existing theories on the phenomenon. Multiple theories have been developed to identify factors that could contribute to job satisfaction amongst employees in organisations and these are:

- Maslow's hierarchy of needs theory- these theory represents a pyramid with a hierarchy of needs, which must be filled from bottom to top. These needs in their sequential order are: Biological (basic survival needs such as food, warmth and rest); Safety (freedom from fear which can be brought about by certainty, stability and organisational); Affiliation (introduced by sense of belonging through affection and love); Esteem (caused by self-belief and satisfaction through reputation and respect) and last one is self-fulfilment (when individuals reach full potential). This theory may be used identify motivating factors amongst employees in any

organisation. The researcher opted not to use this theory since some of the factors may not be achieved with the organisation (McGrath and Bates 2013: 60).

- McClelland's achievement and acquired needs theory: this theory identifies three key elements that can be used to motivate and enhance effectiveness in employees of any organisation. These key elements are achievement (these individuals seek achievement, attainment of realistic but challenging goals); power (these individuals have a strong desire to motivate or lead others) and affiliation (these employees seek to maintain friendly relationships and interaction with others and seek acceptance from others). This theory also focuses on motivating employees and not retention (McGrath and Bates 2013:64).
- The Hackman and Oldham job characteristic model: this model suggest that employee's get their motivation from completing tasks assigned to them and this linked to the meaningfulness (employees must consider the task meaningful), responsibility (employees must be given authority to plan and execute the task) and feedback (employees should receive feedback at how effectively they have been at a task (McGrath and Bates 2013:72).
- Vrooms expectancy theory: this theory is used to understand why employees react in a particular manner in work based request. The formulated that: Motivation = Valance x Expectancy x Instrumentality. Valance measures the reward, whereas expectancy measures the person's confidence in being able to get the results expected and instrumentality measures the extent to which an employee believes that the organisation will deliver the rewards that were promised (McGrath and Bates 2013: 64).

For the purposes of this study, Herzberg's Motivation and Hygiene Theory combined with Brain Drain Theory were used. Herzberg's Motivation and Hygiene Theory will be used to identify the factors that could result in job dissatisfaction or decreased motivation to continue employment in public

tertiary hospitals. The Brain Drain Theory will be used to identify the factors that could either push away or pull radiographers to the private sector.

Herzberg's Motivation and Hygiene Theory was used to explore the contribution of extrinsic and intrinsic factors to job satisfaction amongst radiographers (Figure 3.1). Hertzberg's Theory suggests that intrinsic factors (motivating) results in job satisfaction, whereas extrinsic factors (hygiene) results in job dissatisfaction. Job satisfaction and motivation are directly linked to turnover or intention to leave amongst health care professionals (Bonenberger *et al*. 2014: 6). Evidently, the introduction of car subsidies and funding for continuing professional development saw a slight decrease in the migration of health care professionals in Ghana (Antwi and Phillips 2013: 107). Intrinsic factors are recognition, achievement, advancement, nature of the work undertaken and responsibility. Extrinsic factors are pay, company policies, relationship with supervisors, working conditions, feelings associated with lack of status or security (McGrath and Bates 2013: 66). The success of implementing hygiene factors is dependent on applying the following five rules (Pardee 1990: 12):

- *Identify the type of hygiene factor.*
- *Provide a purpose for the hygiene factor.*
- *Give hygiene factors according to performance.*
- *Keep the administration of hygiene factors simple.*
- *Give the hygiene factor and do not gloat about it.*

Pardee (1990: 10) further suggests that the dynamic improvement of hygiene factors has short-term effects. They are cyclical in nature; they have no final answer and there are infinite sources of pain in the work environment. Hence, recommendations have been made to consider non-financial incentives to increase retention and motivation of health care professionals in the sub-Saharan region (McCoy *et al.* 2008: 6803). There is a different dynamic when it comes to motivating factors. These dynamics are that improvements of motivators have long term effects on employees, the psychological basis of motivation is the need for growth, there are limited sources of motivator

satisfaction and there are no answers to motivator needs (McCoy *et al.* 2008: 6803).

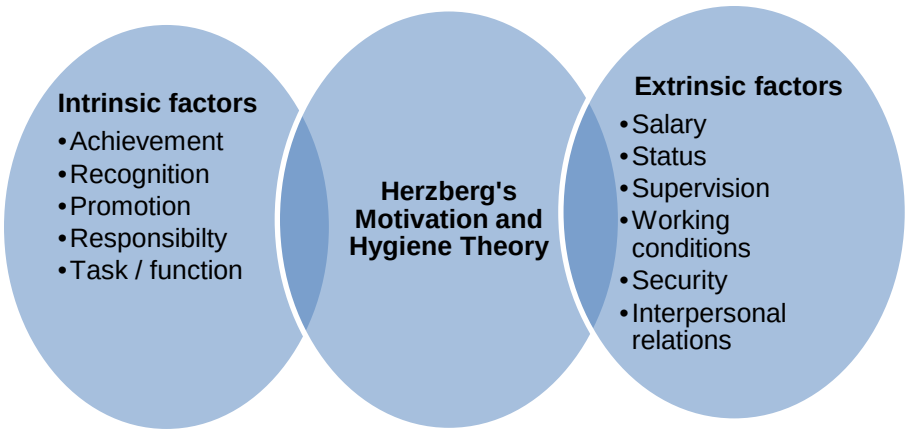

Figure 3.1: Herzberg's Motivational and Hygiene Theory

Brain Drain Theory (Figure 3.2) is linked to the loss of skilled health care professionals from developing countries (Yakovlev and Steinkopf 2014: 98). Generally, the Brain Drain Theory is used when health care professionals emigrate from their country of origin. In the current study, it would be used to determine its impact on radiographers leaving the public sector for the private sector within South Africa. The migration of health care professionals is a result of push and pull factors which overlap with each other. Push and pull factors are: inadequate compensation, poor working conditions, lack of career opportunities and a safer environment (Yakovlev and Steinkopf 2014: 98). An additional possibility could be the active recruitment of radiographers by the private sector to avoid the cost and time associated with training of health care professionals. Furthermore, the availability or the shortage of funded posts in the public sector could result in the maldistribution of radiographers.

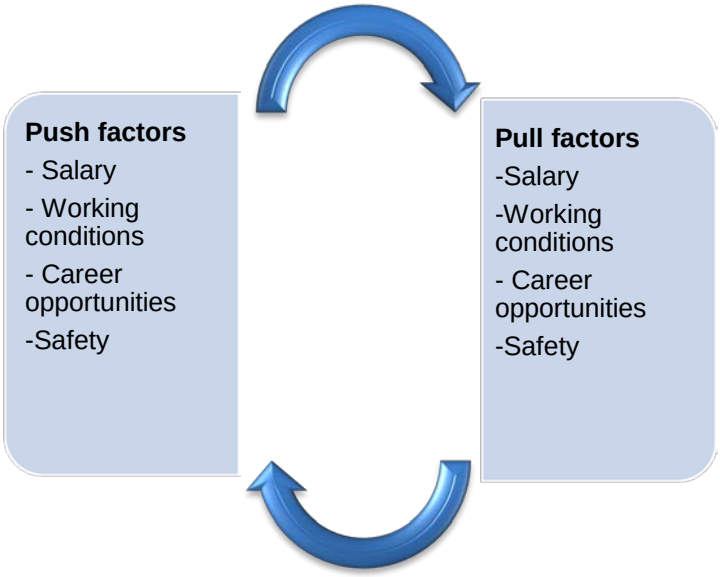

Figure 3.2: Brain Drain Theory

3.3 SELECTION OF THE CONCEPTUAL FRAMEWORK FOR THE STUDY

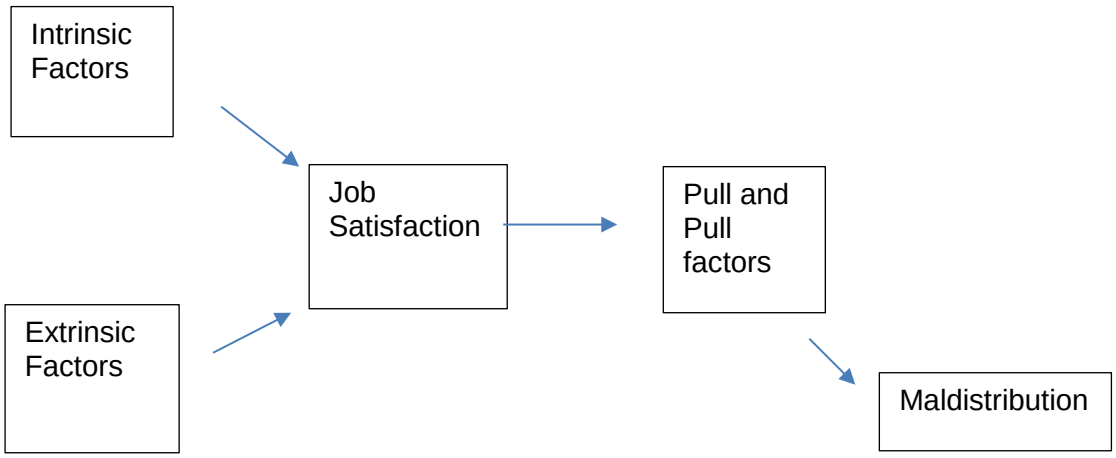

Figure 3.3: Conceptual framework on maldistribution

According to statistics released by the Department of Health, South Africa, there is a maldistribution of radiographers between the public and private sectors (Department of Health 2011:31). The maldistribution of radiographers between the public and private sectors in South Africa could be caused by a mixture of extrinsic and intrinsic factors of job satisfaction Figure 3.1. Generally, the private sector is better funded from the out-of- pocket funds and medical

aid contributions, which makes it easier to pay higher salaries for their employees (Yokovlev and Steinkopt 2014: 15).

Therefore, radiographers could be voluntarily vacating their posts in the public sector in search of improved salaries, as this was the case with nurses in 12 countries across Europe (Aiken *et al*. 2013: 164). The public sector has been associated with poor working conditions which also impacts maldistribution (Coetzee *et al.* 2013: 164). Although eighty percent (80%) of the population in South Africa rely on the government for their medical needs, the majority of health care professionals are employed by the private sector, which results in increased workloads for health care professionals employed by the public sector (Coetzee *et al.* 2013: 164).. Increased workloads has been associated with poor retention of nurses in rural areas (Delobelle *et al*. 2011: 379).

Leadership style adopted by management has been reported to negatively affect organizational commitment amongst radiographers in the Tshwane district (Makanjee *et al*. 2006: 125). In addition, the introduction of OSD by the Department of Health which has aimed at creating new career structures for health care professionals employed by the public sector has resulted in disgruntled employees. Nurses in the North West province have cited that the grading system, linked to their career growth, was unfairly implemented and could result in their career stagnation (Khunou and Maselesele 2016: 9). Furthermore, the inability of nurses to apply their skills at work has been associated with turnover intentions (Munyewende *et al.* 2014: 8). The aforementioned factors could negatively hinder the retention of radiographers within the public sector and could further increase maldistribution.

3.4 APPLYING THE CONCEPTUAL FRAMEWORK IN THE STUDY

The combination of the two theories (Herzberg's Motivational and Hygiene Theory and Brain Drain Theory), would be used to determine if radiographers could be retained in the public sector. Herzberg's Motivational and Hygiene Theory consists of two main factors, the hygiene and motivational factors, both

of which are linked to job satisfaction. The literature suggests that the lack of job satisfaction could negatively affect retention of health care professionals in any organisation. The factors contained in Herzberg's Theory could also result in push and pull factors associated with Brain Drain Theory. In this regard, radiographers could be leaving their post in the public sector due to lower levels of job satisfaction or the push and pull factors associated with Brain Drain Theory.

The literature reviewed identified the following factors as major contributors to job satisfaction: supervisor effectiveness (Coomber and Barriball 2006: 301); staff shortages (Verrier and Harvey 2010: 118); interpersonal relations at work (Nassar *et al.* 2011: 247); heavy work load (Coetzee *et al*. 2013:164); working hours (Jones *et al.* 2013: 49); pay (Netshiswinzhe and Mulaudzi 2015: 104); safe environment (Khamisa *et al.* 2017: 256) and burnout (Suarez *et al*. 2017: 34). Amongst healthcare professionals, the lack of any of these factors have been associated with decreased job satisfaction and increased intention to vacate their posts.

3.5 SUMMARY OF THE CHAPTER

Chapter 3 was used to justify the two theories that were used to guide the study and to clarify the theoretical framework. This chapter was also used to justify the conceptual framework based on the literature reviewed. Chapter 4 will focus on the research methodology used in the current study.

CHAPTER 4: RESEARCH DESIGN AND METHODOLOGY

4.1 INTRODUCTION

Chapter 4 outlines the research methodology that was used in collecting the data for this study. This chapter also justifies the selected research design, namely, exploratory sequential mixed methods design and explains the chosen research paradigm to guide the study. A pragmatic philosophical approach was used to guide study. The population under study were radiographers, and the research setting comprised the four tertiary hospitals in Gauteng province. The chosen sampling technique is clarified, which l includes the exclusion and inclusion criteria. In exploratory sequential mixed methods design, data analysis take place in two different phases, where qualitative data analysis precedes the quantitative data analysis. The steps followed in data analysis is discussed in detail. The ethical standards that were followed during data collection and analysis, are discussed in detail.

4.2 RESEARCH DESIGN

The researcher used a mixed methods approach in conducting the study. In mixed methods studies, researchers use a combination of qualitative and quantitative designs in order to achieve the objectives of study (Creswell and Plano Clark 2011: 3). This combination of qualitative and quantitative methods can be conducted concurrently or sequentially; in this study, it was sequential, where the findings of phase one were used to develop a research tool for the second phase. Mixed methods can compensate for weaknesses that are associated with using either the quantitative or qualitative designs in any study (Creswell and Plano Clark 2011: 12). The mixed methods design allows the researcher to use any tool to collect data, instead of being restricted to a tool that is associated with either quantitative or qualitative methods (Creswell and Plano Clark 2011:12). The use of mixed methods allowed the researcher to

convert the participants' words in the first phase of the study into a questionnaire which identified trends in the second phase (Creswell 2014: 535). Mixed methods data collection can either be inter-method or intra-method mixing. Inter-method mixing refers to the use of two or more methods of data collection in a singular study, while intra-method mixing is collecting qualitative and quantitative in a single measure (Johnson and Christensen 2014: 226). In this study, inter-method mixing was used where qualitative data collection through focus group discussions (FGDs) preceded the quantitative data collection through a closed-ended questionnaire. Mixing of methods will allow the researcher to obtain evidence from multiple sources and to rule out any possible alternative explanations (Johnson and Christensen 2014: 226).

The need to combine the two methods arises from the paucity of information relating to job satisfaction of radiographers in South Africa. The combination of mixed methods involved the collection, analysis and integration of quantitative and qualitative data in this particular study (Hesse-Biber 2010: 3). Mixed methods, in this study, were also used for triangulation, development, complementarity and expansion (Hesse-Biber 2010: 3). Triangulation is defined as validation approach using multiple investigators, methods, data sources and or theoretical perspective in the search for convergence of results (Johnson and Christensen 2014:298). Triangulation also was used to strengthen the conclusion, making it more acceptable to the research community and complementarity ensured that the researcher gained a fuller understanding of the research problem (Hesse-Biber 2010: 3). For the purposes of this study, triangulation was achieved through the collection of qualitative in phase one of the study through focus group interviews and individual interviews. The second phase of the study used a questionnaire to reach a wider range of participants. In addition, there was a combination of theories (the Herzberg motivation and Hygiene theory and the Brain Drain Theory) to explore the phenomenon in different theoretical dimension.

Expansion was used to increase the breadth and range of the research question where the findings of the quantitative phase tested for significance. (Johnson and Christensen 2014: 502). Development was used to inform the second phase of the study, as in most sequential studies (Hesse-Biber 2010: 278). The concluding remarks and model development to retain radiographers emanated from the data collected over the two phases of data collection. In phase 1 of the study 5 themes emerged and these were tested for significance in phase 2 of the study. Thereafter a model to retain radiographers was designed on a basis of these themes, whether they were linked to an intent to leave or not.

4.2.1 Exploratory sequential mixed methods

Exploratory sequential mixed methods were used in this particular study. The combination of methods ensured that the phenomenon under study was fully explored in phase one and that a suitable instrument was developed for the second phase of the study. The phenomena in the qualitative data collection and analysis of Phase 1 were explored, and the findings from this phase were used to develop a suitable instrument for data collection in the quantitative phase. Mixing of qualitative and quantitative methods occurred after the analysis of qualitative data in Phase 1. The findings of Phase 1 were then used to develop a questionnaire for Phase 2 of the study (Figure 4.1). The results from the two phases were incorporated in the discussion which guided the development of the model. Phase 1 was conducted through FGDs with purposefully selected radiographers.

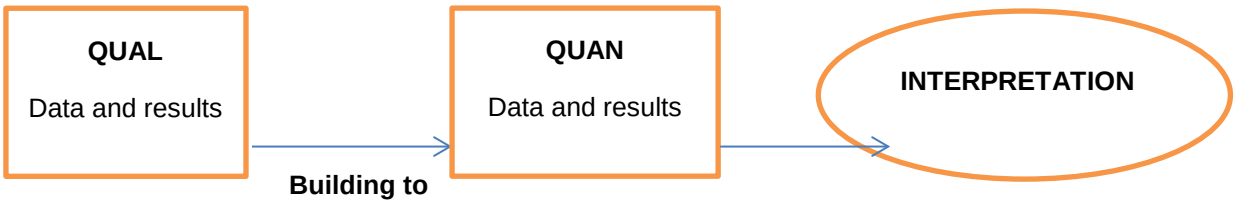

Figure 4.1: The exploratory sequential design (Creswell 2014: 281)

4.2.2 Background of exploratory sequential mixed method

Exploratory sequential mixed methods have been used in various sectors such as health, business and education. In the business sector, Meyers *et al*. (2001) explored organisational assimilation amongst newcomers in an organisation (Creswell and Plano Clark 2011: 336). Organisational assimilation is described as the process whereby newcomers familiarize themselves with the norms of an organisation (Creswell and Plano Clark 2011: 336). In the first of phase their study, they used interviews and identified six dimensions of organisational assimilation which were: familiarity with others, organisational acculturation, recognition, involvement, job competency adaptation or role negotiation. The second phase of the study was used to validate the six dimensions and concluded with job satisfaction and organisational identification which were positively associated with assimilation while propensity to leave was negatively related.

4.3 PHILOSOPHICAL APPROACH OR PARADIGM

A research paradigm is a worldview about research held by a community of researchers based on a set of shared assumptions, concepts, values and practice (Johnson and Christensen 2017: 31). Each research paradigm has its unique ontology, epistemology, methodology, axiology and rhetoric. These unique features contained in each paradigm are defined by Johnson and Christensen (2017: 32) as follows:

- Epistemology is the branch of philosophy dealing with knowledge and its truth. In this study participants and the researchers were treated as creators of knowledge. The participants' perspective on their job satisfaction was used by the researcher to develop the model.
- Ontology relates to beliefs about the nature of reality. In this study the nature of reality is that job satisfaction is the cause of maldistribution of radiographers between the private and public sectors.
- Axiology refers to the beliefs about the role of values or ethics in conducting research. This was discussed under ethical consideration.

- Methodology is the research approach used to investigate the problem in the study. The opted methodology for this study was exploratory sequential mixed methods, due to the paucity of information related to job satisfaction of radiographers in South Africa.
- Rhetoric refers to the science of language, oral and written communications. In this study the researcher had to be familiar with language used in mixed methods research. In phase one of the study, data collection was conducted orally using a standardized interview protocol; in phase two of the study, data collection was in written form through a questionnaire. The results from the two phases would be communicated to the research community in a written form.

The research paradigm is further broken down into four basic sets of beliefs that can be used to guide a particular study. The four philosophical assumptions or paradigms are post-positivism, constructivism, transformative and pragmatism (Creswell 2014: 6). Each of these philosophical assumptions addresses a different dimension in research. For the purpose of this study, the researcher used pragmatic philosophical approach or paradigm. Pragmatism is used when a researcher intends to address a real-life problem (Tashakkori and Teddlie 2010: 16). The current real life problem to be addressed is the maldistribution of radiographers between public and the private sector.

Pragmatism allows researchers the flexibility to choose the methods, techniques and procedures to best suit the needs of their study. Instead of focusing on methods, the researcher emphasizes the research problem and uses all approaches available to understand it. This means that qualitative and quantitative data can be collected, and their analysis could occur concurrently or in a sequential form (Creswell 2014: 11). Flexibility of the research methods allowed the phenomenon of job satisfaction to be explored among radiographers.

4.4 SETTING

Natural settings are uncontrolled, real-life situations where the researcher cannot manipulate the environment for the study (Brink 2013: 54). In the current study, data collection occurred at the participants' places of employment which were tertiary hospitals in the Gauteng province. The selected province has the highest population in South Africa, with an estimated 13.4 million citizens (Department of Labour 2016: 3). The population is distributed over five municipalities, namely, the City of Tshwane, City of Johannesburg, City of Ekurhuleni, West Rand and Sedibeng Figure 4.1. The four tertiary hospitals were situated in two of the municipalities, in the City of Johannesburg and the City of Tshwane. It is also worth noting that this province had the highest contribution to the South African GDP at 34.6 % (Department of Labour 2016: 4). As a result, it has the highest number of private hospitals than any other province in the country (Matsebula and Willie 2006: 162). Therefore, the maldistribution between the public and the private sector might be prominent in this province in comparison to any other province in South Africa. Hence, the researcher's choice to use radiographers in this province for data collection.

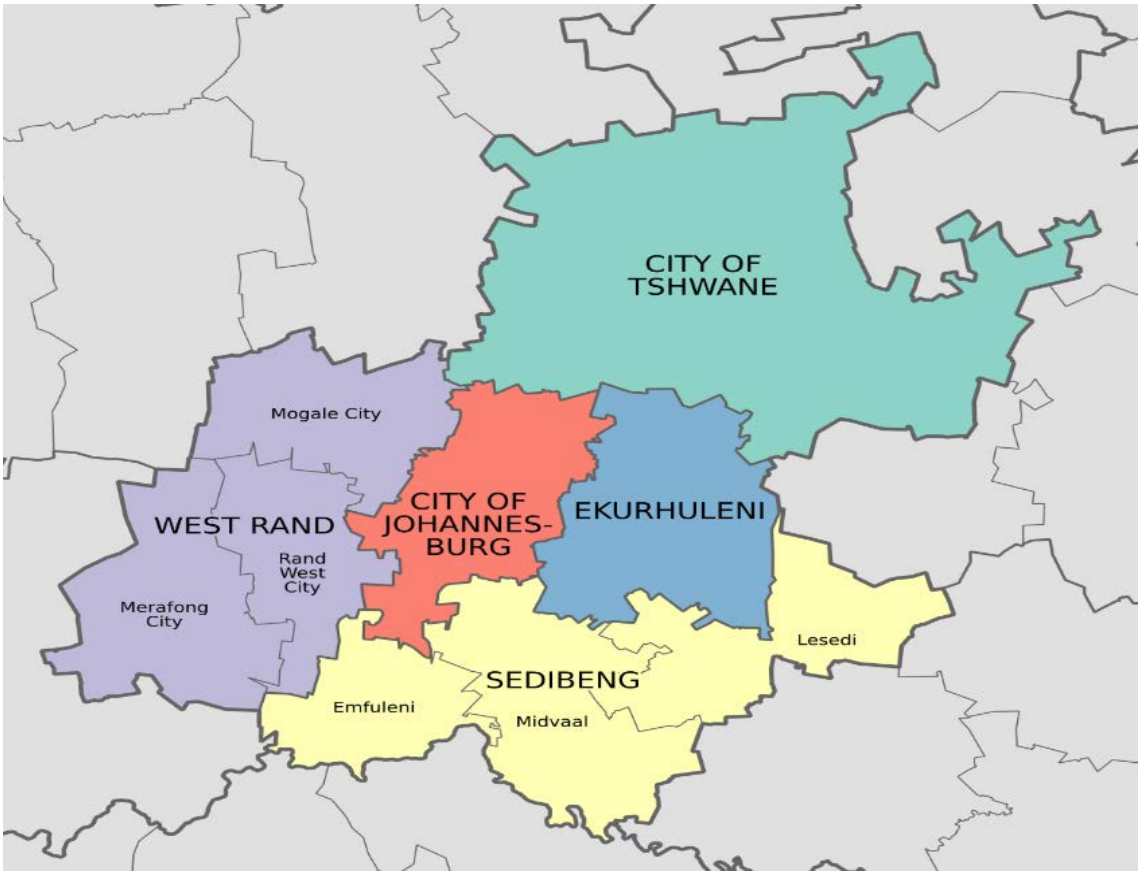

Figure 4.1: Map of the Gauteng province (Department of labour 2016:2)

4.5 SAMPLING PROCESS

According to Johnson and Christensen (2014: 251), the sampling process entails identifying the population to be studied and selecting the correct sampling frame. A sampling frame is formed by the group of individuals under investigation (Johnson and Christensen 2014: 251) and in this study it comprises radiographers employed by tertiary hospitals in the Gauteng province. The process of sampling also entails the specific sampling methods that would be followed in a study. The researcher opted to use two different sampling methods for the qualitative and the quantitative phase. During the sampling process, the researcher needs to calculate the required sample size to provide statistically significant results.

A sample is a set of elements taken from a larger population, while an element is a basic unit selected from the population (Johnson and Christensen 2014: 250). Elements in this study were radiographers who were employed by tertiary hospitals at the time of data collection. Radiographers employed by tertiary hospitals were the accessible population. Population refers to the larger population to which the researcher generalizes the results of the study. (Johnson and Christensen 2014: 250). Tertiary hospitals in the Gauteng province were considered an ideal sample because of the population in the province and the availability of all the five disciplines of radiography within this province and the sampling frame consisted of 12 390 radiographers nationally (HPCSA 2017: 1). A sampling frame is a list of all the elements in the population (Johnson and Christensen 2014: 250). It was worth noting that it was impossible to ascertain the exact number of radiographers employed in the Gauteng province by either the public or the private sector. However, for the purpose of this study, the target population was 325 radiographers who were employed by tertiary hospitals at the time of data collection. In the process of identifying possible participants, different sampling techniques were used for the two phases of data collection. For the qualitative phase of data collection criterion sampling was used and stratified random sampling was used for the quantitative phase.

4.5.1 Qualitative sampling

Purposive sampling, specifically criterion sampling, was used to select the participants in phase one of the study. In criterion sampling, participants were selected on the basis that they satisfied a criterion (Patton 1990: 183). The specific criterion in this study was that participants must be radiographers employed by tertiary hospitals in the Gauteng province. This sampling method also ensured that participants who were knowledgeable about the phenomenon relating to job satisfaction for radiographers employed in tertiary hospitals were selected. The sample population comprised radiographers from the five disciplines, namely, diagnostic radiography, sonography, nuclear medicine, radiation therapy and mammography. Participants representing different

grades were selected, including community service radiographers, that to allow a wider discussion on job satisfaction. . Hence, participants from grades 1, 2, 3 and a community service radiographer from each discipline were included in the FGDs.

One FGD was conducted in each of the identified hospitals. The focus group comprised one community service radiographer from diagnostic radiography, a grade one radiation therapist, a grade three mammography radiographer, a grade two sonographer and a grade two nuclear medicine radiographer. Heads of departments were interviewed individually because of the positions they hold and the limited amount of time they have available. All the interviews were conducted by the researcher.

4.5.1.1 Inclusion criteria

- Radiographers had to be employed by tertiary hospitals within the Gauteng province.
- Community service radiographers.
- Radiographers registered with HPCSA as diagnostic radiographer, radiation therapy radiographer, sonographer, nuclear medicine radiographer and mammography radiographer.
- Radiographers who had been employed at that hospital for a minimum of 3 months, to ensure that they were familiar with institutional policies.

4.5.1.2 Exclusion criteria

- Student radiographers were not part of this study even though they did their clinical rotations in these centres.
- Radiographers who were not employed by a tertiary hospital within the Gauteng province.
- Any person who was not registered with the HPCSA as a radiographer.
- Radiographers who were employed in tertiary hospitals for less than three months.

4.5.2 Quantitative sampling

In the second phase of the study, stratified random sampling was used, specifically disproportional stratified sampling. Disproportional sampling is a type of stratified sampling in which the sample proportions are made to be different from the population proportions on the stratification variable (Johnson *et al*. 2014: 260). This type of stratified sampling is used when certain groups in the study populations are small, and the researcher wants to generalize the findings to the total population. In the current study, majority of the participants are diagnostic radiographers while mammographers and sonographers are in the minority.

This sampling is appropriate for potential respondents in the quantitative phase because it allows the researcher to select potential respondents from a population of radiographers in the various disciplines. From the total number of radiographers in each discipline, a minimum number was calculated by the statistician to ensure statistical significance. Therefore, the researcher had to ensure that the required number was reached, and reminders were sent through the identified research assistant in each of the selected hospitals. At the time of data collection, a total of 292 radiographers were employed across the five disciplines. The required minimum of participants in each discipline in order to have statistical significance based on an assumption that alpha =.05 and a margin of error of 0.005 are as follow: diagnostic radiographers 116, mammography radiographers 9, nuclear medicine radiographers 13, radiation therapists 33 and sonographers 3. Therefore, a minimum of 174 radiographers from the sampled population was required for statistical analysis.

4.5.2.1 Inclusion criteria

- Radiographers must be from the five disciplines of radiography and employed by a tertiary hospital in the Gauteng province.
- Community service radiographers.

- Radiographers registered with HPCSA as diagnostic radiographer, radiation therapy radiographer, sonographer, nuclear medicine radiographer and mammography radiographer.
- Radiographers who had been employed at that hospital for a minimum of 3 months, to ensure that they were familiar with institutional policies.

4.5.2.2 Exclusion criteria

- Participants who were in phase one of the study.
- Student radiographers were not part of this study even though they did their clinical rotations in these centres.
- Radiographers who were not employed by a tertiary hospital within the Gauteng province.
- Any person who was not registered with the HPCSA as a radiographer.
- Radiographers who were employed in tertiary hospitals for less than three months.

4.5.3 Population

Population refers to the larger population to which the researcher generalizes the results of the study (Johnson *et al.* 2014: 250). In the current study, the population of interest were radiographers employed by tertiary hospitals in Gauteng province. At the time of data collection 292 radiographers were employed by the four tertiary hospitals within the Gauteng province across the five disciplines of radiography (Table 4.1). In Health Professions Council of South Africa register, radiographers and clinical technologist are combined under one professional body, thus making difficult to obtain the exact number of registered radiographers. It is worth noting that a total of 12 930 radiographers and clinical technologists were registered with the Health Council of South Africa (HPCSA 2017: 1).

Table 4.1: Distribution of radiographers per hospital

Hospital	Diagnostic	Mammography	Nuclear Medicine	Radiation Therapist	Sonographer
TH1	50	5	12	34	3
TH2	45	4	8	20	0
TH3	36	4	3	-	0
TH4	54	4	8	-	2

4.6 DATA COLLECTION PROCESS

Data collection refers to the techniques used to physically obtain data that will be analysed in a research study (Johnson and Christensen 2014: 225). Various methods can be used to collect data, and these are tests, questionnaires, interviews, focus groups, observations and using secondary data. In this study, the researcher opted to use two methods data collection, namely, interviews and questionnaires (Figure 4.2). The data collection process was conducted over two phases, where interviews were used in the qualitative phase and questionnaires were used in the quantitative phase of the study.

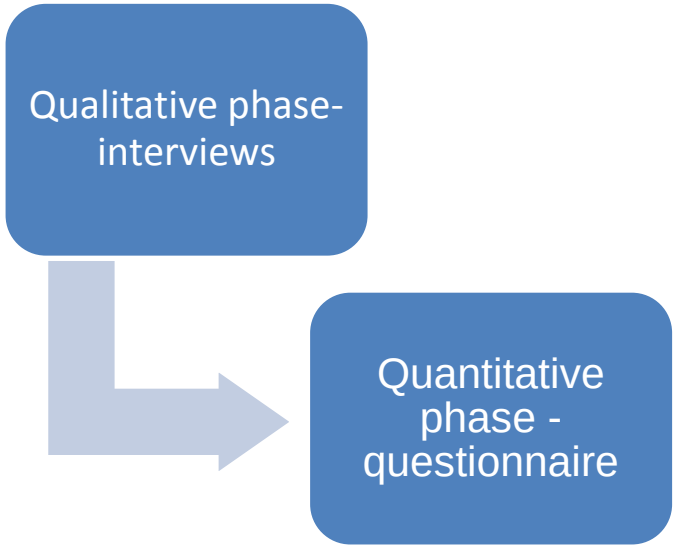

Figure 4.2: Data collection process

Interviewing is a method of data collection where an interviewer (researcher) asks an interviewee (participants) questions related to the study (Johnson and Christensen 2014: 228). Interviews for this study were conducted in person, which meant face-to-face as opposed to telephonic interviews. Specifically, FGDs were conducted by the researcher with a group of respondents. FGDs allow the researcher to obtain general background information, generate a research hypothesis that can be tested with quantitative research methods, stimulate new ideas and creative concepts, learn how respondents talk about the phenomenon of interests which could be used to develop a questionnaire (Johnson and Christensen 2014: 235). The respondents' responses were later analysed for prominent themes and were used to develop a questionnaire.

In the second phase of the study, a self-developed questionnaire was used to collect data. Questionnaires are a form of self-report data collection instrument that is completed by individual participants (Johnson and Christensen 2014: 235). The questionnaire had open-ended questions to provide participants an option to add valuable information. The questionnaires were used to obtain thoughts, feelings, attitudes, beliefs, values, perceptions, personality and behavioural pattern from multiple participants at once. In developing the questionnaire, the researcher had to ensure that the questions were clear, aligned with the research objectives, leading questions were not used and double-barrelled questions were avoided (Johnson and Christensen 2014: 235). Since questionnaires allow privacy, participants provide their honest opinion about the phenomenon under study. A questionnaire was also chosen for the second phase of the study to allow generalizability of the results.

Data was collected from radiographers working at four public tertiary hospitals in the Gauteng province. Data collection in Phase 1 of the study was only collected at two the tertiary hospitals. These two hospitals were chosen because they had all the five disciplines within radiography. Therefore, the FGDs s were conducted in these two hospitals and the questionnaires were distributed in all four hospitals.

4.6.1 Data collection in the qualitative phase

Phase one of the study was conducted through FGDs. Respondents were recruited using various strategies, such as announcements in departmental meetings and a written invite to contact the researcher was placed on departmental notice boards and in the duty room. This required the researcher to liaise with the heads of department to ensure that there was minimal interruption of the delivery of service to patients. Some respondents were interviewed during their leisure time. The researcher requested the use of the duty room within the department to conduct interviews so that participants had privacy.

The method of data collection was face-to-face in FGDs using semi-structured questions as demonstrated in the interview guide. The advantage of face to face interviews is that in-depth responses can be obtained from a wide range of participants and unclear questions can be clarified (Brink 2013: 153). FGDs were used in the exploratory study to provide rich information, especially where little information exists about the phenomenon (Hesse-Biber 2017: 149). The interview guide had open- ended questions to allow the researcher to probe for additional information. Five participants participated in the FGDs. The five participants were from the five disciplines in radiography and these excluded the heads of departments because the subordinate participants could have provided socially acceptable answers in the presence of their seniors. Hence, heads of departments were also interviewed face-to-face individually, using the same interview guide.

The process of data collection could be repeated if new themes emerge at the end of data collection. In qualitative studies, data collection continues until data saturation has been reached. Data saturation refers to a point where the researcher no longer finds new information (Hesse-Biber 2017: 200). In this study, data collection was terminated when data saturation was reached. The groups were designed to be representative of the five disciplines and the different grades of radiographers. Therefore, the FGDs had grades 1-3

radiographers and community service radiographers from any of the 5 disciplines with heads of departments being interviewed separately. The inclusion of different disciplines of radiography, age, gender and race formed heterogeneous groups (Hesse-Biber 2017: 162). Such groups provided the researcher with insight into different perceptions and attitudes related to job satisfaction of radiographers. This was ideal for this study as the researcher intended to explore the phenomena of job satisfaction amongst radiographers in phase one and to develop a questionnaire for the second phase of the study. Average interviews are said to take 1-3 hours. The interviews in this study ranged from 30 minutes one and half hours (Johnson and Christensen 2017: 239). The individual interviews were slightly shorter than average, but all the questions were covered in depth and quality of the interviews were not compromised in any anyway. The length of the interviews guided by the participant's responses, even though the researcher had probing questions. Consistent with ethical requirements, permission was sought from participants to record the interviews to capture the discussions. The participants consented by completing a consent form and interviews were recorded by the researcher.

One FGD was conducted in each of the identified hospitals. Participants in the FGDs comprised one diagnostic radiographer, a grade one radiation therapist, a grade three mammography radiographer, a grade two sonographer and a grade two nuclear medicine radiographer. Heads of departments were interviewed individually because of the positions they hold and time constraints. All the interviews were conducted by the researcher.

4.6.2 Data collection in the quantitative phase

A questionnaire was used to collect data in the second phase of the study. The questionnaire was distributed by the researcher to all the participants employed by the four tertiary hospitals in the Gauteng province. Participants were identified at their place of employment during working hours to enhance content validity. Questionnaires were distributed to the participants at the beginning of each working day and collected at the end of the day. The researcher repeated

the same process in one hospital for a week and reminded participants who had taken questionnaire to complete and return.

A self-developed questionnaire from findings in phase one was used to collect data in Phase 2 of the study. A questionnaire is used to obtain thoughts, feelings, beliefs, values, perceptions, personality and behaviour from respondents (Johnson and Christensen 2017: 228). The researcher had to ensure that the questions were short and simple, and avoided double barrelled, leading, negatively phrased or ambiguous questions (Brink 2013: 156). There are different methods used to administer a questionnaire, namely, online, mailed, telephonic or self-administered. The researcher used a self-administered questionnaire to minimize the low response rate associated with this data collection method. The other advantage of using self-administered questionnaire is that they are less expensive and the easiest method to test reliability and validity in quantitative research (Brink 2013: 153). The self-administered questionnaire had close-ended questions.

4.7 PILOT STUDY

The importance of the pilot study was to ensure that the instrument of choice operated or functioned properly (Brink 2007: 54). By conducting the pilot study and allowing the respondents to discuss the research instrument will assist the researcher to recognise and address any shortfalls associated with the research instrument (Brink 2007: 54). In the current study a total of seven radiographers were asked to complete the questionnaire participate in a group discussion to critique the questionnaire. The participants to the pilot study were 4 diagnostic radiographers, 1 mammography radiographer and two radiation therapists. The pilot study provided an opportunity to clarify ambiguous questions, identify important information that could have been left out and to ensure the instructions are clear (Johnson and Christensen 212: 2017). Pilot testing was conducted on radiographers employed by a public hospital in the eThekwini District and it was conducted for both phases of data collection.

These radiographers are employed in public tertiary hospitals, therefore similarities might exist. However, the results were not included on the final results. These were the changes made after the pilot study:

In section A, no statements were added or changed.

In section B, five statements were added and others were changed.

- These were the statements that were changed: 1 My salary has improved since the introduction of OSD, was changed to; My salary has improved since the introduction of occupational specific dispensation (OSD). 38 The CPD activities are inclusive of all the disciplines within radiography.
- These statements were added: 10 My department pays for overtime; 11 Working overtime is not compulsory in my department; 25 My workplace is hygienic. 39 I am provided with an opportunity to train in specialized areas such as Planning (therapy), MRI, CT, angiography and catheterization laboratory; 47 I am satisfied with the management styles used by my immediate manager; 48 There is adequate support staff to assist with operational needs of patients.
- This statement was removed: I am satisfied with the way the scarce skills allowance has been incorporated into salaries. Majority of the participants failed to understand this statement, hence it was removed.

4.8 DATA ANALYSIS

Data analysis is the process of extracting, compiling and modelling raw data for the purpose of obtaining constructive information that can be applied to formulate conclusions, predict outcomes and support decisions (Johnson and Christensen 2014: 228). In this study, data analysis of mixed methods was followed where qualitative and quantitative data were analysed separately (Creswell and Plano Clark 2011: 203). During the process of data analysis pure qualitative methods were used to analyse qualitative data, while pure quantitative methods were followed to analyse quantitative data. Qualitative data analysis was preceded by quantitative data analysis.

4.8.1 Qualitative data analysis

Thematic analysis of data was used to identify themes in findings. According to Creswell and Plano Clark (2011: 129), there are five steps to be followed in thematic data analysis, which starts with preparing the data for analysis, exploring the data, analysing the data, representing the data for analysis and validating the data. Qualitative data analysis commenced by organizing documents, audio data and transcribing the data. The next process was to explore the data, which was done by reading through the data, writing memos and developing a qualitative codebook. The actual analysis of the data would occur by coding the data, assigning labels to codes, grouping the themes into codes, interrelating themes and then finally applying the qualitative software programmes. The final step was presenting the findings in discussions of themes and presenting visual models, figures and tables.

Coding is an interpretive act that is performed by the researcher in qualitative studies to create a pattern, creating categories, theory building and analytical process (Saldana 2016: 14). Coding is done to ensure that the researcher is able find the meaning of each item of qualitative data and construct patterns in the data (Saldana 2016: 5). The researcher listened to the recorded interviews to initiate coding and transcribed the recorded data into a word document. During this process, the recorded data was broken down into different codes which were entered into the codebook. Thereafter, the codes are broken down into different categories and subcategories which were used to create the themes. This process was continuously repeated to ensure that all the possible codes were entered into a code book.

4.8.2 Quantitative data analysis

A five-step process was followed for the analysis of quantitative data (Creswell and Plano Clark 2011: 129). The first step was coding the data by assigning numeric values, cleaning the data base, recording new variables for computer analysis and establishing the code book. The next step was exploring the data by visually inspecting the data, conducting descriptive analysis and finally

checking for trends and distributions. In analysing the actual data, the researcher had to ensure that an appropriate statistical test was chosen, and SPSS, version 23 was used for this process. The statistical analysis test included a one samples *t*-test, which was used to determine if there was any difference in job satisfaction experienced across different grades and in the different hospitals and the different disciplines within radiography. The One Sample *t* Test determines whether the sample mean is statistically different from a known or hypothesized population mean. For the purposes of our study, a one-sample t-test was used to determine whether the population mean had a significant level of agreement with the statement that was posed to them.

Factor analysis was performed to group and reduce the number of statements that were related. The related statements were used to perform additional analysis such as multiple regression. Two types of factor analysis can be performed, exploratory factor analysis and the confirmatory factor analysis (Pallant 2011: 181). For the purposes of this study, confirmatory analysis was used to confirm a specific hypothesis related to the structure of the set of statements that were grouped together. The ten factors that emerged were government policy on OSD; favourable working conditions provided by supervisors; Intention to leave; favourable working conditions provided by equipment; CPD activity; government policy on Employment Equity Act; Fair remuneration; government policy on PMDS; favourable working conditions provided by infrastructure and HR processes. Correlations are used to describe the strength and direction of the linear relationship between two variables (Pallant 2011:128). Pearson's correlation was used to determine the correlation between the intention to leave (ITL) against the 9 factors.

4.9 TRUSTOWORTHINESS

As qualitative research has an element of subjectivity, and is open to criticism, it is important that the study and the findings provide evidence of validity and reliability (Polit and Beck 2012:174). Lincoln and Guba (1985: 289) suggest that there is an alternative to validity and reliability that would provide the evidence

for a decision trail and trustworthiness to be assured within qualitative research. Trustworthiness refers to the extent to which a research study is worth paying attention to, worth taking note of and the extent to which others are convinced that the findings are to be trusted (Babbie and Mouton 2001: 276). The terms validity and reliability are used differently between qualitative and quantitative studies. In qualitative studies validity requires the researcher to develop methods that will ensure accuracy of the results, whereas reliability requires the researcher to maintain consistency (Creswell 2014: 210). Terms that are associated with qualitative research are trustworthiness, authenticity and credibility, dependability, confirmability and transferability.

4.9.1 Credibility

Credibility refers to the consistency, stability and repeatability of the participant's account as well as the researcher's ability to collect and report accurately (Brink 2007: 118). In Phase 1 of the study, this was achieved by using a standardised interview guide. In addition, the interviews were audio-recorded by the researcher in order to ensure stability. The techniques that were used to increase credibility in this study were prolonged engagement with the participants, triangulation which was achieved by collecting data in two separate hospitals and checking to ensure that all participants were radiographers, employed by a tertiary hospital and peer debriefing was also conducted.

4.9.2 Dependability

Dependability requires the researcher to ensure that the findings of the study are consistent and could be repeated (Brink 2007: 118). To ensure dependability, an audit trail was maintained through safe keeping of raw data of each interview for future reference. The audit involves a scrutiny of the data collected and any supporting documentation by the supervisors. Although the researcher coded the data himself, the data and analysis were checked for discrepancies and scrutinised by the research supervisors.

4.9.3 Confirmability

Confirmability requires the researcher to avoid being biased during data collection to ensure that the findings are supported by data (Brink 2007: 118). The researcher employed reflexivity which involves self-awareness and critical self-reflection on the researcher's potential biases as these may affect the research process and conclusions. Audit trails were conducted to confirm findings, interpretations and recommendations supported by actual data.

4.9.4 Transferability

Transferability is the degree in which the research can be transferred to other settings (Brink 2007: 119). The researcher ensured transferability of the results of this study by providing a description of the research setting and research processes which confirmed the transferability and authenticity of the study, making it possible to build on these findings when conducting further research.

4.9.5 Reflexivity

According to Hesse-Biber (2010:60), reflexivity is thinking about the research assumptions and becoming conscious of what values, attitudes and concerns we bring to a given research project. In the current study, the researcher has been an employees of the government as a radiographer in one of the tertiary hospitals that were included in the study. Therefore, the researcher had to ensure that he eliminates any previous experience with organisation and allowed the participants to describe matters in their own views. This included allowing participants to provide any additional information that could have been left out by the researcher. Similarly in phase two of the study the researcher allowed the respondents to provide any additional information that could have been left out by the researcher.

4.10 RIGOUR OF THE STUDY

Rigour is defined as striving for excellence in research and this entails adherence to detail and accuracy (Gray *et al*. 2017: 42). Validity and reliability measure the rigour of the study.

4.10.1 Validity

Validity is a crucial factor in the development, selection and application of an instrument. De Vos *et al*. (2011: 96) refers to validity as the degree to which the questionnaire or instrument measures the actual questions and the accuracy of questions. This is further supported by Polit and Beck (2010: 175) who explain validity as the degree to which an instrument measures what it is supposed to measure. The questionnaire was validated by face, content and construct validity.

Face validity refers to a measuring instrument by just looking at it as if it measures what it is supposed to measure (Polit and Beck 2010: 336). The questions were related to the topic and all aspects of the topic that were mentioned in the literature and the selected theoretical framework were included in the questionnaire.

Content validity refers to whether items measure the content they are intended to measure (Polit and Beck 2010: 336). To ensure content validity, the statements in the questionnaire reflected all the concepts developed through the intensive literature study that was conducted on job satisfaction. Construct validity is used to ensure that the instrument measures what it is intended to measure (Creswell and Creswell 2018: 153). This achieved through the pilot study, where changes and some statements were added in the original statements.

4.11 ETHICAL CONSIDERATIONS

The researcher obtained ethical clearance from the Institutional Research Ethics Committee (Appendix 1), at the Durban University of Technology. A request to conduct the study was sought from the following gate keepers:

- Gauteng Department of Health (Appendices 2a and 2b).
- Chief Executive of tertiary hospital 1 (Appendices 3a, 3b, 3c, 3d and 3e).
- Chief Executive of tertiary hospital 2 (Appendices 4a, 4b, 4c and 4d).
- Chief Executive of tertiary hospital 3 (Appendices 5a and 5b).
- Chief Executive of tertiary hospital 4 (Appendices 6a, 6b and 6c).

In fulfilling ethical requirements, the following documents were provided to participants: Letter of information to the participants for the interviews and survey (Appendices 7a and 7b).

- Consent form for permission to audio-record the interviews by the researcher (Appendix 8a).
- Demographics to the interview and the interview guide (Appendices 9a and 9b).
- Questionnaire that was used in Phase 2 (Appendix 10a).

4.11.1 Principles of ethics

The researcher adhered to the principles of ethics in conducting the study. These ethical principles were designed to protect the participants, in various ways, from any possible harm during the research study. These are elaborated below:

4.11.1.1 Right to freedom of choice, expression and access to information

The participant's right to freedom of choice and expression was considered by allowing the participant to decide voluntarily whether to participate in the study or not and the right to withdraw at any time. Participants in Phase 2 of the study were also allowed to omit questions they felt uncomfortable in answering, and in Phase 1, they were allowed to exit the interview if they felt uncomfortable (Floyd and Fowler 2009: 164).

4.11.1.2 Right to privacy, confidentiality and anonymity

Special consideration was given to the participant's right to privacy and confidentiality. In Phase 1, privacy was ensured by finding a private place to conduct the FGDs. To ensure the participant's anonymity in Phase 2, the questionnaire did not require their personal information, nor did it require the name of the hospital where they were employed. Each tertiary hospital was provided with a unique code for the questionnaire, only known to the researcher and research team.

4.11.1.3 Right to equality, justice, human dignity and protection from harm

Although interviews and questionnaires are associated with minimal risks, there are key factors that the researcher must inform the participants about (Floyd and Fowler 2009: 165). In protecting the participants, the researcher had to ensure that non-project members do not have access to the data and names of the tertiary hospitals where the data collection occurred. This information would be deleted once it is no longer needed. By completing the questionnaire, the participants declared their voluntary consent to participate in the survey, while in Phase 1, participants signed a consent form to be audio recorded.

4.12 SUMMARY OF THE CHAPTER

The chosen design for this study was mixed methods design exploratory sequential methods. The initial phase of data collection was conducted through FGDs and the findings were then used to develop a questionnaire for the second phase. This section was also used to discuss the inclusion and exclusion criteria for the qualitative and quantitative phases of data collection. The findings and the results of this study will be presented and discussed in chapter 5.

CHAPTER 5 PRESENTATION OF RESULTS
PHASE 1 QUALITATIVE DATA

5.1 INTRODUCTION

The previous chapter described the research methodology for the current study. This chapter presents results from both phases of the study. In phase one, FGDs were conducted for the different disciplines within radiography, and one on one interviews were conducted with the heads of departments. The findings were organized into intrinsic and extrinsic factors using Herzberg's Theory. The presentation of results of the study begins with a description of each group participants, followed by the key findings which are grouped into themes and discussed in terms of their subthemes.

5.2 DESCRIPTION OF PARTICIPANTS

Data collection took place in two tertiary hospitals within the Gauteng province. A total of 16 participants were interviewed individually and in FGDs. Individual interviews were designed for assistant directors because of their busy schedule. In total, seven (7) assistant directors who were representative of the five disciplines were interviewed. In tertiary hospital number one (1), four (4) assistant directors were interviewed who represented diagnostic radiography, nuclear medicine, radiation therapy and ultrasound. Mammography was represented by the diagnostic radiography assistant director. In tertiary hospital number two (2), three (3) assistant directors were interviewed because there were no sonographer employed by the hospital at the time of data collection. The three (3) assistant directors were from radiation therapy, nuclear medicine and diagnostic radiography (representing mammography). FGDs were conducted in the two tertiary hospitals and were representative of the five disciplines.

In tertiary hospital number one (1), the group interview comprised a radiation therapist, a mammography radiographer, and diagnostic radiographer. The nuclear medicine radiographer and sonographer were individually interviewed, because they could not make it to the group interview due to their busy work schedules. In tertiary hospital number two (2), the group interview comprised a mammography radiographer, nuclear medicine, radiation therapist and nuclear medicine radiographer and there were no sonographers at the time of data collection as demonstrated in Table 5.1.

Table 5.1: Demographics of participants

Participant	Gender	Age	Years of service	Position occupied	Discipline
DR 1	Female	50 years and older	Above 20 years	Assistant Director	Diagnostic radiographer
DR 2	Female	50 years and older	Above 20 years	Assistant Director	Diagnostic radiographer
GR 1	Male	21-33	1-10 years	Grade 1 radiographer	Diagnostic radiographer
GR 1	Female	50 years and older	Above 20 years	Grade 3 radiographer	Mammography radiographer
GR 1	Female	34-49	1-10 years	Grade 1 radiographer	Radiation therapist
GR 2	Female	21-33	1-10 years	Grade 1 radiographer	Mammography radiographer
GR 2	Female	34-49	10 ≥20	Grade 2 radiographer	Nuclear medicine radiographer
GR 2	Female	21-33	1-10 years	Grade 1 radiographer	Diagnostic radiographer
NMR 1	Male	34-49	1-10 years	Grade 1 radiographer	Nuclear medicine radiographer
NMR 2	Male	50 years and older	Above 20 years	Assistant Director	Nuclear medicine radiographer
NMR 3	Female	34-49	Above 20 years	Assistant Director	Nuclear medicine
RT 1	Male	34-49	Above 20 years	Assistant Director	Radiation Therapist
RT2	Female	34-49	10 ≥20	Assistant Director	Radiation Therapist
US 1	Female	21-33	1-10 years	Grade 1 radiographer	Sonographer
US 2	Female	+ 50 years	Above 20 years	Assistant Director	Sonographer

***Key: DR= Diagnostic Radiography; GR 1 = Group 1; GR 2= Group 2; NMR= Nuclear Medicine Radiographer US= Sonographer and RT= Radiation Therapist.**

5.3 CONCEPTUALISATION OF JOB SATISFACTION BY RADIOGRAPHERS

The objectives of phase one for the study were to:

- Explore the influence of human factors on job satisfaction.
- Evaluate the role of current policies introduced by the Department of Health on job satisfaction.
- Explore the effect of intrinsic & extrinsic factors on job satisfaction.

These objectives were achieved through asking participants the following questions in phase one of the study:

Ice breaker: Welcome everyone and thank you for taking the time to participate in the FGDs. I am interested in understanding the trends of job satisfaction amongst radiographers. Firstly, I would like to understand how your career as a radiographer has been?

1. What do you find most important in your job as a radiographer?
2. What is satisfying to you in your job as a radiographer?

   Probing questions:

   What are your views regarding the conditions of work?
3. What is dissatisfying about your job as a radiographer?

   Probing questions:
4. How does management react to tasks that you complete and the manner in which these are executed?
5. What do you understand by promotion?
6. What can be done to retain radiographers?
7. Any other questions based on the participants' responses will be asked.

A total of five themes emerged from the interviews and these were:

1. Government policies that influence job satisfaction.
2. Unsatisfactory remuneration.
3. Effects of working conditions on job satisfaction.
4. Functioning of the human resources department.
5. Lack of career pathing.

Table 5.3 outlines the categories, themes and sub-themes that emerged during the process of data analysis.

Table 5.2 Table of categories, themes and sub-themes

Category	Themes	Sub-theme
1.Extrinsic	1.1 Government policies that influences job satisfaction.	1.1.1 Occupational Specific Dispensation (OSD)
		1.1.2 Employment Equity Act
		1.1.3 Performance Management Development System
2.Intrinsic factors	2.1 Lack of career pathing.	2.1.1 Diversity
		2.1.2 Academic growth
		2.1.3 CPD activities
		2.1.4 Promotion
3.Extrinsic factors	3.1 Unsatisfactory remuneration.	3.1.1 Poor remuneration
		3.1.2 Overtime
		3.1.3 Bargaining Council
4.Extrinsic factors	4.1. Effects of working conditions on job satisfaction.	4.1.1 Support from management
		4.1.2 Workload and staff shortage
		4.1.3 Physical safety
		4.1.4 Equipment
5.Extrinsic factors	5.1 Functioning of human relations.	5.1.1 Accessibility
		5.1.2 Benefits
		5.1.3 Working hours
		5.1.4 Availability of posts

5.3.1 Theme 1: Government policies that influence job satisfaction

In the discussion on job satisfaction with participants, they mentioned different policies that influence their job satisfaction, and these are: Occupational Specific Dispensation (OSD), Employment Equity Act (EEA), Performance Management and Development System (PMDS).

Sub-theme 1.1.1: Occupational Specific Dispensation (OSD)

Different sentiments were shared by participants in relation to the OSD Policy which was implemented by the government in 2010. They cited multiple challenges such as unfair implementation, while others thought it had positive influence such as improved salary. This was evident from the following statements extracted from the interview:

"OSD for me was like a gunshot in the foot, because the ladies that just qualified got the same salary as me, with ten years' radiography experience and at that stage I had seven years of nuclear medicine experience, hence I felt it was unfair." (GR2/NMR, Grade 2)

"We never used to have much of a problem before OSD. But when OSD came in it seem that whoever did the OSD document didn't understand the way radiography works. Radiographers who have dual qualification are getting paid more, whereas they don't use their qualifications simultaneously." (RT 2: Assistant Director)

"After the OSD I got less money than before, because we had like scare skill allowance that was not taxed, so when they took that away, they added it to my salary and it pushed me to a higher tax bracket. The AD's were the only people who had that experience, all the other people at least got more money and the juniors a lot more. But unfortunately for me the OSD is actually is fooling people, because now the entry level salary is high but you are going to stay on that salary almost for ten years before you go to the next grade." (DR 1, Assistant Director)

"The entry level salary went up a lot and the whole idea for them that I heard was to make the career attractive for young people to study radiography." (DR 2, Assistant Director)

"I can assure you the salary is better than private since the OSD. Those who still go out to private and say things are better they are not telling the truth. It is difficult for private to match what OSD is giving." (NMR 1, Grade 1 Radiographer)

Sub-theme: 1.1.2: Implementation of the Employment Equity Act (EEA)

The Employment Equity Act was enacted to address inequalities of the past. However, participants believe that its implementation has resulted in unfair

selection of candidates to fill a post. Similar sentiments to the interview extract below were expressed by other participants:

“Because it’s always the better candidate was missed and we end up with someone who either doesn’t stay along afterwards or their troublemakers or their just lazy and they don’t want to do the work that you want them to do. They don’t like to listen to instruction, you know the new generation they don’t believe in rules.” (RT 2, Assistant Director)

Sub-theme: 1.1.3 Performance Management and Development System (PMDS).

Performance Management Develop System is a tool used to monitor the performance and develop employees in the public health sector. The greatest concern was the rating of sub-ordinates by their supervisors as noted in the excerpts below:

“Well with the PMDS I do everyone’s PMDS, so I evaluate every-one. There used to be a time when we used to assign junior radiographers to a chief radiographer to evaluate them. But that became a problem, because if the chief radiographer had a problem with a junior radiographer then they were not fairly evaluated. Then we decided, it’s better if one person does every-ones” (RT 2, Assistant Director)

“I can't be battling for a 3, because from what I understand a 3 is me coming to work and completing my duties. I believe on a daily basis I have one of those jobs where I just have to throw my entire body in it. But I must come to your office and now cry and beg and gravel for a 3, it's a bit of an insult. We hardly get a 5, someone must die for you to get 5.” (GR 2, Grade 2 Radiographer)

“As my manager, the fact that you don't see patients by 5 o'clock, you should see that these people are working very hard. I don't need to sell myself to you

and say you know I cleaned the floor. So you as a manager should know that my team is competent and they all deserve a 4." (GR 2, Grade 1, Radiographer)

5.3.2 Theme: Lack of career pathing

Participants were of the opinion that the career itself was rewarding, but lacked the element of growth. Different departments try to rotate radiographers in specialized areas such as the Computed Tomography in diagnostic, while for radiation therapists, treatment planning is considered to be a specialized area. The following extracts from participants are used to provide evidence of their responses:

Sub-theme: 2.1.1: Rotation in specialized areas

On the job training, recognised with remuneration is known to enhance the level of job satisfaction amongst employees. Different departments have different training protocols. This is noted in the excerpt below:

"Staff in my department have indicated that if they get CT training than would stay. I don't know what is it about CT, but they really want to be trained in CT. I think for them it's like it a modality that which they can feel they can work, it is complex and they can work independently." (DR 1, Assistant Director)

Sub-theme: 2.1.2: Academic growth

Academic growth relates to remunerated recognition received by employees from their employer for improving their skills academically. In turn, this additional remuneration could motivate employees to improve their skills and could also grow the skills as indicated by the extracts below:

"Recognition of the skills, there is no recognition. I can become a person who is holding a Masters, have a PhD but I am still like another person, who's got a 3-year diploma or sometimes a person at the 3-year diploma is more recognised than I am." (NMR 2, Assistant Director)

“Because working under government you don’t get recognized as a mammography radiographer, you still a diagnostic radiographer with a mammography qualification. So my pay slip it still says diagnostic radiographer because they don’t have mammography posts. Yes they don’t recognize it as a specialty in government, same with CT and MRI.” (GR 2, Grade 1 Radiographer)

“It doesn't reflect on their pay slips and it doesn't align with their registration with HPCSA, because with counsel it recognises them is radiation therapist radiographers, but in government hospitals they are diagnostic radiographers.” (NMR 2, Assistant Director)

“After 3 years a diagnostic radiographer can apply for a chief post and be absorbed into a chief post. So you find that now those who are there in speciality, once they are there they start recognising that it is actually a disadvantage in terms of the remuneration. Look at the OSD notches, those notches for diagnostic radiography have grade 1, 2 and 3. Nuclear medicine as a speciality production grade 1, 2 and 3.” (NMR 1, Grade 1 Radiographer)

Sub-theme 2.1.3: CPD activities

The HPCSA requires health care professionals to obtain a certain number of CPD points to remain registered with the council. These points can be obtained from various platforms such as seminars, online and they could also be arranged departmentally. These are extracts from the interviews conducted, and similar sentiments were shared by other participants:

“In the CPD meeting is like 12, 4, 8 hours on a Saturday which is always seems to be at beginning of the month. But they are not always relevant topics. I know it's going to sound very bad, if you take for instance most of the CPD classes you go to, they have one ultrasound topic. Do you want to think I want to waste my whole weekend for one ultrasound topic?” (US 1, Grade 1 Radiographer)

“Society of Radiographers in Pretoria, it’s like non-existing anymore because people just don’t want to attend things in the evenings. They rather want to do CPD via the computer, some of these websites you can get CPD points because that was the motivation about the society for us to get together get interesting speakers to better ourselves and get CPD” (DRG 2, Diagnostic Radiographer)

Sub-theme 2.1.4: Promotion

The prospect of getting promoted was highly impossible. The lack of promotion was blamed on the introduction of the government policy on OSD. Where promotion occurs through accelerated grade progression and for radiographers in speciality have no supervisory post except for the assistant directors. Extracted below are some of the responses from participants:

“That’s just the thing with OSD, what they did was they changed the way that you would move up. They tell you if you do your PMDS, you can get accelerated grade progression in 5 years or else you end up in one grade for ten years. But now because there is no money, government has suspended accelerated grade progression until further notice.” (RT 2, Assistant Director)

“There is one manager and that’s it. So someone must die for you to get that post, there's not that growth, there's a com serve and then there's a second step of being qualified. There's no growth.” (GR 1, Grade 1 Radiographer)

5.3.3 Theme: Unsatisfactory remuneration

Some radiographers indicated that low salaries were one of the most dissatisfying aspects of being employed by the government. Senior radiographers believed that the introduction of OSD significantly increased their salaries. The contradicting views from participants are supported by the following extracts from the interviews:

Sub-theme: 3.1.1: Poor remuneration

Salaries are a significant factor in job satisfaction. Participants felt that their salaries were not reflective of the qualification they held. The issue of poor salaries was aggravated by being placed in an incorrect post by the OSD Policy and the possibility of being on one salary notch for a period of 10 years. Hence, an increase in numbers of newly qualified radiographers vacating their posts. The following are extracts from the interviews which were shared by other participants as well:

"I have a university degree and someone like a cleaner who doesn't have a university degree, gets like eight thousand rand less than me. It feels a little bit weird, like I went off to school and did extra degree." (GR2, Grade 1 Radiographer)

"We've lost mostly young people, people that have just qualified and don't have children yet, not married yet so for them that end value is very important the amount of money they getting is very important" (DR 1, Assistant Director)

"My salary has been incorrect for 10 years. When I qualified as a sonographer, it was supposed to go onto the ultrasonography post. It is much low, it is at the level of an entrance level sonographer and I have more years of experience. That being said I'm still here in government and I don't plan on moving." (US 1: Grade 1 Radiographer)

Sub-theme: 3.1.2: Overtime

Some participants indicated that remunerated overtime supplemented their income, while others preferred having their free time for personal use. Managers preferred that subordinates be paid for overtime rather than having time off. The contradicting views as expressed by participants:

"I have more free time, I don't do weekends, I don't do night shifts and I don't do overtime. I don't do public holidays, so for me that was a big bonus because

I'm still young and there is things I want do, I want go out, I want visit friends." (GR 2, Grade 1 Radiographer)

"You have to apply for the overtime and then they will deny it. It's a huge problem, so then what do I do give them hours. So now you give them time off, but when can they take their hours off? How do I give them those hours, because I do not have enough personnel? Now you accumulate the hours but I can't let you take them." (RT 2, Assistant Director)

"We don't have a choice but to do overtime, but then we don't get paid for being on call that's not the end. But we do it because there is so many mammies that we get, cause we get patients from Mpumalanga, Limpopo they come basically from everywhere so we have no choice but to do it." (GR 2, Grade 1 Radiographer)

Sub-theme: 3.3.1: Bargaining council

The lack of representation of radiographers in the bargaining council seemed to have resulted in disgruntlement of participants. State matters related to salaries are discussed and resolved at the bargaining council. Therefore, if a profession is not represented in the bargaining council, salary and other issues may not be addressed. These are the extracts from the interviews:

"You know we don't have a voice, we don't know what is happening at the bargaining chamber when they decide on making all this decisions. Cause we are not involved, we only getting whatever there is being discussed there on paper." (RT 2, Assistant Director)

"The disadvantage of the society of radiographers is that it doesn't have the numbers. Numbers for them to represent radiographers in the bargaining chamber." (DR 2, Assistant Director)

“But then comes the other issue, the existing UNIONS will not agree to see these exodus of professionals going into forming their own. So the best thing would be the existing unions should make provision for the allied or whatever groups that there that are big at national level they should be able give input.” (NMR 2, Assistant Director)

5.3.4 Theme: Effects of working conditions on job satisfaction

A positive working environment is provided by a combination of factors. These factors are the benefits the employees receive from their employer; a flexible work allocation; support from management; functional equipment; physical safety while on duty; workload and staff shortage. Participant’s responses to these different factors are presented below:

Sub-theme: 4.4.1: Support from management

Participants demonstrated conflicting responses regarding support from management. Some of the participants felt that they were supported by their senior managers, while others expressed a lack of support. Similarly, the subordinates had mixed responses with regard to management support as noted in the quotations below:

“I must say in my hospital definitely we’ve got amazing professor and we have meetings with her every month. Even more than once a month, I have meeting with her and then we also have CDC meetings where our medical manager from top management attends. Even if we have a problem with HR, we invite the HR manager.” (DR 2, Assistant Director)

“Your manager don't even acknowledge that you have sacrificed your time, sometimes were here until 5 o'clock with a patient. But then they complain you don't want to scan more patients.” (GR 1, Grade 1 Radiographer)

Sub-theme: 4.1.2: Workload and staff shortage

The demand for radiology services are on the increase globally. However, participants in this study indicated that the number of radiographers employed by the state have decreased. The decrease in personnel has resulted in increased workloads for radiographers employed by the public sector and increased waiting times for patients. These were the participants' responses on matters related to workload and staff shortage:

"Previously we use to work on average of four to five radiographers per machine and then you doing an average of thirty three patients. Now we have three people or two people per machine, how do I handle everyone's need for twenty two and thirty days of leave for the year? They are getting burnt out. They are much desponded, extremely desponded because why are they doing it? I mean we ask the department and the management as well, to give me more people." (RT 2, Assistant Director)

"Unfortunately when people leave, it enforces pressure on that people that stay behind and most especially with diagnostic radiographers. They work shifts as well, which means the people that are left behind are under a lot of pressure, taking a lot of responsibility and extra work hours that actually can't come easily." (NMR 1, Grade 1 Radiographer)

"We have few radiographers trained in mammography, you end up coming to work sick as a dog because there is no one to do your job and you know if you phone in sick today than they have now to cancel every single patient on the list" (GR 2, Grade 2 Radiographer)

"*We a have a lot of patients that default because they've been waiting too long, while others die in the waiting list. So when we call them to start the treatment, their families tells us they've passed away or they get very upset with us because they waited for so long. So what's happening is we no longer treating radical patients, we now treating patients that have become palliative"* (RT 2, Assistant Director)

"When we started this year we had a waiting list of 8 months for MRI. It has be reduced by 3 months, so now we are at 5 months. Because the machines breaks and if a machines breaks one day, it becomes too much." (DR 1, Assistant Director)

Sub-theme: 4.1.3: Physical safety

Participants indicated a lack of clear protocol in case of an emergency. A greater concern was expressed concerning the availability of security after hours when a minimal number of staff are on duty. Similar concerns were expressed by other participants:

"I phoned the security once, it took them like half an hour to get there. The patient like running around pulling out his drip pulling out his catheter running around with a broken leg. Because we get patients that are like high or drunk." (GR 2, Grade 1 Radiographer)

Sub-theme: 4.1.4 Equipment

Participants also complained about faulty equipment and the lengthy process involved before the equipment is repaired. They indicated that this problem has a negative impact on service delivery, increases waiting times for patients. Such concerns were also expressed by other participants:

"Problem this year was that they didn't renew our maintenance contracts from head office side, to save money and that was hectic because now you need to get someone out to come and look at your equipment. Then you need to get a PO number for them to order the parts and that takes about to three to six weeks." (DR 1, Assistant Director)

"There are lot of new radio-pharmaceuticals that are developed now. We have to work with that and we don't know how to handle these things and you will realized that your dosimeter it reads very high. It means you've been exposed to high level of radiation. I can feel that my fingers are sore that's the most

dissatisfying factor in this department the lack of equipment to handle this." (GR 2, Grade 2 Radiographer)

"And that's a problem because as she was saying, you end up compromising a lot of your time and effort so that you can see that the workload of the patients is done and finished. Using all those equipment that are old, that haven't been serviced in the while or are quickly being serviced but they're very old machines. And deal with patients from referral hospitals." (GR 1, Grade 3 Radiographer)

5.3.5 Theme: Functioning of Human Relations Department

Human Resources Department should be readily available to address employee's challenges and queries. However, participants cited challenges with accessibility to the HR department, even though they considered the government to have the best working hours and benefits. Some of the challenges with HR as expressed by participants:

Sub-theme: 5.1.1: Accessibility

There were contradicting views with regards to support from HR. Participants expressed a high level of frustration with HR not being available to resolve their work problems and the time it took to get feedback from HR. While others felt that the HR department was available to address their issues as noted below:
"Our medical manager from top management attends our meeting and even if we have a problem with HR, we the HR manger." (DR 2, Assistant Director)

"Nothing they sent you to ,Oh no you were at this hospital, you go to the hospital and somebody will assist you and then they'll be like phone us back on Monday, so we can send something through you try phoning on Monday, Tuesday Wednesday, Thursday Friday everybody is like no he's on leave. Two months after phoning every day they tell you, he has been transferred to a different hospital. I'm still here." (US 2, Assistant Director)

“The AD went and HR told us we are dealing with it have patience, we will sort it out have patience, 4 years went of going to HR every week and got told the same thing” (US 2, Grade 1 Radiographer)

Sub-theme: 5.1.2: Benefits

Participants appreciated the benefits, such as housing allowance, medical aid, annual leave, sick leave and maternity leave. Participants felt that these were the best, especially for females of a child- bearing age and these are some of their responses:

“I mean here in government, you get twenty two days of leave, you get paternity leave, you get four months of paid maternity leave, you get prenatal leave so you get one day every month during your pregnancy that you can go and see the doctor and you don’t have to come to work” (RT 2, Assistant Director)

Sub-theme: 5.1.3: Working hours

The working hours in the government hospital were viewed as one of the best, since they were fixed and standardized. Even though other participants felt that the working hours lacked flexibility. These are the excerpts from the interviews to support this statement:

“In government you work your prescribed hours of 8 hours and you get your lunch. It's either you working shift or straight hours being 8 to 4 Monday to Friday. Shifts may overlap with the weekend, but the number of hours worked at kept at 40 hours a week.” (NMR 1, Grade 1 Radiographer)

“In the hours are not set, but you get paid money instead of time off and you de decide what is more important.” (US 2, Assistant Director)

Sub-theme: 5.1.4: Availability of posts

The posts that are said to be frozen by the Department of Health were causing strain on staff. Even though management has been motivating for posts, their requests have not been fulfilled, despite the increased need for the radiology and oncology services. The excerpts below support this notion:

"I've got a new machine and now I have to split whoever I have to work there since our posts have been frozen. Over the years we used to have thirty one posts for our department, and now we only have twenty one. The work load has increased over the years, the amount of cancer patients we are seeing is much more than they used to be ten years ago. The need is growing but our resources are decreasing" (RT 2, Assistant Director)

"Managers are motivating for the post but with no success. The manager will motivate for 10 post and they give them 5. So in an essence it's creating a shortage in department and it's creating an over work and it's creating the burn out, because people are overworked and they going start now leaving again you understand." (NMR 2, Assistant Director)

5.4 SUMMARY OF THE CHAPTER

A total of five themes which emerged from the interviews with participants were presented and supported by direct extracts from the interviews. These themes were government policies; poor remuneration; working conditions; functioning of the human resources department and the lack of career pathing. These themes were organized into intrinsic and extrinsic factors of job satisfaction using Herzberg's Motivation and Hygiene Theory. In the next chapter results of phase two of the study will be presented.

CHAPTER 6 PRESENTATION OF RESULTS
PHASE 2 QUANTITATIVE DATA

6.1 INTRODUCTION

In the second phase of the study a self-developed questionnaire was used as a tool for data collection. The questionnaire was self-administered according to the needs of that particular department. In some departments, the questionnaire was distributed during departmental meetings and collected at the end of a meeting. While in other departments the questionnaire was distributed by the researcher at the beginning of a working day and collected at the end of the working day. The researcher continuously repeated this process in one hospital for a week to obtain a maximum response. An envelope was left in a central spot in each department to insert the completed questionnaires from the participants.

The objectives of Phase 2 of the study were to:

- Determine the pattern of job satisfaction among radiographers.
- Identify the role of the working environment on job satisfaction.
- Evaluate the role of current policies introduced by the Department of Health on job satisfaction.

Therefore, this chapter focuses on reporting the results from phase 2 of the study, which was quantitative. Descriptive statistics, ANOVA, Pearson's correlation, one sample t-test and Independent samples t-test were the statistical tests that were used to analyse data. Factor analysis was used to identify the sub-scales through component analysis and rotation. An SPSS software, Version 23 was used to conduct the analysis.

6.2 DEMOGRAPHICS

The demographics section was used to ascertain who the participants were in terms of their age, their experience, marital status, the tertiary hospital they are employed in and to confirm their occupation. Therefore, this section would be used to present the demographics of all the participants.

6.2.1 Gender

The majority of participants in the study, 60% (n=108) were females, while males had only 40% (n=73) representation in the study. As demonstrated in Figure 6.1.

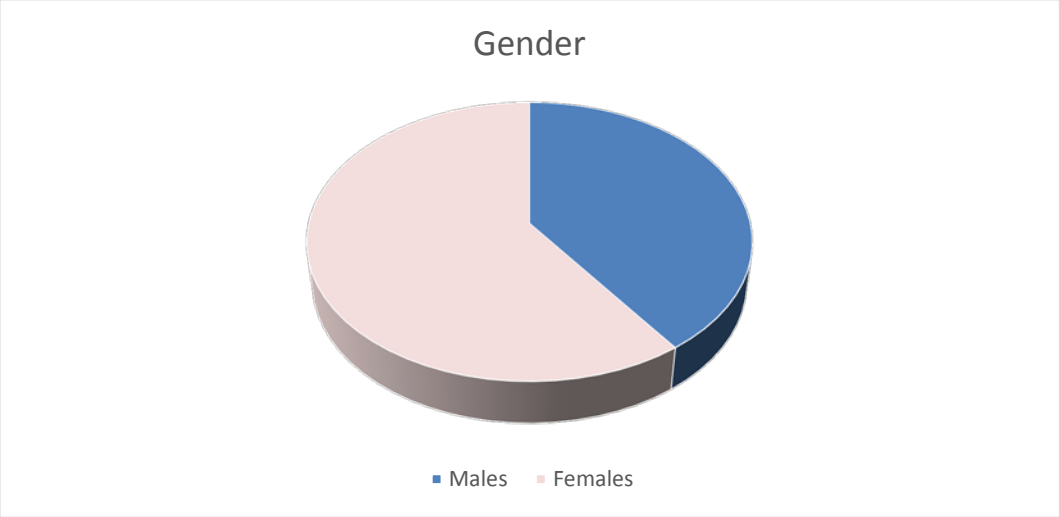

Figure 6.1: The representation of gender (n=182)

6.2.2 Age

The majority of participants 50% (n=80) were between the ages of 21-33 and this age group is known the Millennials. While Generation X, aged between 34-49 accounted for 31% (n=56) of the population and only 19% (34) represented the Baby Boomers, aged above 50 years, participated in the study, as demonstrated in Figure 6.2.

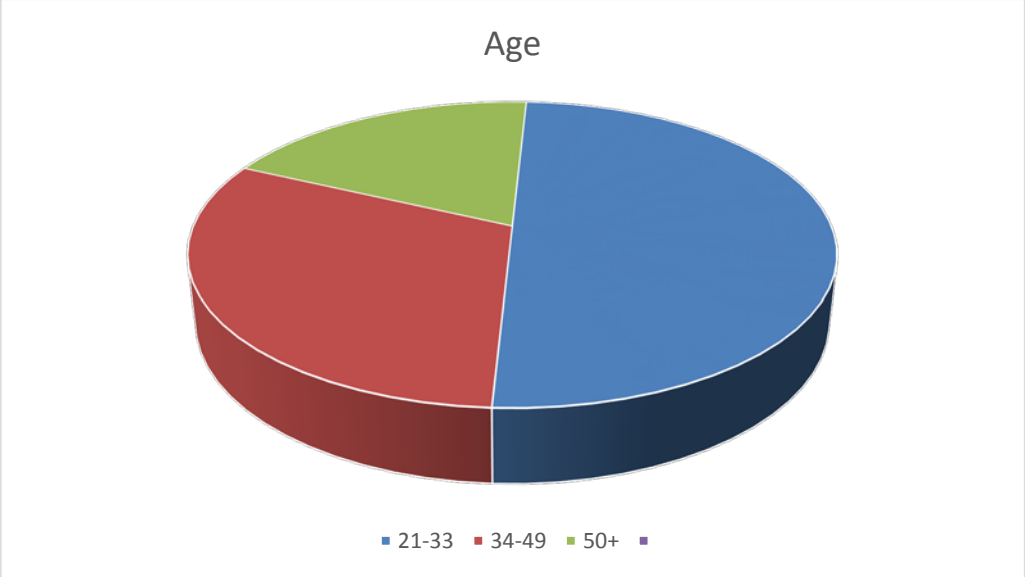

Figure 6.2: Representation of age (n=180)

6.2.3 Race

The race category was divided into five sections and these were Black, Indian, Coloured, White and other. The majority of participants, 68% (n=124) were Black, followed by 17% (n=31) White participants, 7.7% (n=14) Indians, Coloured 5.5% (n=10) and other 1% (n=2). The percentage distribution of participants is demonstrated in Figure 6.3.

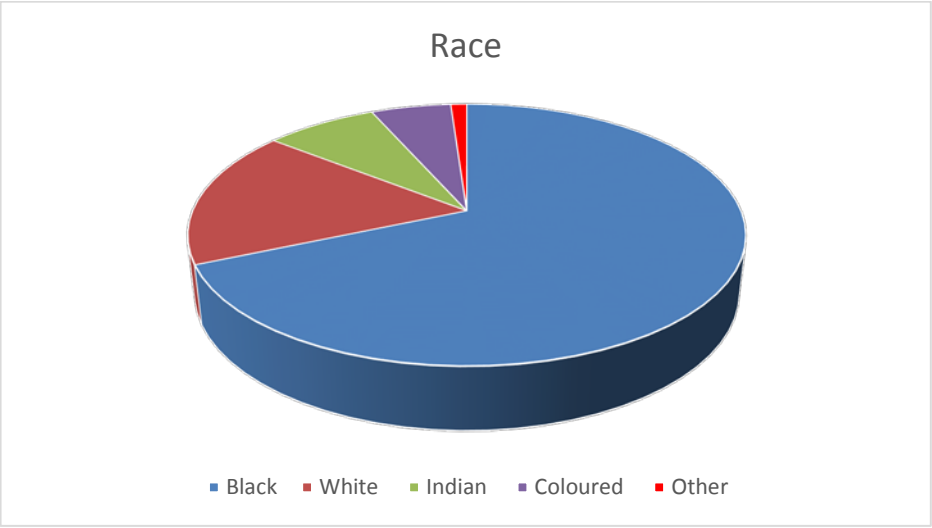

Figure 6.3: The distribution of race (n=182)

6.2.4 Marital status

In this study, majority of participants were single, 49% (n=89), followed by married participants, 42% (n=77), divorced or separated, 6% (10) and widowed, 2% (n=4), as indicated in Figure 6.4.

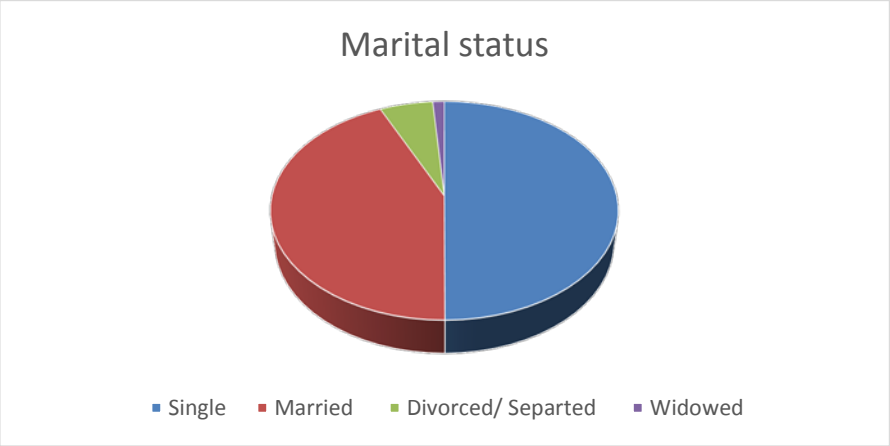

Figure 6.4: Marital status (n=182)

6.2.5 Number of years employed as a radiographer

The majority of participants, 51% (n=93) were employed for a period of 1-10 years, while those who were employed for a period greater than 10-20 years made up 28% (n= 51) of participants and only 20% (n=37) were employed for a period greater than 20 years as demonstrated in Figure 6.5.

Figure 6.5: Experience of radiographers in years (n=182)

6.2.6 Position occupied

The highest number of participants were Grade 1 radiographers, which correlates with the previous item on number of years employed. The grading system used by the Occupational Specific Dispensation allows for progression every 10 years. Hence, the correlation between numbers of years employed as a radiographer and Grade 1 radiographers. There were 54% (n=98) Grade 1 radiographers, 19% Grade 2 radiographers, 23% (n=35) Grade 3 radiographers and 4% (n=7) assistant directors, as demonstrated in Figure 6.7.

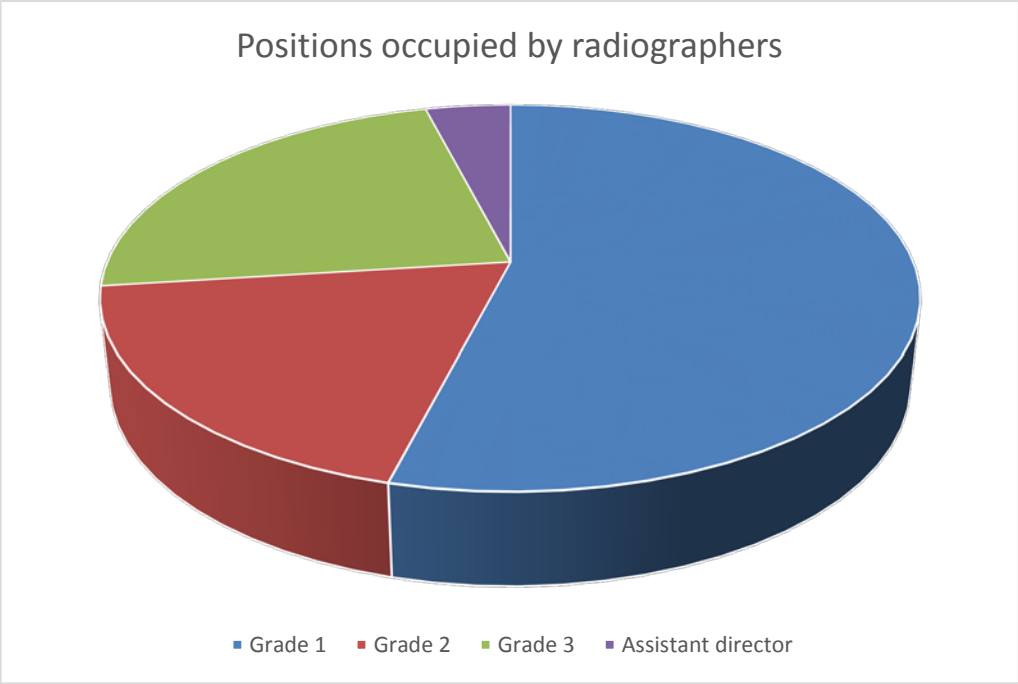

Figure 6.6: Position occupied by radiographers (n=182)

6.2.7 Occupation

Diagnostic radiography is the discipline that is generally available in most hospital settings, hence it always had the greatest number of participants in comparison to other disciplines. Radiation therapy services are provided in two of the tertiary hospitals and not readily available in every hospital setting. Similarly, nuclear medicine radiography, ultra-sonography and mammography services are only available in selected hospitals. However, at the time of data

collection there were no sonographers employed in two of the tertiary hospitals. Hence the unequal distribution within radiography disciplines in this study, where diagnostic radiographers comprised 55% (n=100) of the participants, radiation therapists, 24% (44), nuclear medicine radiographers, 13% (24), mammography radiographers, 5% (n=9) and sonographers, only 3% (5) as demonstrated in Figure 6.7.

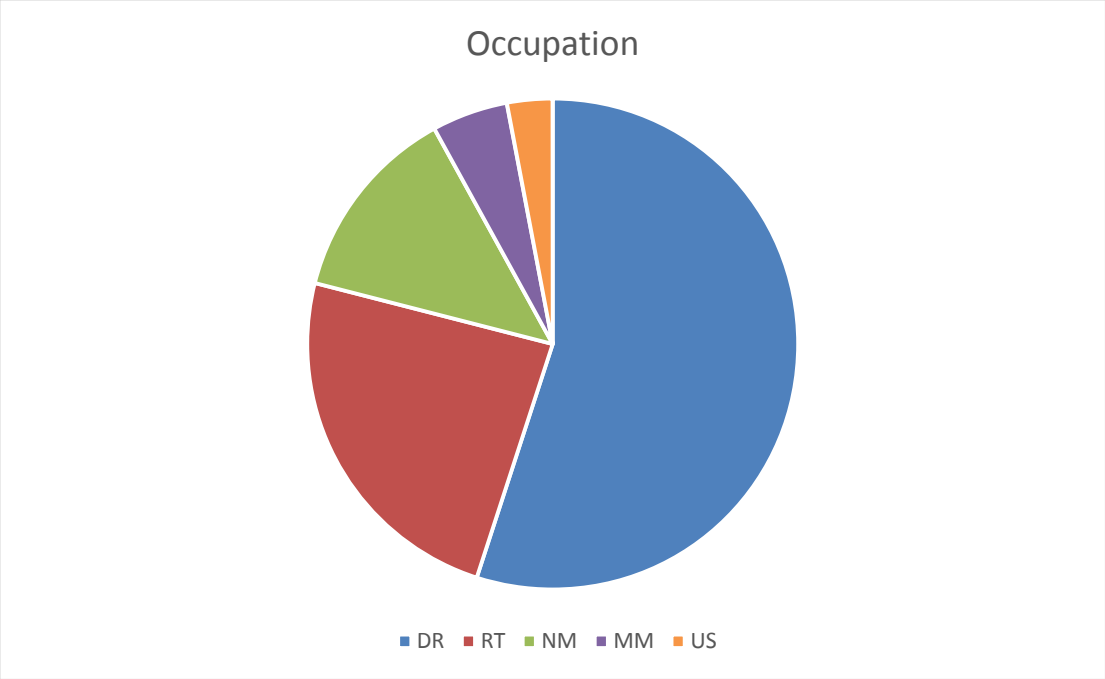

Figure 6.7: The representation of radiographers per occupation

6.2.8 Tertiary hospitals

In this study, four tertiary hospitals (TH) situated within the Gauteng province were selected. The tertiary hospital that had the majority of participants was TH1 42% (n=76), followed by TH2 30% (n=54). These two tertiary hospitals are the only ones that have radiation therapists, which could have increased their numbers. The tertiary hospital that had the least number of participants in the study was TH3 (12%=22), followed by TH4, 17% (n=30), as indicated in Figure 6.8.

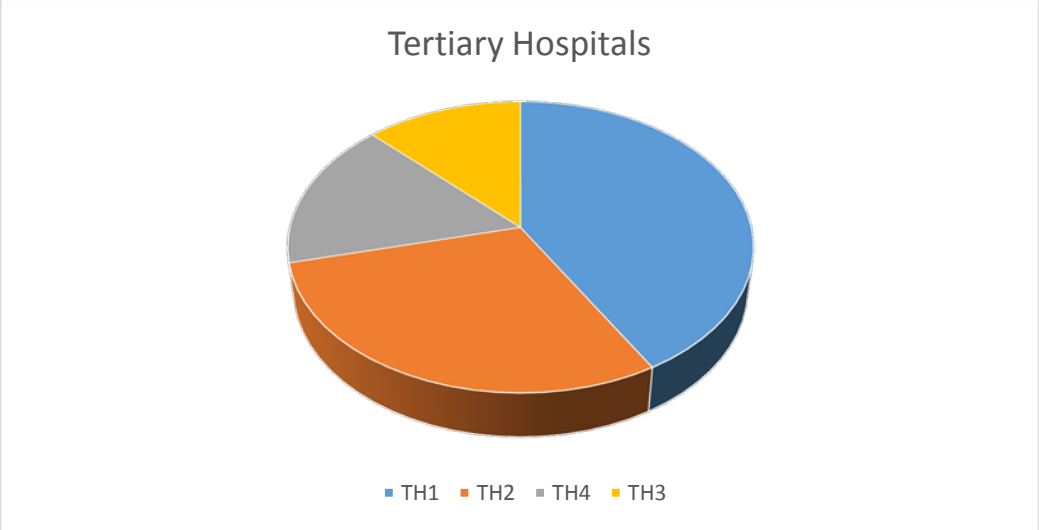

Figure 6.8: The representation of tertiary hospitals in the study (n=182)

6.3 ONE-SAMPLE T-TEST

The One Sample *t* Test determines whether the sample mean is statistically different from a known or hypothesized population mean. For the purposes of our study, a one-sample t-test was used to determine whether the population mean had a significant level of agreement with the statement that was posed to them. The one-sample t-test is used when data is collected from a single sample drawn from a defined population and in this study, it was radiographers employed by tertiary hospitals within the Gauteng province. The significance of results is determined using the p-value, which is defined according to the following values:

- A small p-value (typically ≤ 0.05) indicates strong evidence against the null hypothesis, so you reject the null hypothesis.
- A large p-value (> 0.05) indicates weak evidence against the null hypothesis, so you fail to reject the null hypothesis.
- A p-value very close to the cut-off (0.05) is considered to be marginal (could go either way).

Reported below are the statements that had a significant level of agreement or disagreement with the statement that was posed to the participants. The questionnaire had 48 statements and used a Likert scale of 1-5, where 1 was

strongly disagree and 5 was strongly agree. The statements were represented by each of the following values:

- **Strongly disagree**- 100% disagree with the statement; I always disagree with the statement and I definitely disagree with the statement.
- **Disagree**- 80-90% disagree with the statement; I sometimes disagree with the statement; I partially disagree with the statement.
- **Neutral-** I have no views on the statement; Not applicable to me; I neither disagree nor agree.
- **Agree-** 80-90% agree with the statement; I sometimes agree with the statement; I partially agree with the statement.
- **Strongly agree** - 100% agree with the statement; I always agree with the statement and I definitely agree with the statement.

6.3.1 Significant agreement:

Item B6: There is significant agreement (M=3.20) that Employment Equity Act ensures that suitable candidates are selected to fill posts, t (176) = 2.428, p=.016.

Item B12: There is significant agreement (M=2.42) that my grade/accelerated progression has been implemented on time t (176) = -3.094, p=.002.

Item B31: There is significant agreement (M=2.71) that HR is available to address my work-related problems when needed t (180) = -3.426, p=.001.

Item B41: There is significant agreement (M=3.29) that the CPD activities have relevant topics for me t (177) = 3.214, p=.002.

Item B42: There is significant agreement (M=3.27) that the CPD activities in seminars are inclusive of all the disciplines within radiography t (177) = 3.376, p=.001.

Item B41: There is significant agreement (M=3.29) that the CPD activities have relevant topics for radiographers, t (177) = 3.214, p=.002.

6.3.2 Significant disagreement:

Item B2: There is significant disagreement (M=2.47) that my OSD was fairly implemented, t (179) = -6.030, p<.0005.

Item B4: There is significant disagreement (M=3.45) that I am fairly rated by my supervisor, t (179) = 5.567, p<.0005.

Item B5: There is significant disagreement (M=3.43) that the interview process for vacant posts is fair, t (181) = 5.548, p<0005.

Item B9: There is significant disagreement (M=2.42) that I am satisfied with the salary scale that applies to me, t (180) = -6.395, p<0005.

Item B10: There is significant disagreement (M=3.83) that my department pays for overtime work, t (180) = 3.697, p<0005.

Item B11: There is significant disagreement (M=3.76) that working overtime is not compulsory in my department, t (181) = 3.76, p<0005.

Item B13: There is significant disagreement (M=3.34) that I am satisfied with the benefits I receive from my employer, e.g. leave, medical aid and housing allowance t (178) = 4.099, p<.0005.

Item B14: There is significant disagreement (M=3.34) that I can use my leave days as I wish, t (180) = 3.569, p<.0005.

Item B15: There is significant disagreement (M=2.52) that I am being paid a fair amount for the work I do, t (180) = -5.189, p<.0005.

Item B16: There is significant disagreement (M=2.41) that I am being paid a fair amount for the qualifications I have, t (179) = -6.462, p<.0005.

Item B17: There is significant disagreement (M=2.69) that I am satisfied with the remuneration received for working overtime, t (179) = -3.831, p<.0005.

Item B18: There is significant disagreement (M=4.01) that I do not mind working overtime as long as I am paid for it, t (178) = 12.416, p< .0005.

Item B19: There is significant disagreement (M=2.43) that I would not prefer to work overtime-even if I am paid for it, t (179) = -6.13, p<.0005.

Item B20: There is significant disagreement (M=3.76) that I am satisfied with my working hours, t (180) = 9.712, p<.0005.

Item B21: There is significant disagreement (M=3.73) that I receive support from my colleagues with work related problems, t (180) = 10.225, p<.0005.

Item B23: There is significant disagreement (M=2.06) that there are enough staff members to handle the workload in my department t (179) = -10,963, p<.0005.

Item B 27: There is significant disagreement (M=3.31) that the machinery I work with is serviced on a regular basis, t (179) = 3.615, p<.0005.

Item B 29: There is significant disagreement (M= 2.53) that machinery that reaches its end of life is replaced when necessary, t (179) = -5.352, p< .0005.

Item B30: There is significant disagreement (M=2.41) that I am satisfied with the condition of the facilities (e.g. air conditioning and patient linen) in my department, t (179) = -7.139, p<.0005.

Item B33: There is significant disagreement (M=2.60) that I am satisfied that I am adequately represented at the bargaining council, t (178) = -4.896, p<.0005.

Item B35: There is significant disagreement (M=3.50) that I am satisfied with the way HR monitors my leave and working hours, t (180) = 6.397, p<.0005.

Item B36: There is significant disagreement (M=2.34) that I am satisfied with the way HR has implemented OSD, t (178) = -7.755, p<.0005.

Item B37: There is significant disagreement (M=2.30) that my post graduate qualification is recognized in my salary, t (176) = - 7.652, p<.0005.

Item B38: There is significant disagreement (M=2.30) that people with skills in specialized areas, such as Planning (Therapy), MRI, CT, angiography and catheterization laboratory, t (176) = -11.621, p<.0005.

Item B43: There is significant disagreement (M2.61) that I intend/would like to vacate my post within the next 12 months t (177) = - 4.039, p<.0005.

Item B44: There is significant disagreement (M=2.48) that I am actively looking for a job, t (179) = -5.177, p<.0005.

Item B45: There is significant disagreement (M=2.35) that I have distributed my curriculum vitae in the last 3 months, t (179) = -6.912, p<.0005.

Item B46: There is significant disagreement (M=2.25) that I am looking for a job in another government hospital, t (179) -8.385, p<.0005.

Item B48: There is significant disagreement (M=2.39) that there is adequate support staff to assist with operational needs of patients, t (176) = -6.577, p<.0005.

6.4 FACTOR ANALYSIS

Factor analysis was performed to group and reduce the number of statements that were related. The related statements were used to perform additional analysis such as multiple regression. Two types of factor analysis can be performed, exploratory factor analysis and the confirmatory factor analysis (Pallant 2011: 181). For the purposes of this study, confirmatory analysis was used to confirm a specific hypothesis related to the structure of the set of

statements that were grouped together. Literature sources differ on when and how factor analysis be used. Some recommend that factor analysis should only be used in larger groups, reason being the correlation coefficients in small variables are less reliable (Pallant 2011: 182). Large sample sizes are considered to have a minimum of 300 cases, while a small sample size has a minimum of 150 cases. However, some authors suggest that researchers should focus on the ratio of participants per item, a ratio of 10 cases per item (Gray *et al*. 2017: 552; Terre Blanche *et al*. 2008: 248). For this study, some items were grouped in relation to their similarities but others could not reach the recommended 10 cases per item. Two tests are used for statistical measures, the Bartlett's test of sphericity and the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy:

- *The Bartlett's test of sphericity should be significant ($p<.05$) for the factor analysis to be considered appropriate.*
- *The KMO index ranges from 0 to 1, with .6 suggested as the minimum value for good factor analysis (Pallant 2011: 182).*

Prior to analysis, items 10, 11, 18 and 19 were dropped because they did not measure how the respondent feels about conditions that they experience but rather about what actually happens in their facility. Items were dropped because they did not add to or ensure the reliability of the measured constructs and these were items 37, 38 and 39. At the end of this process, 10 factors emanated from the remaining items as demonstrated in Table 6.2. To further test reliability amongst the items, a Cronbach's alpha coefficient was calculated. An ideal Cronbach's alpha should have a value of .7 but in cases where the scale has fewer items, a value of .5 may be obtained (Pallant 2011: 97). The KMO and Bartlett's Test reliability and correlation was also performed between the items as demonstrated in Table 6.1.

Table 6.1: KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.765
Bartlett's Test of Sphericity	Approx. Chi-Square	3255.626
	df	946
	Sig.	.000

KMO of .765 indicates that the data was adequate for successful and reliable extraction.

Bartlett's test – $p<.05$ – indicates that correlations between items are not too low.

Table 6.2: The 10 factors with their reliability, calculated with Cronbach's alpha

Factor	**Factor label**	**Name**	**Items retained**	**Items removed to give greater reliability**	**Alpha (reliability)**
1	GOV-Policy	OSD	1 2 9 32 33 36		.807
2	Working conditions	Supervision	8 13 14 20 21 22 47		.808
3	ITL	Intention to leave	43 44 45 46		.857
4	Working conditions	Equipment	26 27 28 29		.825
5	CPD	CPD activity	40 41 42		.793
6	GOV- Policy	Employment Equity Act	5 6 7		.809
7	Remuneration	Fair remuneration	15 16	37 38	.822
8	GOV- Policy	PMDS	3 4		.831
9	Working conditions	Infrastructure	23 24 25 30 48		.677
10	HR	HR processes	31 34 35	39	.684

The factors are represented by the following items in the questionnaire:

Factor 1: Government policy – OSD:

- 1. My salary has improved since the introduction of Occupational Specific Dispensation (OSD).
- 2. My OSD was fairly implemented.
- 9. I am satisfied with the salary scales that apply to me.
- 32. I have been placed in a correct post according to my qualification.
- 33. I am satisfied that I am adequately represented at the bargaining council.
- 36. I am satisfied with the way HR has implemented OSD.

Factor 2: Working condition – Supervision:

- 8. I am satisfied with the way my performance is recognized by my supervisor.
- 13. I am satisfied with the benefits I receive from my employer, e.g. leave, medical aid and housing allowance.
- 14. I can use my leave days as I wish.
- 20. I am satisfied with my working hours.
- 21. I receive support from my colleagues with work related problems.
- 22. I receive recognition from my supervisor for the effort I put into my work.
- 47. I am satisfied with the management style used by my immediate manager.

Factor 3: Intention to leave:

- 43. I intend/ would like to vacate my post within the next 12 months.
- 44. I am actively looking for a job.
- 45. I have distributed my curriculum vitae in the last 3 months.
- 46. I am looking for a job in another government hospital.

Factor 4: Working condition – Equipment:

- 26 The machinery I work with is kept in good working order.
- 27 The machinery I work with is serviced on a regular basis.
- 28 When machinery breaks down it is repaired quickly.
- 29 Machinery that reaches its end of life' is replaced when necessary.

Factor 5: CPD activities:

- 41. My department has Continued Professional Development (CPD) activities.
- 42. The CPD activities have relevant topics for me.
- 43. The CPD activities in seminars are inclusive of all the disciplines within radiography.

Factor 6: Government policy – Employment Equity Act:

- 5. The interview process for vacant posts is fair.
- 6. The Employment Equity Act ensures that suitable candidates are selected to fill posts.
- 7. In this hospital, a vacant post is always filled by the best candidate for the job.

Factor 7: Fair remuneration:

- 15. I am being paid a fair amount for the work I do.
- 16. I am being paid a fair amount for the qualifications I have.

Factor 8: Government policy – PMDS:

- 3. The system of PMDS ratings used in my department is fair.
- 4. I am fairly rated by my supervisor in my PMDS.

Factor 9: Working condition – Infrastructure:

- 24. There are enough staff members to handle the workload in my department.
- 25. I feel safe at work.
- 26. My workplace is hygienic.
- 30. I am satisfied with the condition of the facilities (e.g. air conditioning and patient linen) in my department.
- 48. There is adequate support staff to assist with operational needs of patients.

Factor 10: Human Resources:

- 31. HR is available to address my work-related problems, when needed.
- 34. I am satisfied with the way HR processes my overtime claims.
- 35. I am satisfied with the way HR monitors my leave and working hours.

6.4.1 Analysis of constructs

The ten (10) identified factors were individually analysed as separate constructs. These constructs were formed by finding the average of the agreement scores that were formulated by the Likert scale. In the Likert scale, 1= strongly disagree and 5= strongly agree, as demonstrated in Table 6.11.

6.4.1.1 Results on each construct using the one sample t-test:

Factor 1: Government policy – OSD:

There is significant disagreement that (M=2.6363) that OSD Policy was fairly implemented, t (181) = -5.665, p<.0005.

Factor 2: Government policy – Employment Equity Act:

There is significant agreement (M=3.1584) that the Employment Equity Act is fairly implemented, t (181) = 2.312, p=.022.

Factor 3: Government policy - PMDS:

There is significant agreement (M=2.840) that the PMDS is fairly used, t (181) = 2.840, p=.005.

Factor 4: Working condition – Supervision:

There is significant disagreement (M=3.3048) that supervision creates a favourable working condition, t (181) = 5.219, p<.0005.

Factor 5: Working condition – Equipment:

There was no significant agreement or disagreement for the working conditions related to equipment.

Factor 6: Working condition – Infrastructure:

There is significant disagreement (M=2.5889) that the infrastructure creates a favourable working condition, t (180) = -7.276, p<.0005.

Factor 7: Intention to leave:

There was a significant disagreement (M=2.4245) that participants had intentions of vacating their posts, t (179) = -7.155, p<.0005.

Factor 8: CPD activities:

There was significant agreement (M=3.2019) that departments had relevant CPD activities, t (179) = 2.659, p<.009.

Factor 9: Fair remuneration:

There was significant disagreement (M=2.4724) that remuneration received by participants was fair, t (180) = -6.268, p<.0005.

Factor 10: Human resources processes:

There was no significant agreement or disagreement for the Human Resource processes.

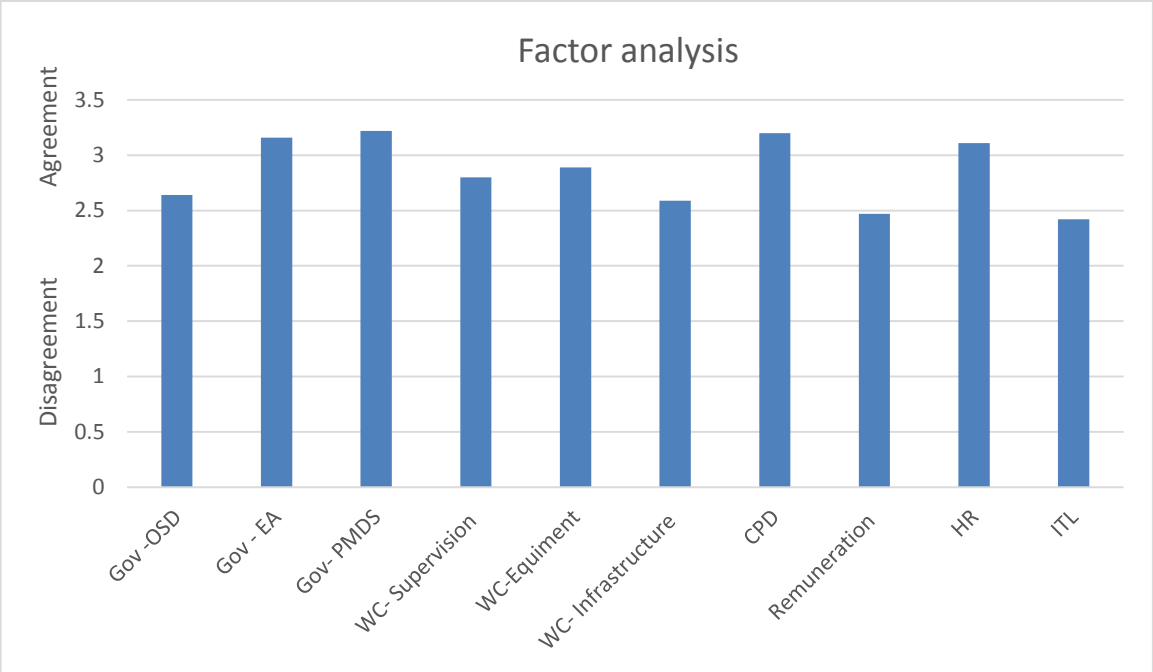

Figure 6.9: Factor analysis level of agreement.

6.4.2 Correlation of constructs on intention to leave (ITL) using Pearson's correlation

Correlations are used to describe the strength and direction of the linear relationship between two variables (Pallant 2011:128). Pearson's correlation was used to determine the correlation between the intention to leave (ITL) and the other nine (9) factors as demonstrated in Table 6.3. They all showed a relationship and have been presented in sequential order from the construct with the strongest relationship with ITL to the one with the least. The supervisor relationship was the most important factor to retain staff. Spearman's correlation is used when the variables are an ordinal scale. In the case of this analysis, the variables are interval scale and so Pearson's is the test that is applicable. When testing for a correlation between variables A and B, a positive correlation shows that high values of A are associated with high values of B; in

the same way low values of A are associated with low values of B. A negative correlation indicates that high values of A are associated with low values of B, and vice versa. Both positive and negative correlations are possible with both Pearson's test and Spearman's test.

Table 6.3: Pearson's correlation on intent to leave

		GOV_ OSD	GOV_ EEA	GOV_ PMDS	WC_ SUP	WC_ EQUIP	WC_ INFRA	CPD	REM	HR
ITL	Pearson Correlation	-.233**	-.086	-.302**	-.344**	-.163*	-.236**	-.201**	-.202**	-.249**
	Sig. (2-tailed)	.002	.254	.000	.000	.029	.001	.007	.006	.001
	N	180	180	179	180	180	180	180	180	180

6.5 RESULTS OF THE CORRELATION OF CONSTRUCTS ON (ITL) USING PEARSON'S CORRELATION

Working condition – supervision:

There is a significant negative correlation between intention to leave and satisfaction with the type of supervision, r= -.344, p=.000. This indicates that participants who are satisfied with their supervision do not intend to leave.

Government policy – PMDS:

There is a significant negative correlation between intention to leave and satisfaction with PMDS, r=-.302, p=.000. This indicates that participants who are satisfied with PMDS do not intend to leave.

Human resources processes:

There is a significant negative correlation between intention to leave and satisfaction with human resources processes, r=-.249, p=.001. This indicates that participants who are satisfied with human resource processes do not intend to leave.

Working condition – Infrastructure:

There is a significant negative correlation between intention to leave and satisfaction with working conditions of infrastructure, r=-.236, p=.001. The participants who are satisfied with the infrastructure provided by working conditions do not intend to leave.

Government policy – OSD:

There is a significant negative correlation between intention to leave and satisfaction with the OSD Policy of Government, r=-.233, p=.002. Those participants who are satisfied with the OSD Policy have no intention of leaving.

Fair remuneration:

There is a significant negative correlation between intention to leave and satisfaction with fair remuneration, r=-.202, p=.006. Those who are satisfied with their remuneration do not intend to leave.

Continued professional development activities:

There is a significant negative correlation between intention to leave and satisfaction with structured CPD activities in the departments, r=-.201, p=.007. Those who are satisfied with structured CPD activities in their departments do not intend to leave.

Working conditions – Equipment:

There is a significant negative correlation between intention to leave and satisfaction with the state of the equipment, r=-.163, p=.029. Those who are satisfied with the state of the equipment do not intend to leave.

Government policy – Employment Equity Act:

There was no significant correlation between intention to leave and the Employment Equity Act.

6.6 DEMOGRAPHICS ANALYSIS

Analysis was performed on the different constructs to measure if they differed across demographics. The demographics section of the questionnaire was designed to identify gender, age, race, marital status, experience and the position occupied. Different analytical tests were performed for each section. The ANOVA was used for the demographics with more than two variables to provide information on how the groups differ, but it failed to report on the significance. In cases where ANOVA was not suitable, the Welch test was used to test the hypothesis that two populations have equal means. The independent samples t-test was used for gender because it is ideal for comparing scores across two groups of people, males and females as demonstrated in Table 6.4 (Pallant 2011:105).

Table 6.4: Independent Samples T-Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
WC_SUP	Equal variances assumed	.193	.661	-2.277	179	.024	-.26943	.11835	-.50296	-.03589
	Equal variances not assumed			-2.257	149.872	.025	-.26943	.11940	-.50535	-.03350
ITL	Equal variances assumed	3.968	.048	2.415	177	.017	.38539	.15956	.07050	.70028
	Equal variances not assumed			2.384	147.655	.018	.38539	.16166	.06592	.70486

6.6.1 Independent samples t-test

The independent samples t-test was conducted on all ten constructs which are: the government policies, namely, OSD, the Employment Equity Act, and the PMDS; working conditions, namely, supervision, equipment and infrastructure; intention to leave; structured CPD activities, fair remuneration and human resources process. However, the independent samples test only indicated significance for two constructs, supervision and the intention to leave as reported below.

There is a significant difference in agreement with supervision construct across gender, t (179) = -2.277, p=.024. Males (M=3.1448) agree significantly more than females (M= 3.1448) that supervision is fair.

There is a significant difference in agreement that they intend to leave across gender, t (147.655) = 2.384, p=.018. More males (M=2.65) than females (M=2.26) indicate their intention to leave.

6.6.2 ANOVA test on race

The ANOVA test was performed for all the ten constructs to determine whether there were significant differences across race. The results are presented only for the constructs, intention to leave and structured CPD activities that had significant differences across race groups as demonstrated in table 6.5.

Table 6.5: Results of the ANOVA on race

		Sum of Squares	df	Mean Square	F	Sig.
ITL	Between Groups	14.553	4	3.638	3.391	.011
	Within Groups	186.680	174	1.073		
	Total	201.232	178			
CPD	Between Groups	14.204	4	3.551	3.651	.007
	Within Groups	169.249	174	.973		
	Total	183.453	178			

There is a significant difference in agreement that they intend to leave depending on Race, F (4, 174) = 3.391, p=.011. In particular, Blacks agree significantly more that they intend to leave than do Whites and the ‘other’ race groups.

There is a significant difference in agreement that there are structured CPD activities on race, F (3.651), p=.007. In particular, whites agree significantly more that they have structured CPD activities than do Indians and the 'other' race groups.

6.6.3 The Welch Test on race

Wherever the ANOVA test could not be performed, the Welch test was used to test the hypothesis that two populations have equal means. When the ANOVA assumption of equal variances does not hold, the Welch test is used to test the equality of group means. This is a standard alternative when this condition is not satisfied. Each case for which it applies is easily identified in the reporting where the Welch statistic is reported instead of the F statistic.

The Robust test of equality could not be performed for the Government Policy on Employment Equity Act, and for the PMDS and for the intention to leave because at least one group has a zero (0) variance. The two constructs that had significant differences were working conditions and supervision as demonstrated in Table 6.6.

Table 6.6: Robust Tests of Equality of Means[b,c,d]

		Statistic[a]	df1	df2	Sig.
GOV_OSD	Welch	.930	4	6.785	.500
GOV_POST	Welch	.	.	.	.
GOV_PMDS	Welch	.	.	.	.
WC_SUP	Welch	4.363	4	6.873	.045
WC_MACH	Welch	.327	4	6.947	.852
WC_COND	Welch	1.329	4	6.929	.348
ITL	Welch	.	.	.	.
CPD	Welch	2.779	4	6.767	.116
REM	Welch	2.463	4	7.026	.140
HR	Welch	.468	4	6.975	.758

There is a significant difference in satisfaction with general working conditions and supervisor relationships depending on race, Welch (4, 6.873) = 4.363, p=.045. The Whites are significantly more satisfied than the Blacks with supervision.

6.6.4 The ANOVA test on marital status

The ANOVA test was performed on all the 10 constructs on marital status. However, only CPD activities had a significant difference as demonstrated in Table 6.7.

Table 6.7: ANOVA test on marital status

		Sum of Squares	df	Mean Square	F	Sig.
CPD	Between Groups	8.981	3	2.994	2.989	.033
	Within Groups	174.247	174	1.001		
	Total	183.228	177			

There is a significant difference in agreement that there are structured CPD activities on marital status, F (2.989), p=.033. In particular, divorced or separated participants agree significantly more that they are satisfied with structured CPD activities than single participants.

6.6.5 The ANOVA test on experience

The ANOVA test was performed to determine any difference that might exist across the 10 different constructs using their experience. There was significant difference on the Government's policy – Employment Equity Act, working conditions – Infrastructure, intention to leave, structured CPD activities and fair remuneration as demonstrated in Table 6.8.

Table 6.8: ANOVA test for experience

		Sum of Squares	df	Mean Square	F	Sig.
GOV_POST	Between Groups	23.282	3	7.761	10.508	.000
	Within Groups	131.456	178	.739		
	Total	154.738	181			
WC_COND	Between Groups	5.024	3	1.675	2.891	.037
	Within Groups	102.554	177	.579		
	Total	107.578	180			
ITL	Between Groups	12.030	3	4.010	3.724	.013
	Within Groups	189.535	176	1.077		
	Total	201.565	179			
CPD	Between Groups	8.874	3	2.958	2.946	.034
	Within Groups	176.736	176	1.004		
	Total	185.610	179			
REM	Between Groups	15.692	3	5.231	4.303	.006
	Within Groups	215.170	177	1.216		
	Total	230.862	180			
HR	Between Groups	7.770	3	2.590		
	Within Groups	125.297	177		3.659	.014
	Total	133.068	180	.708		

There is a significant difference in agreement with satisfaction of the Employment Equity Act depending on experience, F (3, 178) = 7.761, p=.000. In particular, Grades 1 and 3 radiographers, and assistant directors agree significantly more than Grade 2 radiographers, that the Employment Equity Act is fairly implemented.

There is a significant difference in satisfaction with the working conditions-Infrastructure depending on experience, F (3, 177) = 2.891, p=.37. In particular, Grade 1 radiographers agree significantly more than Grade 2 radiographers, that the infrastructure provides favourable working conditions.

There is a significant difference in agreement that they intend to leave depending on experience, F (3, 176) = 3.724, p= .013. In particular, Grade 1 radiographers agree significantly more than Grade 2 radiographers, that they intend to leave than do grade 2 radiographers.

There is a significant difference in agreement that the departments have structured CPD activities, depending on experience, F (3, 176) = 2.958, p= .034. In particular, Assistant directors agree significantly more than Grade 1 radiographers, that departments have structured CPD activities.

There is a significant difference in agreement with fair remuneration depending on experience, F (3, 177) = 4.303, p= .006. In particular, Grade 3 radiographers agree significantly more than Grade 1 and Grade 2 radiographers, that the remuneration is fair.

There is a significant difference in agreement with satisfaction with human resources processes depending on experience, F (3, 177) = 3.659, p= .014. In particular, Grade 1 radiographers agree significantly more than Grade 2 radiographers, that they are satisfied with the efficiency of human resources processes.

6.6.6 The Welch test on experience

The Welch Test was performed on all 10 constructs, but only two constructs had significant differences for experience, namely, PMDS and the efficiency of human resources processes as demonstrated in Table 6.9.

Table 6.9: Robust Tests of Equality of Means

		Statistic[a]	df1	df2	Sig.
GOV_OSD	Welch	1.798	3	26.103	.172
GOV_POST	Welch	10.894	3	27.279	.000
GOV_PMDS	Welch	4.099	3	32.509	.014
WC_SUP	Welch	5.962	3	30.249	.003
WC_MACH	Welch	2.307	3	28.381	.098
WC_COND	Welch	2.844	3	25.991	.057
ITL	Welch	4.060	3	26.592	.017
CPD	Welch	3.363	3	27.275	.033
REM	Welch	3.762	3	25.913	.023
HR	Welch	4.524	3	29.609	.010

There is a significant difference in satisfaction with the government policy- on PMDS depending on experience, Welch (3, 32.509) = 4.099, p= .014. The Assistant directors are significantly more satisfied with PMDS than Grade 3 radiographers.

There is a significant difference in satisfaction with efficiency of human resources processes depending on with experience, Welch (4, 29.609) = 4.524, p=.010. The assistant directors agree more significantly than Grade 2 radiographers, that they are satisfied with efficiency of human resource processes.

6.6.7 ANOVA analysis across different disciplines

The ANOVA test was performed to determine differences across the different constructs focusing on the five (5) disciplines of radiography. There were significant differences within these constructs, OSD, fair remuneration and the efficiency of the human resource processes as demonstrated in Table 6.10.

Table 6.10: ANOVA analysis across different disciplines

		Sum of Squares	df	Mean Square	F	Sig.
GOV_OSD	Between Groups	44.249	4	11.062	21.391	.000
	Within Groups	91.536	177	.517		
	Total	135.785	181			
REM	Between Groups	35.249	4	8.812	7.929	.000
	Within Groups	195.613	176	1.111		
	Total	230.862	180			
HR	Between Groups	11.342	4	2.390	3.406	.010
	Within Groups	113.062	176	.702		
	Total	124.404	180			

There is a significant difference in agreement with satisfaction of the government policy- on OSD depending on the radiography discipline, F (4, 177) = 21.391, p= .000. In particular, Diagnostic and nuclear medicine radiographers agree significantly more than radiation therapists, that they are satisfied with government's OSD Policy.

There is a significant difference in agreement with satisfaction of fair remuneration depending on the radiography discipline, F (4, 176) = 7.929, p= .000. In particular, diagnostic radiographers agree significantly more than sonographers and radiation therapists, that they are satisfied with fair remuneration.

There is a significant difference in agreement with satisfaction of human resource processes depending on the radiography discipline, F (4, 176) = 3.406, p= .010. In particular, diagnostic radiographers agree more significantly than radiation therapists, that they are satisfied with the efficiency of human resources processes.

6.6.8The Welch Test

The Welch Test was performed for on all the constructs, however, only three constructs had a significant difference, namely, equipment, intention to leave and structured CPD activities within the department as demonstrated in Table 6.11.

Table 6.11: Robust Tests of Equality of Means

		Statistic[a]	df1	df2	Sig.
GOV_OSD	Welch	19.459	4	20.103	.000
GOV_EEA	Welch	2.170	4	20.332	.109
GOV_PMDS	Welch	2.435	4	21.100	.079
WC_SUP	Welch	.598	4	20.138	.669
WC_EQUI	Welch	6.902	4	24.108	.001
WC_SUP	Welch	.917	4	20.069	.473
ITL	Welch	4.840	4	20.921	.006
CPD	Welch	4.538	4	20.801	.009
REM	Welch	8.739	4	24.689	.000
HR	Welch	4.482	4	20.137	.009

There is a significant difference in satisfaction with working conditions-the construct of equipment the radiography discipline, Welch (4, 24.108) = 6.902, p=.001. The diagnostic radiographers are significantly more satisfied than radiation therapists, that working condition provided by equipment are favourable.

There is a significant difference with intention to leave depending on the radiography discipline, Welch (4, 20.921) = 4.840, p= .006. The diagnostic radiographers and radiation therapists agree significantly more, to have intentions to leave than do mammography radiographers.

There is a significant difference in satisfaction with structured CPD activities depending on the radiography discipline, Welch (4, 20.801) = 4.538, p=.009. The nuclear medicine radiographers are significantly more satisfied with structured CPD activities than radiation therapists.

6.6.9 Spearman's correlation

In data analysis, correlation is used to describe the strength and direction of the linear relationship between two variables. Two common tests are performed for correlation, the Pearson product-moment (r) correlation previously discussed and the Spearman's Rank Order Correlation (rho). The Spearman's rank order correlation is useful in cases where the data does not meet the Pearson's correlation (Pallant 2011:128). The two constructs that needed the Spearman's correlation were the age of the participants and the experience of radiographers as demonstrated in Table 6.12. The three constructs that showed correlations are presented in sequential order, structured CPD activities, favourable working conditions provided by supervision and intention to leave.

Table 6.12: Spearman's correlation

			ITL	GOV_OSD	GOV_EEA	GOV_PMDS	WC_SUP	WC_EQUIP	WC_INFRA	CPD	REM	HR
Spearman's rho	A2. Age	Correlation Coefficient	-.161*	.040	-.099	.038	.166*	.069	-.029	.190*	.124	-.041
		Sig. (2-tailed)	.031	.592	.186	.614	.026	.359	.701	.011	.097	.582
		N	178	180	180	179	180	179	179	178	179	179
	A5. Number of years as a qualified radiographer	Correlation Coefficient	-.231**	.024	-.208**	-.025	.137	.040	-.064	.148*	.116	-.168
		Sig. (2-tailed)	.002	.748	.005	.736	.066	.598	.390	.048	.121	.024
		N	179	181	181	180	181	180	180	179	180	180

6.6.9.1 Results of Spearman's correlation on age

There is a significant positive correlation between age and structured CPD activities, rho=.190, p=.011. The older participants are more agreeable to the availability of structured activities in their departments.

There is a positive correlation between age and satisfaction with their favourable working condition- provided by supervision, rho= .166. Older participants are more agreeable to favourable working conditions related to supervision.

There is a negative correlation between age and intention to leave, rho = -.031, p=.-166. Older participants had no intention to leave.

6.6.9.2 Results of Spearman's correlation on experience

There is significant negative correlation between intention to leave and experience, rho=-.002, p=- .231. Participants with higher levels of experience have no intentions of leaving.

There is a significant negative correlation between the constructs of experience and government policy- the Employment Equity Act, rho=.005, p=-.208. Those who have a higher level of experience disagree that the Employment Equity Act is fairly implemented.

There is a significant negative correlation between experience and human resource processes, rho= .024, p= -.168. Those who have a higher level of experience disagree that the HR processes are run efficiently.

There is a positive correlation between experience and structured CPD activities, rho= .048, p=148. Those with a higher level of experience agree with the availability of structured CPD activities.

6.6.10 ANOVA analysis across the hospitals

The ANOVA test was performed to determine if differences exist across the constructs when compared across the four tertiary hospitals. There was a significant difference across 9 of the 10 constructs in the different hospitals. There was no significant agreement or disagreement across the different hospitals to the construct, that equipment provided favourable working conditions. The detailed results of the ANOVA analysis are demonstrated in Table 6.13.

Table 6.13: The ANOVA analysis of the tertiary hospitals

		Sum of Squares	df	Mean Square	F	Sig.
GOV_OSD	Between Groups	8.022	3	2.674	3.726	.012
	Within Groups	127.763	178	.718		
	Total	135.785	181			
GOV_EEA	Between Groups	7.626	3	2.542	3.076	.029
	Within Groups	147.112	178	.826		
	Total	154.738	181			
GOV_PMDS	Between Groups	15.234	3	5.078	4.808	.003
	Within Groups	186.954	177	1.056		
	Total	202.188	180			
WC_SUP	Between Groups	26.274	3	8.758	18.104	.000
	Within Groups	86.110	178	.484		
	Total	112.384	181			
WC_INFRA	Between Groups	13.942	3	4.647	8.785	.000
	Within Groups	93.636	177	.529		
	Total	107.578	180			
ITL	Between Groups	14.639	3	4.880	4.595	.004
	Within Groups	186.926	176	1.062		
	Total	201.565	179			
CPD	Between Groups	22.012	3	7.337	7.893	.000
	Within Groups	163.599	176	.930		
	Total	185.610	179			
REM	Between Groups	24.971	3	8.324	7.156	.000
	Within Groups	205.891	177	1.163		
	Total	230.862	180			
HR	Between Groups	19.061	3	6.354	9.864	.000
	Within Groups	114.007	177	.644		
	Total	133.068	180			

There is a significant difference in agreement that the government policy on OSD was implemented fairly tertiary hospital, F (3, 178) = 3.726, p= .012. In particular, radiographers at TH2 agree more significantly than radiographers at TH1 that OSD is implemented fairly.

There is a significant difference in agreement that the government policy on Employment Equity Act (EEA) is implemented fairly tertiary hospital, F (3, 178) = 3.076, p= .029. In particular, radiographers at TH4 agree more significantly than radiographers at TH3 that EEA is implemented fairly.

There is a significant agreement that the government policy on PMDS is fairly implemented depending on tertiary hospital, F (3, 178) = 4.808, p=.003. In particular, radiographers at TH2 agree more significantly than radiographers at TH4 that PMDS is fairly implemented.

There is a significant agreement that the working conditions provided by supervisors are favourable depending on the tertiary hospital, F (3, 178) = 18.104, p =.000. In particular, radiographers at TH1 agree more significantly than radiographers at TH3, and radiographers at TH2 agree more significantly than all the hospitals that supervision is favourable.

There is significant agreement that the working conditions provided infrastructure are favourable depending on tertiary hospital, F (3, 177) = 8.785, p= .000. In particular, radiographers at TH1 and TH2 agree more significantly than radiographers at TH3 and TH4 that working conditions provided by infrastructure is favourable.

There is a significant agreement that radiographers intend to leave tertiary hospital, F (3, 176) = 4.595, p= .004. In particular, radiographers at TH4 agree more significantly than radiographers at TH2 and TH3 that they intend to leave.

There is a significant agreement that departments have structured CPD activities depending on tertiary hospital, F (3, 176) = 7.893, p= .000. In particular, radiographers at TH2 agree more significantly than radiographers at TH1 and TH3 that departments have structured CPD activities.

There is a significant agreement that radiographers receive fair remuneration tertiary hospital, F (3, 177) = 7.156, p= .000. In particular, radiographers at TH2, agree more significantly than radiographers at TH1 and TH3, that they receive fair remuneration. However, radiographers at T3 agree more significantly than radiographers at TH1.

There is significant agreement that human resources processes run efficiently tertiary hospital, F (3, 177) = 9.864, p= .000. In particular radiographers at TH1 and TH2 agree more significantly than radiographers at T3 that human resource processes are run efficiently.

6.7 OPEN ENDED QUESTIONS: Section C

The open-ended part of the questionnaire, Section C was not completed by most participants, hence no significant analysis was possible.

6.8 SUMMARY CHAPTER

This chapter presented the results of the quantitative phase of the study. During analysis, the items from the questionnaire were categorized into ten (10) factors or constructs, namely, These 10 factors were government Policy on OSD, PMDS and Employment Equity Act; favourable working conditions created by supervisors, infrastructure and equipment; structured CPD activities; fair remuneration; intention to leave and efficiency of the human resources processes. A SPSS version 23 was used to perform data analysis. Various statistical tests such as the one sample t-test, the ANOVA test, the Welch test and different correlation analysis. The results indicated significantly different levels of satisfaction with multiple factors ranging from age, race, marital status,

experience, tertiary hospital and the discipline of radiography. In Chapter 7 the findings of the qualitative and quantitative phases of the study will be integrated.

CHAPTER 7: INTEGRATION OF RESULTS FROM PHASE 1 AND PHASE 2

7.1 INTRODUCTION

A sequential mixed methods research design was used as the guiding methodology for this study. In sequential mixed methods, data collection occurs in two separate phases, where phase 1 is qualitative and phase 2 is quantitative (Creswell 2014: 281). Phase 1 of the study used FGDs and one on one interviews for data collection. Thereafter, the findings of phase 1 were used to develop the questionnaire which was used for data collection in phase 2. The previous chapter presented the results of phase 2. This chapter focuses on integrating the results of phase 1 and phase 2.

7.2 INTEGRATION OF RESULTS

The objectives of the study were to (a) determine the pattern of job satisfaction among radiographers, (b) identify the role of the working environment on job satisfaction, (c) explore the influence of human factors on job satisfaction; (d) evaluate the role of current policies introduced by the Department of Health on job satisfaction; (e) explore the effect of intrinsic and extrinsic factors on job satisfaction. To achieve objectives (c) and (e), a set of standardized and guiding open ended questions were used to collect data in phase 1.

Five themes emerged from data analysis and they focused on government policies that influence job satisfaction; career pathing; fair remuneration; effects of working conditions on job satisfaction; and the efficiency of the human relation processes. They were categorized into intrinsic and extrinsic factors of job satisfaction using Herzberg's Motivation and Hygiene Theory.

These emerging themes were used to develop the questionnaire to achieve objectives (a), (b) and (d) in phase 2. This section integrates the qualitative and quantitative phases of the study. The findings of phase 1 are presented,

followed by the statements that were used to test the hypothesis in phase 2, and the results of phase 2.

7.2.1 Occupational specific dispensation (OSD)

Participants agreed that the introduction of OSD improved their salaries. However, some participants felt that it was not fairly implemented as it resulted in them receiving lesser salaries after its introduction. Senior participants felt that they were less recognised as they ended up earning the same salary with those who were newly qualified. Participants working in a speciality such as nuclear medicine, sonography, mammography, and radiation therapy felt that the OSD failed to recognise them in the salary structure. Previously, the requirement to study any of the specialties in radiography was that participants had to obtain a National Diploma in Diagnostic Radiography. Due to the staff shortage in specialities and increased demand for their services, a National Diploma in a speciality without a National Diploma in Diagnostic Radiography was introduced. However, the OSD Policy has failed to recognise radiographers working in a speciality without dual qualification. Hence, their grievance with the OSD Policy. Participants without a dual qualification further indicated that their salary advice also fails to indicate their qualification as registered by the HPCSA. For example, radiation therapists without a dual qualification, are recognised as diagnostic radiographers in their salary advice.

Furthermore, the participants shared their views on the salary stagnation associated with the OSD Policy. Participants indicated that their entry salary was at an acceptable level. However, they could remain in one position for a period of 10 years without the possibility of a promotion, which is in contrast to those who believed that the OSD offer was market-related and the private sector could not compete in this regard. Assistant directors had similar disgruntlement about their salary scale. They indicated that there was a minimal difference between their salary scale and Grade 3 radiographers, even though they had the additional duties of management. For these reasons, radiographers believed that whoever drafted the OSD Policy for them lacked

the understanding of the profession. Participants believed that this was caused by the lack of direct representation of radiographers in the bargaining council where salary negotiations occur for public servants. To test the hypothesis in phase 2 of the study, these were the statements posed to the participants:

- 1. My salary has improved since the introduction of occupational specific dispensation (OSD).
- 2. My OSD was fairly implemented.
- 9. I am satisfied with the salary scales that apply to me.
- 32. I have been placed in a correct post according to my qualification.
- 33. I am satisfied that I am adequately represented at the bargaining council.
- 36. I am satisfied with the way HR has implemented OSD.

The factor analysis of these constructs indicated a significant disagreement with the fair implementation of the OSD Policy. In addition, the Pearson correlation indicated a significant negative correlation between satisfaction with the OSD Policy and intention to leave. Participants who were satisfied with the OSD Policy were did not intend to leave. Furthermore, the ANOVA test across the disciplines identified radiation therapists as the group of professionals who showed the most dissatisfaction with the OSD Policy. These results correlate with the sentiments shared by participants in phase 1 of the study, that OSD has not been fairly implemented.

This could translate to failure of the policy of the policy to attract and retain radiographers in the public sector. Radiographers in speciality such radiation therapists, sonographers and mammography radiographers were the ones who were most negatively affected by the unfair implementation of the OSD policy. This was caused by the failure of the policy to create sub-scales for the radiographers working in speciality and has resulted in lack of salary and career growth. The lack of career growth has been caused by the lack of supervisory posts positions for radiographers working in speciality. Similarly the assistant directors felt that the salary did not correlate with the duties they had and that there no difference between them and grade 3 radiographers.

7.2.2 Employment Equity Act (EEA) No. 55 of 1998

The sentiments shared by participants in phase 1 was that the interview process for the new posts and promotion was not fair. In the view of some of the participants, favouritism is applied in promotion, while others blamed the Employment Equity Act for an unfair selection. Some believed that the best candidates are not selected and those who assume the post, end up not staying long, while others indicated that the posts are frozen if the applicants are not of the required race needed for the demographics in the department. To test these hypotheses in phase 2 of the study, the following statements were posed to respondents:

- 5. The interview process for vacant posts is fair.
- 6. The Employment Equity Act ensures that suitable candidates are selected to fill posts.
- 7. In this hospital, a vacant post is always filled by the best candidate for the job.

However, the findings of phase 1 could not be correlated with the results in phase 2. The results of one sample t-test indicated significant agreement that the Employment Equity Act (EEA) is being fairly implemented. Furthermore, the results of the Pearson's correlation could not find any significant correlation with the levels of satisfaction with the Employment Equity Act and intention to leave. Similarly, the ANOVA test found significant agreement on three of the four levels of experience that the EEA is being implemented fairly. The only group that seemed to disagree were Grade 2 radiographers, while Grades 1 and 3, and assistant directors agreed significantly with the fair implementation of the EEA. The only significant difference that existed in the fair implementation of the EEA was that between hospitals. Participants employed at TH4 agreed more significantly than did participants at TH3.

7.2.3 Performance Management and Develop System (PMDS)

The findings of phase 1 of the study indicated that different departments use different systems of rating for sub-ordinates. In some of the departments, the ratings for subordinates are performed by one senior personnel, while in other departments, the responsibility is shared amongst a group of senior personnel. However, the subordinates felt neither of the systems worked effectively for them because of the lack of recognition from their supervisors. The subordinates felt that everyone deserved a rating of 4 because of the effort they put into their work and staff shortages that exist across departments. Ratings range from 1-5, where 1 represents not effective and 5 is very effective. The additional significance of the PMDS rating is that it is directly linked to the accelerated grade progression of the OSD. If it is not fairly implemented, participants could remain in one position for a period of 10 years, when automatic grade progression occurs. In order to test these hypotheses, the following statements were posed to the participants in phase 2 of the study:

- 3. The system of PMDS ratings used in my department is fair.
- 4. I am fairly rated by my supervisor in my PMDS.

The results of one sample t-test in phase 2, contradict the findings of phase 1. There was significant agreement that participants are rated fairly by their supervisors. The fair ratings of the PMDS are of great importance, because those radiographers who were satisfied with their ratings did not intend to leave. According to the results of the Welch test, the assistant directors were satisfied with the implementation of the PMDS ratings. However, there was no significant difference in satisfaction with the PMDS ratings according to age. The only difference that existed was at hospitals. Participants at TH2 agreed significantly with the implementation of the PMDS policy.

7.3 LACK OF CAREER PATHING

The theme of career pathing included diversity, academic growth, CPD activities, and promotion. These were the results and findings under each sub-theme.

7.3.1 Rotation in specialized areas

The findings of phase 1 indicated that the opportunity to train in specialized areas such as computed tomography (CT), magnetic imaging resonance (MRI), catheterization laboratory, angiography and treatment planning in radiation therapy was recognized and important to the participants. However, participants felt that the selection process for training was not fair, and there was no remuneration offered for the additional training and the pressure that comes with training in specialized areas, such as being on call on a regular basis. To test the hypotheses in phase 2 of the study, the following statements were posed to the participants:

- 38. People with skills in specialized areas, such as Planning (therapy), MRI and CT, are remunerated fairly for their skills.
- 39. I am provided with an opportunity to train in specialized areas such as Planning (therapy), MRI, CT, angiography and catheterization laboratory.

In phase 2, one sample t-test was the only possible test for these two items. Their results showed that there was significant disagreement that participants with specialized skills received financial benefits for their training, and there was no significant agreement or disagreement with regards to receiving training in specialized areas. Training is specialized areas comes with additional responsibilities such being on call on a regular basis and the demand for these imaging modalities is higher than general x-rays. Therefore, radiographers with specialized training should be remunerated accordingly and the different salary scale for specialized training is what has been used by the private sector to attract and retain radiographers. In addition, participants in phase one of the study expressed that the selection for training in specialised areas was biased towards those who were liked by management. Further contributing to the

factors that could result in failure for the public sector to retain or attract radiographers.

7.3.2 Academic growth

The findings in phase 1 demonstrated that there was no official recognition for additional qualifications. In other words, there is no recognition for post-graduation qualifications such as a master's degree or Ph.D. in the field. Salaries remain the same, regardless of your qualification level. The matter is aggravated for participants in the speciality, who indicated that they were not placed in the correct post, nor did their salary advice indicate their speciality. Furthermore, participants in the speciality felt that the structure of their profession was very limited. There are no posts for supervisors as all the participants are placed in the same category and the only difference is the grade. The only supervisory post that exists is that of the assistant director and there can only be one supervisor in a department. Diagnostic radiography has posts for supervisory chiefs who are in charge of sections within the department. To test this hypothesis in phase 2 of the study, the following statements were posed to the respondents:

- 32. I have been placed in a correct post according to my qualification.
- 37. My postgraduate qualification is recognized in my salary.

The only possible test for these two items was the one sample t test. The results demonstrated that there was significant disagreement among participants that they were placed in the correct post. Therefore, correlating the findings of phase 1.

7.3.3 Structured CPD activities

The findings of phase 1 indicate that participants had different views on the existence of structured CPD activities in different departments. Some of the participants indicated that there are structured CPD activities in their departments, while others indicated that they did not have them. Furthermore, participants from the specialized departments indicated that the CPD topics

were not inclusive for their disciplines, hence not making them worthwhile to attend the structured CPD activities and obtaining their CPD points online. According to the participants, online CPD points have resulted in the collapse of the Society of Radiographers in their region. The Society of Radiographers is one of the structured bodies that organises seminars for CPD points, amongst other functions. The additional challenges with structured CPD activities were their timing. Participants indicated that after hours and weekends were meant for family time, thus making in house CPD activities conducted during working hours very important. The following statements were posed to the participants to test these hypotheses in phase 2 of the study:

- 40. My department has Continued Professional Development (CPD) activities.
- 41. CPD activities have relevant topics for me.
- 42. The CPD activities in seminars are inclusive of all the disciplines within radiography.

Results of the one sample t-test in phase 2 showed that there is significant agreement with the availability of structured CPD activities and the relevance of the topics. The results did not show any significant level of agreement or disagreement with the availability of CPD activities in the departments. However, the results of the Pearson's correlation between intention to leave and structured CPD activities showed a significant negative correlation. In other words, those who are satisfied with structured CPD activities do not intend to leave. In addition, the results of the ANOVA test showed a significant difference in the availability of structured CPD activities across race. White participants significantly agreed with the structured CPD activities in their departments. Furthermore, divorced or separated participants showed a higher level of satisfaction with CPD activities in their departments. Tertiary hospital 2 showed significant agreement with having structured CPD activities in their hospital.

It is apparent that the method of obtaining CPD points online is the preferred method amongst radiographers and has resulted in the collapse structured that use to provide this platform. In addition, some of the departments have created platforms during working hours for radiographers to obtain their CPD points.

The organisation of CPD activities differed according to hospitals and some were more organised hence the difference in satisfaction with departmental CPD activities. It is also worth noting that tertiary hospital showed most satisfaction with departmental CPD activities and the hospital had the highest number of white radiographers. Therefore, this could explain the difference in satisfaction with CPD activities according to race and tertiary hospital.

7.3.4 Promotion

The results of phase 1 demonstrated that participants believed that there was no possibility of being promoted. This was attributed to the governments' policy on OSD and the favouritism in the interview process, whenever senior posts were available. Participants employed in a speciality were mostly affected by the OSD Policy, because of the lack of supervisor’s posts, except for the assistant directors, thereby limiting their ladder of career growth. Some participants indicated that they have been in the same posts for almost 8 years and their accelerated grade progression had not been implemented. This was also acknowledged by managers, who indicated that the entry level salary for newly qualified participants was significantly high and there was no structure to permit promotion. Furthermore, diagnostic radiographers felt that the interview process for a senior position was not fair. In order to test this hypothesis, the following statements were posed to participants in phase 2:

- 5 The interview process for vacant posts is fair.
- 12 My grade/accelerated progression has been implemented on time.

Results of the one sample t-test correlated the findings of phase 1 regarding the fairness of the interview processes. Respondents significantly disagreed that the interview process was fair, and significantly agreed with the implementation of the accelerated grade progression, allowing salary increment to the next salary notch.

7.4 UNSATISFACTORY REMUNERATION

The three themes that emerged under unsatisfactory remuneration were poor remuneration, overtime, and the bargaining council. These themes were tested in phase 2 of the study for their significance.

7.4.1 Poor remuneration

The findings of phase 1 showed that participants were not happy with their salaries because it did not correlate with their qualifications. In addition, they were not placed in the correct salary grade by the OSD Policy. Participants believed that the OSD Policy was not drafted fairly due to a lack of knowledge about the structure of radiography as a profession and the lack of direct representation of radiographers at the bargaining council. In the public sector, all salary negotiations and drafting of policies related to salaries take place at the bargaining chamber.

Some managers believe that poor salaries were one of the leading factors that caused newly qualified radiographers to vacate their posts, for posts in the private sector. Other managers believe that the benefits provided by the public sector out-weighed the salary package offered by the private sector and therefore, those who leave the public sector because of poor salaries have not done their calculations. Despite being underpaid and placed in the incorrect post, some participants were adamant that they were not leaving the public sector. To test these hypotheses in phase 2 of the study, the following statements were posed to participants:

- 9. I am satisfied with the salary scales that apply to me.
- 15. I am being paid a fair amount for the work I do.
- 16. I am being paid a fair amount for the qualifications I have.
- 32. I have been placed in a correct post according to my qualification.
- 33. I am satisfied that I am adequately represented at the bargaining council.

Results of the one sample t-test in phase 2 showed significant disagreement with all the statements, except for being placed in a correct post. In addition, Pearson's correlation test showed a significant negative correlation between fair remuneration and intention to leave. Participants who are satisfied with their remuneration do not intend to leave. The results of the ANOVA test on experience correlated with the sentiments shared by managers that newly qualified radiographers have the highest rate of vacating their posts because of poor remuneration. Grade 1 and Grade 2 radiographers showed the greatest dissatisfaction with their salary. An additional significant difference was found across disciplines using the ANOVA test. Diagnostic radiographers were more satisfied with remuneration than radiation therapists and sonographers. Even though salaries are meant to be standardized in the public sector, participants from tertiary hospital 2, were more satisfied with their salaries than participants in tertiary hospitals 1 and 4.

7.4.2 Overtime

There were contradicting views from participants regarding working overtime. Some of the participants indicated that they did not want to work overtime, as they preferred to spend their time on personal matters, such as spending time with family. Others indicated that they would love to work overtime provided that they were paid for overtime. However, managers cited challenges in obtaining authorization for remunerated overtime from the human relations department, which forces them to offer time off for any overtime work. Staff shortages prevented participants taking their time off, resulting in accumulating hours that cannot be taken. In order to test these hypotheses, the following statements were posed to respondents in phase 2:

- 10. My department pays for overtime work.
- 11. Working overtime is not compulsory in my department
- 17. I am satisfied with the remuneration received for working overtime.
- 18. I do not mind working overtime as long as I am paid for it.
- 19. I would prefer NOT to work overtime – even if I am paid for it.

The results of the one sample t-test showed significant disagreement with all the statements. Therefore, respondents strongly disagreed with receiving remuneration for overtime work and the level of satisfaction with the remuneration received. However, this suggests that overtime is not compulsory in their departments and that respondents did not like overtime. This shows a correlation between phase 1 and phase 2 of the study.

7.5 EFFECTS OF WORKING CONDITIONS ON JOB SATISFACTION

The themes that emerged from the effects of working conditions on job satisfaction were support from management, workload and staff shortage, physical safety and equipment. In phase 2 of the study, these were grouped into working conditions supervision, infrastructure, and equipment.

7.5.1 Working conditions – supervision

There were different views on support from the management by managers and their subordinates. Some of the managers felt that they received support from their senior managers within the hospital and most of their work-related challenges were addressed. Other managers felt that they had no support from senior managers within the hospital. Participants, who were not managers, also indicated that there was no support from their immediate managers. Participants further added that their managers were only interested in pushing the number of patients that could be attended and, in the process, failed to acknowledge the effort they put into their work. To test these hypotheses in phase 2, the following statements were posed to the respondents in phase 2:

- 8. I am satisfied with the way my performance is recognized by my supervisor.
- 13. I am satisfied with the benefits I receive from my employer, e.g. leave, medical aid and housing allowance.
- 14. I can use my leave days as I wish.
- 20. I am satisfied with my working hours.
- 21. I receive support from my colleagues with work related problems.

- 22. I receive recognition from my supervisor for the effort I put into my work.
- 47. I am satisfied with the management style used by my immediate manager.

The results of the one sample t-test indicated that there was significant disagreement that supervisors created favourable working conditions. Similarly, Pearson's correlation test also indicated that satisfaction with supervisors or management styles as the leading factor that influenced intention to leave. Participants who were satisfied with their supervisors had no intention of leaving. Furthermore, there was a difference in satisfaction across gender; males were more satisfied that supervisors created favourable working conditions. The Spearman's correlation test also found a difference across age; older participants agreed that supervisors created favourable working conditions. In addition, the ANOVA test found a difference in the level of satisfaction with supervision. Participants in tertiary hospital 1 were more satisfied with their supervisors than those employed in tertiary hospital 3. However, participants in tertiary hospital 2 showed the greatest satisfaction with their supervisors.

7.5.2 Working conditions – Infrastructure

The findings of phase 1, demonstrated that there were severe staff shortages. According to managers, staff shortages have resulted in burnout amongst their subordinates. One of the reasons for burnout is that they are unable to take leave whenever it is due, and some of the participants expressed that they come to work even when they are sick, or else the list of patients will have to be cancelled for the day. Participants from the diagnostic radiography discipline were most affected by staff shortages since they provide a 24-hour service and must take time off after working night duty or a weekend.

The staff shortages were said to be negatively affecting patients as well. The waiting for specialized imaging procedures, such as MRI, were estimated to be as long as eight (8) months. Cancer patients who were due for radiation therapy also had to wait for long periods before they could start their treatment. Participants indicated that some patients die while waiting for radiation therapy or by the time they start treatment, the disease has progressed to an advanced stage.

An additional concern for participants was the safety issue while on duty. Some of the participants expressed concerns about the possibility of contracting infectious diseases. Others felt that there was a greater threat with the lack of physical safety while on duty and that there was no clear protocol on what should happen in case of a security threat. To test these hypotheses, the following statements were posed to participants in phase 2 of the study:

- 24. There are enough staff members to handle the workload in my department.
- 25. I feel safe at work.
- 26. My workplace is hygienic.
- 30. I am satisfied with the condition of the facilities (e.g. air conditioning and patient linen) in my department.
- 48. There is adequate support staff to assist with the operational needs of patients.

The results of the one sample t-test showed that there was significant disagreement that there was adequate staff to handle the workload, that respondents were satisfied with the accessories to support their duties, and that there was enough support staff to assist with the needs of the patient. There was a further negative correlation between intention to leave and favourable working conditions created by infrastructure. Those who were satisfied with infrastructure did not intend to leave. Furthermore, the ANOVA test showed that there was a difference in the level of satisfaction with infrastructure when correlated with experience. Grade 1 radiographers were satisfied with the working conditions related to infrastructure. In addition, the ANOVA test showed

a difference across hospitals. Tertiary hospitals 1 and 2 were more satisfied with the infrastructure than respondents from tertiary hospitals 3 and 4.

7.5.3 Equipment

In Phase 1, managers agreed that there were challenges caused by the state of equipment. They believed the problems were caused by the government's decision not to renew maintenance contracts on their machines. Managers stated that they had to obtain a purchase order number from the finance office before any equipment could be fixed. According to them, this process takes could take 3-6 weeks, before an authorization is received. The issue with poor equipment had an adverse effect on their sub-ordinates who felt that they had to sacrifice their well-being by overworking in trying to get through the patient list. In addition, participants felt that there was a shortage of protective gear against radiation, which exposes them to the risk of excessive radiation exposure. To test these hypotheses in phase 2, the following statements were posed to participants:

- 26. The machinery I work with is kept in good working order.
- 27. The machinery I work with is serviced on a regular basis.
- 28. When machinery breaks down it is repaired quickly.
- 29. Machinery that reaches its end of life' is replaced when necessary.

The results of the one sample t-test showed that there was a significant disagreement that the machinery is in good working order and gets replaced when it has reached the end of life, but there was no significant disagreement related to service and maintenance of the machinery. The results of the Pearson's correlation showed that there was a significant negative correlation between intention to leave and satisfaction with the state of the equipment. Those who were satisfied with the state of the equipment had no intention to leave.

7.6 EFFICIENCY OF HUMAN RESOURCES DEPARTMENT (HRD)

Participants raised concerns related to the efficiency of the Human Resources Department (HRD) processes, namely, the availability of HR to resolve work-related problems, the benefits provided by the government, the working hours as stipulated in their contracts and the availability of posts.

Managers believed that HR was readily available to address their problems, including senior management from the HR department. Contrarily, their subordinates felt that HR had failed to address their issues. According to the participants, HR would continuously delay addressing their issues by referring them to the next person or postponing to the following day. In some cases, issues have been pending for 4 years without any solution and at times participants are told that their documents have been lost and need to be o resubmitted.

The only gratifying factor is the benefits and the working hours provided by the government, which are monitored by the HR department. Participants stated that, in the public sector, they receive the best benefits such as a minimum of 22 days of leave based on experience, sick leave, fully paid maternity and paternity leave which is recognized as being the best. Regarding working hours, participants stated that they only worked their prescribed hours and if they worked additional hours they would be given time off or overtime pay where authorization was obtained. The choice would be on the individual to decide on what was important to them, time off or remuneration for overtime.

According to the participants, the absence of funded posts has resulted in the failure of departments to absorb newly qualified radiographers (community service radiographers) and to replace staff members who have left, despite the increased need for imaging services. They cited that the ripple effect of failure to fill posts was an increased workload on the remaining staff members and the concern that the profession might become less attractive. Managers also stated that they motivate for posts, but do not receive the number of posts they

request. To test these hypotheses in a wider range of participants, the following statements were posed in phase 2 of the study:

- 31. HR is available to address my work-related problems when needed.
- 34. I am satisfied with the way HR process my overtime claims.
- 35. I am satisfied with the way HR monitors my leave and working hours.

The results of the one sample t-test did not demonstrate significant agreement or disagreement with the availability of HR to resolve participants' issues and process their overtime. However, there was significant disagreement with the way HR monitored their leave. The results of Pearson's correlation showed a significant correlation with the efficiency of HR processes and intention to leave. Those who were satisfied with the efficiency of HR had no intention to leave.

The results of the ANOVA test showed that there was a significant difference in satisfaction with the HR processes when correlated with experience. Grade 1 radiographers were more satisfied with the efficiency of the HR processes that Grade 2 and 3 radiographers. In addition, the results of the Welch test showed that the assistant directors were more satisfied with the efficiency of the HR processes than Grade 2 radiographers. According to the results of the ANOVA test, diagnostic radiographers were more satisfied with the efficiency of the HR process than the radiation therapists. The results of Spearman's correlation showed that participants with a higher level of experience disagreed that the HR processes were managed efficiently. The last test to be performed was the ANOVA test across the different tertiary hospitals. Respondents from tertiary hospital 1 and 2 were more satisfied with the efficiency of the HR processes than those in tertiary hospital 4.

7.7 SUMMARY OF THE CHAPTER

Sequential mixed methods were used for this study, thereby collecting data in 2 phases. In phase one of the study, three policies were identified to have in impact on job satisfaction amongst radiographers. The unfair implementation of the OSD policy and unfair rating of sub-ordinates on the PMDS by supervisors were identified to be amongst the contributing factors of job satisfaction and ultimately could lead to an intent to leave amongst radiographers. Similarly, supervisors were identified were identified as the leading factor that could result in radiographers vacating their posts in the public sector. Departmentally arranged CPD activities and online CPD activities were the most preferred method of obtaining CPD amongst participants. However, there was a difference noted amongst the different tertiary hospitals, across race and across marital status. Further studies might be needed to clarify this difference. The next chapter would be used to discuss the findings of the results from phase 1 and phase two of the study.

CHAPTER 8: DISCUSSION OF FINDINGS

8.1 INTRODUCTION

The aim of this exploratory sequential mixed methods study was to explore the extrinsic and intrinsic factors of job satisfaction amongst radiographers employed by public tertiary hospitals in the Gauteng province in order to develop a model that could be used to enhance job satisfaction amongst radiographers. The guiding theoretical framework for the study was Herzberg's Motivation and Hygiene Theory used in conjunction with the Brain Drain Theory. In Phase 1, the intrinsic and extrinsic factors of job satisfaction were explored through FGDs and one on one interviews. Interviews were conducted in two of the tertiary hospitals that employed radiographers from all the five disciplines of radiography within the Gauteng province. The five themes that emerged were government policies, career pathing, fair remuneration, working conditions and the efficiency of the human relations department. These themes were used to develop a questionnaire for Phase 2 of the study.

In Phase 2 of the study, quantitative research methods were used. The developed questionnaire was self-distributed to radiographers in the five disciplines namely: diagnostic radiographers, radiation therapist, nuclear medicine radiographers, mammography radiographers and ultra-sonographers. These radiographers were employed by all four public tertiary hospitals. The questionnaire was self-distributed by the researcher in order to increase the response rate and reliability of the results. The discussion of the findings and results is in three sections namely: demographic profiles of the respondents, themes and subthemes with the relevant factors in the quantitative and qualitative phases as well as the discussion of results in relation to the objectives of the study.

8.2 DEMOGRAPHIC PROFILE OF PARTICIPANTS

In Phase 1 of the study 15 participants were interviewed and only four (4) of those were males, while the other 11 were females. The study population included seven (7) assistant directors and all five disciplines of radiography were represented. In Phase 2 of the study, a total of 182 questionnaires were distributed and collected of a possible 292 radiographers employed the four tertiary hospitals in the Gauteng province. The response rate was 62%. The majority of participants 50% (n=80) were between the ages of 21-33. This age group is known as the Millennials and they are ambitious and multi-tasking (United Nations Joint Staff Pension Fund 2008: 3). In addition, they consider training to be essential, and attaining new skills to be important.

The majority of participants were Black (68%); Whites (17%); Indians (7.7%) and Coloureds (5.5%). These results are in line with the demographics of the South African population where the majority are Black people (STATS SA 2016:3). The results further showed that 49% of the participants were single and 42% were married, while only 6% were separated or widowed. A total of 51% were newly qualified, while 28% were employed for a period ≥10 -20 years and only 20% were employed for a period greater than 20 years. These results correlated with the positions occupied by radiographers, where 54% were Grade 1 radiographers, 19% were Grade 2 radiographers, 23% were Grade 3 radiographers and only 4% were assistant directors.

The majority of participants were diagnostic radiographers (55%), while 24% were radiation therapists, 13% were nuclear medicine radiographers, 5% were mammography radiographers and only 3% were sonographers. This is in keeping with the availability of imaging service in the public hospitals. Diagnostic radiography is the dominant discipline and its services are readily available in the majority of public hospitals, where there is a high demand. Nuclear medicine, mammography, radiation therapy and ultra-sonography services are only available in tertiary hospitals for the public sector.

However, the low percentage of sonographers would be of concern for the Gauteng Department of Health. The Department of Health introduced the National Core Standards (NCS) for Establishment of Health in South Africa in 2011 (Department of Health 2011: 1). According to sub-domain 3 of the NCS, managers should monitor waiting times and ensure that ultrasonography services are available and are provided within the agreed time scales (Department of Health 2011: 26). To counter the shortage of sonographers within the public sector, the government provides bursaries for the training of ultra-sonographers. However, fails to retain them in the public sector for various reasons. Amongst the leading reasons are the salaries offered by the private sector, the heavy workload in the public sector, the working conditions and poor working environment. Additional differences were noted in participation rates across the four tertiary hospitals: the majority of the participants were from tertiary hospital (TH) number 1 (42%), TH2 had 30%, TH3 had 12% and TH4 had 17% participation. The questionnaire was distributed to radiographers who were on duty and willing to participate and researcher made similar efforts of returning to the same site on a weekly basis to distribute the questionnaire. However, the researcher could only use the allocated time that was agreed upon with management. At the time of data collection some of radiographers were not on duty for various reasons thus affecting the response rate. It also is worth noting that TH3 and TH4 do not provide oncology services. Therefore, no radiation therapists are employed by these hospitals and this could account for the difference in participation rates.

8.3 THEMES AND SUBTHEMES

Five themes emerged in Phase 1 and they were tested for significance in Phase 2, with the use of a questionnaire. The themes were government policies, career path, unsatisfactory remuneration, working conditions and the efficiency of human resource processes. The next section is used to discuss these themes and their sub-themes.

8.3.1 Government policies

Three sub-themes related to government policies emerged in Phase 1 of the study and these were further tested for significance in Phase 2 of the study. The government policies that had an impact on job satisfaction amongst participants were the Occupational Specific Dispensation (OSD), Employment Equity Act (EEA) and the Performance Management and Development System (PMDS).

8.3.1.1 Government Policy on Occupational Specific Dispensation (OSD)

The government's policy on OSD for Therapeutic, Diagnostic and Related Allied health Care Professionals came into effect on the 1st of July 2010 (Department of Public and Administration 2011:4). Its objectives were to introduce career pathing based on competencies, experience and performance (PHSCDSBC 2010:3). The changes saw a significant increase in salaries earned by health care professionals employed by the public sector and the number of nurses employed by the public sector (Coetzee *et al*. 2013: 164 and Netshiwinzhe and Mulaudzi 2015: 103). Similarly, managers in Phase 1 of the study agreed to that newly qualified radiographers received a reasonable higher salary. However, the response to the statement on the questionnaire related to this notion did not get a significant level of agreement in Phase 2.

Furthermore, participants believed that there was no salary growth because of the failure to implement accelerated grade progression. A similar issue of salary stagnation was raised by nurses (Sonjane *et al*. 2016: 4 and Khunou and Maselesele 2016: 9). The negative effect of the salary stagnation has been the migration of health care professionals to economically developed countries (George and Rhodes 2012: 3). An additional negative connotation reported amongst nurses with the OSD Policy, was the unfair implementation of the policy which saw no significant increases in their salaries (Netshiwinzhe and Mulaudzi 2015: 103). Similarly, the results of the one samples t-test, in this study, showed significant disagreement that the OSD Policy was fairly

implemented. The results of the Pearson's correlation also showed that there was a negative correlation between intent to leave and satisfaction with the OSD. Those participants who were satisfied with the OSD Policy had no intention of leaving.

There was a further significant difference reported by the ANOVA test, with the level of satisfaction in the implementation of the OSD Policy across the different disciplines within radiography. In particular, radiation therapists showed the highest level of dissatisfaction with the policy. This would be consistent with results of Phase 1, where they cited that the OSD Policy had failed to recognise their qualification. The results of the Spearman's correlation test also showed that there was a difference in the level of satisfaction across the different hospitals. In particular, respondents employed at tertiary hospital 2, agreed more significantly than those employed at tertiary hospital 1 that they satisfied with the OSD policy. For this reason, managers had cited challenges of losing personnel to other hospitals or other provinces, depending on how they had implemented the OSD Policy.

The negative connotation associated with level of satisfaction with the OSD, was the intent to leave. The results of the Pearson's correlation showed a significant negative correlation between intention to leave and satisfaction with the OSD Policy. Respondents who were satisfied with the OSD Policy did not intend to leave. There was l significant difference across hospitals, which could not be explained since the policy is meant to be standardized. Participants employed at tertiary hospital 2 agreed significantly that the PMDS is fairly implemented than those at tertiary hospital 2, which impacts negatively on job satisfaction amongst radiographers employed by the public sector. Similar negative connotations have been reported on PMDS in the Eastern Cape (Adejoka and Bayat 2014:19).

8.3.1.2 Employment Equity Act (EEA) No. 55 of 1998

The Employment Equity Act No.55 of 1998 was introduced by the government in 1998 to address the inequalities for designated groups during the apartheid regime in South Africa. The designated groups were women, persons with disabilities, Black Africans, Coloureds and Indians (Government Gazette 2014: 4). The objectives of the EEA, inter alia, were to develop measures to recruit, retain, train, develop and promote designated groups. Thus far, the most significant changes have occurred at skilled or intermediate occupational levels, where there has been an increase of 20% in the promotion of Africans (Jones *et al*. 2012: 7).

The reported barriers to the implementation of the EEA with regards to retention include a lack of cultural sensitivity where new recruits are expected to assimilate into the current organisational culture; a lack of cultural awareness programmes and organisational culture that values diversity; Black people not fully integrated into the organisation with meaningful delegation of duties and Black staff members not being systematically developed and trained (Booysen 2007: 50). Hence, organisations failed to retain the designated groups. Similarly, in Phase 1 of this study, managers expressed concern of retaining designated groups. Their additional challenges were finding suitable candidates to fill posts according to the demographic needs of their departments. In such cases, they stated that the HR department would freeze those posts until a suitable applicant was found. This has a negative impact on the delivery of health care services.

8.3.1.3 Performance Management and Development System (PMDS)

The PMDS Policy was first introduced into the South African health care system in 2001. The aim of this policy was to plan, manage and improve employee's performance (DPSA 2007: 10). This policy would have ensured that it maximises every employee's output in terms of quality and quantity, which in turn would improve the department's overall performance and service delivery. Such management systems are known to positively motivate employees to

attain and achieve set targets with an intention of receiving rewards, enhancing self-confidence and self-satisfaction (Mensah and George2015: 98). However, participants in Phase 1 of the study expressed negative sentiments with the PMDS policy. Participants believed that their managers failed to rate them fairly nor did they acknowledge the efforts they put into their work. They expressed that the failure to be rated fairly has deprived them of bonuses received for being effective at their task. In addition, they expressed that it has resulted in the failure to be eligible for accelerated grade progression, which is a promotion to a higher grade based on above average performance on the PMDS ratings (PHSDSBC 2010: 6). The failure to rate subordinates fairly was blamed on managers' bias or favouritism towards individuals. According to Mashego and Skaal (2016: 3), managers in the Limpopo province were found to have never attended a workshop on PMDS. Therefore, they lacked the required skills and expertise to effectively rate their subordinates (Mashego and Skaal 2016: 5).

Similarly, in Phase 2 of the study, there was a significant disagreement that subordinates were fairly rated by their supervisors, p<000.5. However, the results on factor analysis showed that there was a significant agreement that PMDS system as a tool is used fairly. Contrary to respondents in the Eastern Cape who cited that the tool led to their motivation, was outdated and it failed to provide them with a platform for skill development (Adejoka and Bayat 2014: 20). This was due to the fact that the Department of Health in the Eastern Cape had not paid PMDS bonuses for 10 years.

8.3.2 Career pathing

The sub-themes that emerged under the lack of career pathing were task functions which included training, academic growth, CPD activities and promotion. All these sub-themes had a direct negative link to job satisfaction. In the discussion of the results, the item of academic growth and promotion are grouped together because of their similarities.

8.3.2.1 Rotation in specialized areas

The findings of Phase 1 showed that participants would like to rotate in specialized areas such as therapy planning for radiation therapists, Computed Tomography (CT), Magnetic Resonance Imaging (MRI), angiography and catheterization laboratory for diagnostic radiographers. This sentiment was also acknowledged by some of the managers, who stated that providing training in specialized areas was a positive retention and attraction strategy for them. However, participants expressed that there were unfair selection criteria for training in specialized areas. Similarly, in Malawi, health care professionals cited that opportunities for in-service training were biased towards those who were liked by management (Manafa *et al.* 2009: 5). Participants in that study cited that management would only share training opportunities with a selected few, hence only that group would receive development opportunities. Radiographers in the Free State province had to wait for a period of 4-5 years before they could receive training in specialized areas (du Plessis 2012:115) because training opportunities were based on seniority. Furthermore, participants expressed the failure to be recognized with remuneration for the additional training, which, according to them, comes with additional responsibilities such as being on call on regular basis. The remuneration for the additional training could be considered as a career ladder programme.

Career ladder programs allow employees to gain skills and knowledge while on the job (Dill *et al.* 2014: 63). To combat a severe shortage of radiographers in the late 1990's and early 2000's in America, a radiologist assistant role was introduced (Williams *et al.* 2004: 845). This was done to eliminate the lack of career pathing within the field of radiography and to increase the retention and recruitment rate. For this reason, du Plessis *et al*. (2012: 116) recommended that a formalized postgraduate qualification in specialization should be introduced.

A formalized career ladder programme could be achieved through a collaboration with employers and radiography training universities. Whereas management in health organizations are thought to have the power to provide incentives for improved qualifications, while the universities would prepare radiographers for their extended roles. The introduction of career ladder programs allows organizations to reward employees with higher salaries and promotion where possible (Dill *et al*. 2014: 63). The results of the one samples t-test in this study, which indicated that there was no additional remuneration for radiographers working in specialized areas, correlated with those in Phase 1. This was verified by significant disagreement that those with specialized training get paid for their skills, $p<.0005$.

Furthermore, the ANOVA test verified the unfair selection process for training. Respondents employed at tertiary hospital, TH4, had significant disagreement that the selection process was fair in comparison to the other three tertiary hospitals, $p=.000$. In addition, Grade 3 radiographers had a significant agreement to receiving training in specialized areas. This concurs with the study by du Plessis (2012:115), where training opportunities are provided according to seniority. The post of Grade 3 radiographers are occupied by seniors and this could have a negative impact in the retention of junior radiographers who were found to be more satisfied immediately after qualification and enthusiastic to learn new techniques (Probst and Griffiths 2009: 155). This necessitates the need to review training protocols to retain newly qualified radiographers.

8.3.2.2 Academic growth and promotion

Organisations could enhance employee commitment by helping employees to reach their career goals, acquiring new skills and offering financial incentives for their efforts (Weng *et al.* 2010: 392). Consequently, this could enhance employee retention in an organization (Ellenbecker and Cushman 2011: 1883). The lack of career progression is an area of concern for medical specialists

employed by the public sector in South Africa, hence their desire to move to the private sector (Ashmore 2013: 11).

Similarly, in Phase 1 of the study, participants expressed a lack of career growth within the public sector. This was attributed to the introduction of the OSD Policy which had prevented their accelerated grade progression. The fiscal challenges have been cited as the main contributing factor by the employer. This has resulted in participants being in one position for a period of 8 years without any promotion but had no intentions of vacating their posts. However, the results of the one sample t-test contradicted the results in Phase 1. There was a significant agreement that accelerated grade progression had been implemented on time, p=.002. Majority of the respondents in phase two of the study agreed that their accelerated grade progression had been made on time and this might require further investigation to identify the difference in responses between the two phases of data collection.

With regards to academic growth, participants employed in speciality expressed that their qualification was not recognized. This was evident in their pay slips that did not correlate with their qualification or their registration with HPCSA. According to their pay slip, they were employed as diagnostic radiographers, which is a failure to recognise their qualification. Nor were the clear structures to recognize post-graduate qualifications such as the master's degree or a PhD in the profession. This was verified by the results of the ANOVA test in phase 2 of the study, where radiation therapists had the least significant agreement with being placed in the correct post, p=.000.

Furthermore, participants employed in a speciality cited the greatest concern with lack of career structures. This notion of a lack of career pathing has been reported by Lawrence *et al*. (2011:7), amongst radiation therapists in the Gauteng province. According to participants, there were no supervisory posts except for the assistant director's position and there could only be one assistant director. These sentiments were verified by managers, that the OSD policy failed to create supervisory posts for participants employed in speciality. The

lack of career pathing within radiography was the reason for the introduction of radiology assistants in America in the early 2000's to make the career more appealing (Williams *et al.* 2004: 845). Subsequently, there were increases in the intake of first year students in radiography for this reason, amongst others.

8.3.2.3 Continued Professional Development (CPD) activities

According to Elshami *et al*. (2016: 65), CPD comprises learning activities through which health care professionals maintain and develop their knowledge and skills throughout their career to ensure that they retain their capacity to practice safely, effectively and legally within their evolving scope of practice. The CPD activities are further categorized into voluntary, obligatory and mandatory. Mandatory CPD activities are monitored and are linked to penalties if they are not performed (Elshami *et al*. 2016: 69). In South Africa, as part of mandatory CPD activities, the HPCSA requires radiographers to obtain a minimum of 30 continuing education units in a year and these must include ethics, human rights and medical law (Naidoo *et al*. 2018: 210). However, there are barriers to successfully implementing these CPD activities amongst radiographers, which include a lack of supervisors support, lack of training budgets, access to courses, non-relevant content and a lack of interest by radiographers (Henderson *et al*. 2016: 190).

Similar challenges of non-relevant topics and poor timing of the CPD activities were expressed by participants employed in speciality in Phase 1 of the study. They indicated that the CPD activity topics only focus on the dominant discipline which is diagnostic radiography. Furthermore, the topics lacked the integration of all the disciplines. However, the results of the one sample t-test in Phase 2, showed that there was significant agreement that the CPD activities had relevant topics, p=.002. Similarly, in a study by Elshamani *et al.* (2016: 70), almost 50% of the participants agreed that the CPD activities had relevant topics. In addition, respondents believed that the topics were inclusive of all the disciplines within radiography, p=.001, even though these results could be

linked to percentage of diagnostic radiographers who were majority of participants (55%) in the study.

These results imply that respondents who were satisfied with structured CPD activities in their departments had no intention to leave. This was evident in the results of the Pearson's correlation, where those who were satisfied with structured CPD activities in their department had no intention to leave r=-.201, p=.007. There was also a difference in the level of agreement across race. White respondents agreed that structured CPD activities existed in their departments, p=.007.

In addition, there was significant agreement noted across marital status. Participants, who were divorced or separated, were satisfied with structured CPD activities. To some extent, this could be correlated to the results of a study by Elshami *et al.* conducted amongst radiographers in Sudan. The results of that study showed that 68% of participants could not attend CPD activities because of family responsibility. For this reason, in a study by Naidoo *et al*. (2018: 211) and Stevens (2016:177), the majority of participants believed that CPD activities should be conducted departmentally and within working hours.

Respondents from only one tertiary hospital agreed that there were structured CPD activities in their department, namely, TH2. Additional analysis showed that there were significant differences across experience. The results of the ANOVA test showed that assistant directors were more satisfied with structured CPD activities than Grade 1 radiographers. This was also verified by the Pearson's correlation that demonstrated a positive correlation between structured CPD activities and experience. The respondents with higher level of experience were satisfied with structured CPD activities, rho=.048, p=148. It is worth noting that the researcher could not find a study that had reported a difference with CPD activity satisfaction which correlated with experience.

8.3.3 Unsatisfactory remuneration

The sub-themes that emerged in Phase 1 of the study were poor remuneration, overtime and the bargaining council. In the discussion, poor remuneration and bargaining council are combined, and overtime is a stand-alone theme. All the sub-themes that emerged had significant effect on job satisfaction.

8.3.3.1 Poor remuneration and representation at the bargaining council

It has been reported that radiographers in the KZN province have lower levels of satisfaction with their salary, in comparison with medical doctors (Haskins *et al*. 2017: 177). Similar sentiments regarding poor salaries are shared by other authors, who state that beside the introduction of OSD, health care professionals in the public sector are still not satisfied with their salaries (Sojane *et al.* 2016: 4; Khunou *et al*. 2016: 9 and George *et al.* 2012:6). The findings of phase 1 in this study also demonstrated a significant dissatisfaction with remuneration.

The findings of Phase 1 showed that participants were not paid an amount that correlated with their qualification and were also not placed in the appropriate post. This finding was verified in Phase 2 of the study, where Grade 1 radiographers had the greatest intention to leave, according to the results of the Spearman's correlation p=.013. Furthermore, the results of the ANOVA showed that there was there was significant disagreement that respondents were satisfied with their salary scale, p<0005. An additional difference was found across the different disciplines. Radiation therapists and sonographers were found to be less satisfied with their remuneration, in comparison to diagnostic radiographers. For these reasons, managers believed that they were losing newly qualified personnel. Similarly, nurses across 12 countries in Europe cited low salaries as their source of job dissatisfaction and ultimately intended to leave (Aiken *et al*. 2013: 146).

Respondents believed that the poor remuneration was caused by the lack of direct representation for radiographers in the bargaining council in South Africa. The results of the one sample t-test verified that there was a significant disagreement that radiographers had direct representation in the bargaining council. According to Section 39 (a) of the Labour Relations Act No. 66 of 1995, "*a representative trade union requires at least 30% of the employees in a sector or area*" (Department of Labour 1995). Therefore, to either form their own union or be organized into one union, extensive organisation of radiographers is required to obtain the required 30% to have a seat at the negotiation chambers.

8.3.3.2 Overtime

According to the Gauteng Department of Health, overtime is working an excess of official hours per day, per week and per month that an employee has been granted (Gauteng Department of Health 2011: 3). Prior to commencing overtime work, authorization must be obtained from the Gauteng Department of Health. The process of obtaining authorization from the hospital management was reported to be a challenge for some of the managers in Phase 1 of the study. They expressed that their request was rejected in most cases, even though they had severe staff shortages. Their sub-ordinates had no choice but to take time off as a form of compensation, however, this was not always possible because of staff shortages.

Furthermore, newly qualified radiographers were not keen on working overtime. Therefore, their level of dissatisfaction with working overtime could be heightened if it is remunerated. In Phase 1, newly qualified radiographers expressed that they did not want to work overtime because they are still young and would rather use their weekend socializing with friends and family. This is in keeping with traits of Millennials, who do not like working weekends and prefer a maximum of 10 hours per day (Generational chart 2014:5). Similarly, radiographers in previous studies have been reported to exhibit a greater level of job satisfaction because of not working on weekends (White *et al*. 2007: 219 and Jones *et al*. 2013: 52).

The findings of Phase 1 were verified by the results of the one sample t-test in Phase 2, where there was significant disagreement that departments paid for overtime p<.0005. In addition, there was significant agreement that working overtime was compulsory, which increased the level of negativity around working overtime with no added remuneration. Similar negativity was seen in Australia amongst radiographers, where it was reported that working overtime was a source of occupational stress and job satisfaction. Therefore, the authorization for remunerated overtime needed to be reviewed.

8.3.4 Working conditions

A total of four sub-themes emerged for working conditions in Phase 1 as factors that could negatively of positively affect job satisfaction amongst participants. The results showed that these themes had a significant effect on job satisfaction. These four themes were support from management, workload and staff shortages, physical safety and the state of equipment.

8.3.4.1 Support from management

According to Brunetto *et al*. (2013: 835), the supervisor-nurse relationship is an important factor in nurse retention. Similarly, the results of the Pearson's correlation showed a significant negative correlation with intention to leave and supervision. The type of supervision used by managers was the leading factor that influenced the intent to leave. Respondents who were satisfied with their supervisors did not intend to leave, r= -.344, p=.000. The findings of Phase 1 indicate that participants believed that their immediate managers failed to recognise the effort they put into executing their duties.

The managers were also indicated that they did not receive support from the hospital managers. Some of the managers felt that their immediate managers were very supportive, while others said that the positions they occupied were very difficult and lacked support. These findings would be of concern in the retention of radiographers in the public sector. A study by Nasar *et al*. (2011: 245) found that the leadership style used by management affected the retention

of employees in any organisation. The use of authoritative leadership style was associated with greater intention to leave, while consultative leadership style was associated with greater satisfaction (Nassar *et al*. 2011:247). In addition, the lack of support from management, was coupled with a lack of support from colleagues. The results of the one sample t-test, showed that there was a significant disagreement that respondents were supported by their colleagues with work related problems, p=.0005. This was contrary to their nursing counterparts who showed higher level of satisfaction because of relationships they had with their colleagues (Pillay 2009: 7). It is also worth noting that females had the highest level of disagreement regarding satisfaction with the type of supervision.

Furthermore, newly qualified staff showed the least satisfaction regarding supervisors' provision of favourable working conditions. This was evident in the results of the Spearman's correlation which showed that there was a positive correlation with favourable working conditions provided by supervision. Only respondents who were older agreed that supervisors provided favourable working conditions, rho=.166.

Baby Boomers have been reported to have higher levels of satisfaction with their supervisor-subordinate relationship, teamwork, affective commitment and lower intentions to vacate their post in comparison to Generation X and Y (Brunetto *et al*. 2013: 833).The results of this study indicate that supervision has a negative effect on job satisfaction and ultimately retention amongst newly qualified radiographers employed by tertiary hospitals in the Gauteng province.

In addition, there was a significant difference in level of satisfaction with supervision across the hospitals, as reported by the results of the ANOVA test. Respondents from tertiary hospital, (TH1), agreed more significantly than tertiary hospital, (TH3) that supervisors provided favourable working conditions. It is worth noting that respondents from tertiary hospital, (TH2), were more satisfied than any other of the tertiary hospital with the supervision they received. These results regarding the effects of supervision on job satisfaction

indicate that there is a need to explore the leadership styles used by radiography managers in the different institutions.

8.3.4.2 Workload and staff shortage

Staff shortages and heavy workloads in the health care professions are not unique to South Africa. Hence the World Health Organization's initiative of the Global strategy on Human Resources for Health (HRH): 2030 that was introduced in 2015. One of the objectives of the strategy was to ensure that current and future needs of the population are covered to address shortages and maldistribution (WHO 2015: 23). In South Africa, the maldistribution is noted between the public and private sectors and between urban and rural areas (ECONEX 2013: 10).

The findings of Phase 1 also demonstrated that there was a shortage of radiographers within the selected tertiary hospitals. Managers expressed that the number of radiographers per working station have decreased, even though the need for imaging services have increased. According to the managers, this has resulted in burnout amongst employees. It is worth noting that burn out amongst nurses was one of the leading reasons for nurses to voluntarily vacate their posts (Hayes *et al*. 2014: 2009). In addition, the respondents expressed that they had to sacrifice their wellbeing, since they reported on duty even though they were sick just to ensure that patients were attended to. This was verified by the results of the one sample t-test, that showed significant disagreement that there was enough personnel to handle the workload, $p<.0005$.

Furthermore, the results of the Pearson's correlation showed that there was a significant negative correlation between intention to leave and satisfaction with working conditions of infrastructure, which addressed shortage. Respondents who were satisfied that working conditions provided by infrastructure were favourable, had had no intention to leave. A similar trend was reported amongst doctors in Ghana (Naicker *et al*. 2009: 61) and amongst radiographers in the

UK (Verrier and Harvey. 2010: 119). The challenges associated with health care professionals vacating their post voluntarily is the time taken to train new ones and the costs associated with training (Nassar *et al*. 2011: 244).

In addition, the patients were also negatively affected by the shortages of radiographers. Managers from radiation therapy expressed that staff shortages prevented them from working overtime or increasing the hours of service to reduce the waiting list for cancer treatment. They further expressed that some of the patients die while waiting for radiation treatment, while other patients receive treatment after the cancer has progressed and treatment is then for palliative purposes. Similarly, patients who required specialised diagnostic imaging services such as MRI and CT also had to wait a lengthy period to be scanned. A similar trend of waiting times was reported in Scotland (Henderson *et al*. 2016: 180). Therefore, these challenges need to be addressed urgently to ensure that effective imaging services are delivered to patients.

There was a significant difference across hospitals in the level of satisfaction that working conditions provided by infrastructure were favourable. Respondents from tertiary hospitals 1 and 2 agreed more significantly that working conditions provided by infrastructure were favourable than those from tertiary hospitals 3 and 4. It is worth noting that tertiary hospital 1 and 2 are located in the urban areas of the city and were previously meant for White people during the apartheid era.

8.3.4.3 Physical safety

In Phase 1 of the study, participants expressed that they never felt safe at work and that there was no clear protocol to handle security threats. The participant's greatest concern was after hours when they worked with skeletal staff and had to walk around the hospital for bedside imaging examinations. Similar lack of workplace safety has been reported by Munyewende *et al.* (2014: 4), amongst nurses in the Free State province. They feared physical or verbal trauma while on duty. The reported perpetrators of this type of violence were patients,

patient's family members and other colleagues. Any type of violence experienced by health care professionals during working hours is known as Type II violence (Pompeii *et al.* 2016: 853). However, the statement on feeling safe at work did not get a significant agreement or disagreement in Phase 2 of this study.

8.3.4.4 Equipment

In a study conducted across three countries within the sub-Saharan region, South African health care professionals were reported to experience lower levels of job satisfaction and a greater intent to leave (Blaauw *et al*. 2012: 127). The common cause of job dissatisfaction in all countries was the shortage of medical supplies and faulty medical equipment (Blaauw *et al*. 2012: 127). Similarly, in Phase 1 of this study, participants raised major concerns with the state of the equipment. They expressed that the equipment that had reached its end-of-life according to the manufacturers' recommendations, were not replaced. Furthermore, was that the equipment broke down on regular basis and it took a while for it to be fixed. Managers cited that the main cause of the delay in repairing broken down equipment was the absence of maintenance contracts and the time it took to receive purchase order numbers from the central office.

According to the participants, broken down equipment had a negative ripple effect on patients because it increased waiting lists and waiting times. Tertiary hospitals in the province cater for more than one community. They serve as a referral centre for the nearby hospitals and provinces because of all the specialized services they offer. Participants also expressed that using broken down equipment affected them physically, since it took extra physical effort to obtain basic images. The issues related to faulty equipment were verified in Phase 2 of the study by the results of the one sample t-test. The results showed that there was significant disagreement that the machinery was serviced on a regular basis and that equipment that had reached its end-of-life was replaced, p=.0005. Similar findings of poor infrastructure have been reported by

Makanjee *et al.* (2005: 122), in the same province. This is despite the introduction of NCS by the Department of Health in 2011.

Domain 7 of this policy focuses on ensuring that facilities and infrastructure are well maintained. The sub-domain on machinery and utilities clearly states that operational plant, machinery and equipment are maintained, fully functional and complies with regulations. It further clarifies that operational plant, machinery, and equipment are upgraded, replaced, decommissioned and disposed of according to a documented system (Department of Health 2011: 42). However, the results of this study contradict this policy which is not being properly implemented in the tertiary hospitals that were included in the study.

Radiography as a profession directly deals with radiation, except for sonography. Therefore, radiographers need to wear protective apparel which is lead lined whenever they examine patients. However, nuclear medicine radiographers cited a shortage or a lack of the necessary protective apparel to handle some of the radiopharmaceuticals. Thus exposing them to unnecessary radiation, which could have detrimental effects in the long run. These challenges further compound the lack of favourable working conditions created by the lack of equipment and in turn reduce job satisfaction.

8.3.5 Efficiency of the Human Resources Department (HRD)

The Department of Health (DOH) recognized human resources management as one of their strategic plans for the period 2010/11-2012/13. The Strategic Plan was a 10-point plan which was aimed at creating a well-functioning health system. Part of the plan was to improve human resources planning, development and management. According to DOH, this plan would be executed through recruitment and retention of professionals, including urgent collaboration with countries that have excess of these professionals (South Africa. Department of Health 2010: 24).

However, the findings of Phase 1 showed that the Gauteng Department of Health has not successfully implemented this plan by freezing posts for radiographers. Managers expressed frustration with the frozen posts which have resulted in severe shortages in their departments. They further added that the need for imaging service and the number of patients has increased but the personnel to handle the workload have decreased, thus making it difficult to effectively manage leave for their subordinates. In turn, the remaining radiographers are over-worked, and they have increased intent to leave. Managers further expressed that even though they write to senior management, motivating for additional posts, the requests are never fulfilled. A similar trend of unfilled posts has resulted in severe shortages of health care professionals in the Eastern Cape Province (Longmore *et al.* 2014:368).

In addition, Longmore *et al*. (2014: 370) reported that the HR Department had not properly implemented OSD for the doctors in that province. Similarly, the results of the one sample t-test showed that there was a significant disagreement that the OSD was fairly implemented by the HR Department, p<.0005. According to managers, this resulted in their subordinates to voluntarily vacate their posts and move to other provinces or government hospitals where they believed OSD was fairly implemented. Furthermore, there was significant disagreement that that HR had properly managed leave for the respondents, p=<.0005, even though respondents believed that the benefits which included annual leave, sick leave, paternity and maternity leave were the best.

Respondents further expressed that working hours were the best; they only worked their prescribed 40 hours per week. Similarly, medical specialists in the Western Cape cited that the good working hours in government was one of the reasons they had not moved to the private sector (George and Ashmore 2013). They further expressed that this allowed them to focus on their research and they had less calls since they were seniors. However, the challenge was the availability of HR to address work related problems. This was also reported by

Longmore *et al.* (2014:70), that HR was never available to address their work-related problems and that their processes were poorly organized.

In Phase 1 of the study, participants expressed similar sentiments about the lack of availability of HR to assist when needed. They further added that HR had lost their documents which they had to resubmit. A similar concern was evident amongst doctors in the Eastern Cape (Longmore *et al*. 2014: 70). These failures by HR have a negative impact on job satisfaction and ultimately on retention of employees in the public sector. The results of the Pearson's correlation showed that respondents who were satisfied with the efficiency of the HR department did not intend to leave.

8.4 DISCUSSION OF RESULTS IN RELATION TO THE STUDY OBJECTIVES

The study had six (6) objectives, five (5) of which have been achieved.

Objective 1: Explore the effect of intrinsic and extrinsic factors on job satisfaction.

This objective was achieved in Phase 1 of the study through FGDs and one-on-one interviews. The intrinsic factor of job satisfaction that emerged was the lack of career pathing. According to the literature, career pathing has the can help employees reach their career goals, while acquiring new skills and offering financial incentives for their efforts and this could enhance retention (Weng *et al.* 2010: 392 and Ellenbecker and Cushman 2011: 1883).

However, the findings of Phase 1 indicate that participants believed that there was no career path and it lacked diversity, academic growth and promotions. The participants employed in speciality within radiography reported the greatest dissatisfaction with lack of career pathing. They believed that the OSD Policy failed to acknowledge them as there was no supervisory post for them. In addition, it failed to acknowledge their qualification as it placed them on a diagnostic radiographer's post and this was reflected on payslips. Furthermore,

participants cited a lack of structured CPD activities in their departments and that the topics were not inclusive for all the disciplines. These findings were contradicted in Phase 2 of the study, where the results of the one sample t-test showed that there was a significant agreement that departments had structured CPD activities and that they were inclusive. Also, the results of the Pearson's correlation test showed that respondents who were satisfied with structured CPD activities had no intention of leaving, thus making this a great retention strategy. The extrinsic factors of job satisfaction that were identified were government policies, unsatisfactory remuneration, working conditions and the efficiency of the HR processes. These factors were further explored for significance in phase 2 of the study.

Objective 2: Explore the influence of human factors on job satisfaction.

This objective was achieved in phase 1 of the study, through one on one interviews and focus groups interviews. The findings showed that participants believed that there was no support from management or acknowledgement for efforts they put in their work. These findings were verified in phase 2 of the study, where supervision was identified as the leading factor for intent to leave by the Pearson's correlation test. An additional difference with level of satisfaction with supervision was identified across the tertiary hospitals. Respondents form tertiary hospital 3 showed the least satisfaction with level of supervision they received. Whereas supervisor-nurse relationship has been identified as a significant factor in staff retention (Brunetto *et al*. 2013:835).

Objective 3: Determine the pattern of job satisfaction among radiographers.

This objective was achieved in Phase 2 of the study with the aid of the questionnaire. The questionnaire had 48 statements which were categorized into 10 factors by the factor analysis based on their conceptual appropriateness. These factors were tested for intent to leave using the Pearson's correlation test and nine (9) of them had a significant negative

correlation with intent to leave. The factors are listed in order of their significance:

- Favourable working conditions provided by supervision.
- Government policy on Performance Management and Development Systems (PMDS).
- Efficiency of the human relations processes.
- Favourable working conditions provided by infrastructure.
- Government on Occupational Specific Dispensation (OSD).
- Unsatisfactory remuneration.
- Continued Professional Development (CPD) activities.
- Favourable working conditions provided by equipment.

Objective 4: Identify the role of the working environment on job satisfaction.

In Phase 1 of the study, three themes emerged that were considered to have an effect on job satisfaction. The three themes were workload and staff shortage, physical safety while on duty and faulty equipment. Workload and staff shortage were reported by managers to negatively affect the way in which they manage leave days for their subordinates. They believed that it was one of the compelling reasons for radiographers to voluntarily vacate their posts within the public sector. Similar findings of voluntarily vacating their posts because of heavy workload was reported amongst nurses (Hayes *et al.* 2014: 2009). The results of Phase 2 also showed that there was a significant disagreement that there were enough radiographers to handle the workload.

Objective 5: Evaluate the role of current policies introduced by the Department of Health on job satisfaction.

In Phase 1 of the study, three government policies emerged, namely, Occupational Specific Dispensation (OSD), Performance Management Development Systems (PMDS) and a policy on Employment Equity Act (EEA). The general sentiments were that these policies were not fairly implemented, hence the participant's disgruntlement with them.

Objective 6: Develop a model to be used by tertiary hospitals to enhance job satisfaction for radiographers.

The model developed is discussed in the following chapter.

8.5 SUMMARY OF THE CHAPTER

In this chapter, the themes that emerged in Phase 1 and their significance in Phase 2 of the study, were discussed. The themes that had emerged in Phase 1 were used to develop the questionnaire which was used in Phase 2 of the study. The questionnaire had 48 statements, which were later categorized into 10 factors for factor analysis. These factors were than tested for intent to leave using the Pearson's correlation, a total of 8 factors showed a significant negative correlation with intent to leave. These were collaborated with existing literature for similarities or for any difference that could have been identified.

CHAPTER 9: A MODEL TO ENHANCE JOB SATISFACTION FOR RADIOGRAPHERS

9.1 INTRODUCTION

The last objective of this exploratory mixed methods study was to develop a model that could be used to enhance job satisfaction amongst radiographers employed by the public sector in the Gauteng province. Two theories that were used to develop this model were Herzberg's Motivation and Hygiene theory and the Brain Drain Theory. Herzberg's Theory was used to explore the intrinsic and extrinsic factors of job satisfaction and the Brain Drain Theory was used to explore what factors are mostly like to increase the intent to leave. This chapter focuses on the development of the model.

9.2 PROCESS OF MODEL DEVELOPMENT

A model is defined as "*any device that is used to represent something other than itself and parts of the model should correspond to the theory it represents*" (Walker and Avant 2011: 61). In developing the model to enhance job satisfaction amongst radiographers, the researcher used processes followed in nursing theory development because of the paucity of knowledge in radiography. It is worth noting that specific processes are designed for theory development but for the purpose of this study, the researcher adapted the processes for model development. This process of theory adaptation from one field to another, or statements and redefining concepts is known as derivation (Walker and Avant 2011: 63).

Walker and Avant (2011: 66) suggest different approaches that could be followed in developing a model. According to them, a model development is a step by step process which has: concepts, statements and theory derivation; concepts, statements, and theory synthesis; concepts, statements, and theory analysis. Chinn and Kramer (2011: 176) considers the process of model

development to be a four-step process, which comprises identifying and defining concepts; identifying assumptions; clarifying the context within which the model is placed; and designing relationship statements. Both these processes in model development have some similarities.

9.3 A MODEL TO ENHANCE JOB SATISFACTION FOR RADIOGRAPHERS

After exploring two possible processes that could be used for model development, the researcher predominantly followed the one recommended by Chin and Kramer (2011). According to Chinn and Kramer (2011: 176), there are four (4) approaches that can be used for structuring and contextualising theory development. These approaches are identifying and defining concepts; identifying assumptions; clarifying the context within which theory is placed and designing relationship statements. These four steps are clarified and their links to literature in following text.

9.3.1 Identifying and defining concepts

Concepts are the building blocks of any model and they are a mental image of a phenomenon, an idea or a construct in the mind about a thing or action (Walker *et al*. 2011: 59). Chinn and Kramer (2011: 176), recommend that structuring a model requires identifying concepts that will form the building foundation of the model. The aim of this study was to explore the intrinsic and extrinsic factors of job satisfaction amongst radiographers. Therefore, these two factors are the building foundation of the model, coupled with their effect on organizational commitment and intent to leave. Chinn and Kramer (2011: 176), further add that assumptions that originate from cultural history will also affect the conceptual structure of model development and time will also determine the link that these factors will have with one another. There are four components of a time frame that determine the relationship between factors in model development and these are coincident antecedent, intervening and consequent (Chinn and Kramer 2011: 176).

The authors define antecedent concepts as those that come before other concepts. In this study, radiographers working in speciality such as ultra-sonography, radiation therapy, mammography and nuclear medicine cited concerns of not being placed in the correct post according to their qualification. This was caused by the introduction of the OSD Policy that did not recognize the existence of the sub-specialities within radiography. Thereby, introducing a causal relationship between job dissatisfaction and placement in a correct post. It is also worth noting the results of the Pearson's correlation which showed that radiation therapists had the greatest intent to leave.

Consequent concepts are defined by the authors as those that follow other concepts. For the purposes of this study, consequent concepts were identified as those concepts that were associated with higher level of disagreement on the Likert scale in the questionnaire and ultimately greater intent to leave. These concepts were the government's policy on OSD and PMDS; favourable working conditions provided by supervisors and equipment; and unsatisfactory remuneration. Whereas the consequent concepts that were associated with higher level of agreement on the Likert scale and ultimately associated with greater disagreement on intent to leave were the government's policy on EEA and structured CPD activities.

There are intervening concepts, which are also described as coincident and have a particular influence on the relationship among concepts. Intervening concepts also influence the relationship between antecedent concepts and the consequent concepts. In this proposed model, the consequent concepts that have been mentioned in the previous paragraph and have both a negative and positive relationship between job satisfaction and intent to leave. These consequent concepts have been proven to influence intent to leave amongst radiographers employed in public tertiary hospitals in the Gauteng province.

Concept analysis was achieved through data collection over two (2) phases. In Phase 1, data was collected through audio-recorded interviews with purposefully selected participants from two tertiary hospitals in the Gauteng

province. The sampled population included all the disciplines of radiography, namely, diagnostic radiography, mammography, radiation therapy, ultrasonography and nuclear medicine radiography. To ensure a representative sample, radiographers with different levels of experience were invited from Grade 1 all the way to assistant directors.

The collected data in Phase 1 was analysed using the five steps of thematic analysis as suggested by Creswell and Plano Clark (2011: 129). These five steps of thematic analysis are preparing the data for analysis, exploring the data, analysing the data, representing the data for analysis and validating the data. A total of five themes emerged which were categorized into intrinsic and extrinsic factors, in line with Herzberg's Motivation Theory. The theme that emerged for intrinsic factors of job satisfaction was career pathing. There were four extrinsic factors that emerged which were government policies, unsatisfactory remuneration, working conditions and the efficiency of the human relations department. These themes were used to develop a tool for Phase 2 of data collection.

In Phase 2 of the study, a questionnaire was developed and was distributed to the four public tertiary hospitals within the Gauteng province. The questionnaire had 48 statements posed to the participants and it used a Likert scale of 1-5, where 1 was strongly disagree and 5 was strongly agree. During data analysis, factor analysis was performed and a total of 10 factors emerged. Factor analysis was used to group different factors based on their conceptual appropriateness. These 10 factors were government policies on OSD, PMDS and EEA; favourable working conditions provided by supervision, equipment and infrastructure; CPD activities; unsatisfactory remuneration and efficiency of the human relations department.

9.3.2 Identifying assumptions as part of the model

According to Chinn and Kramer (2011: 178), assumptions are underlying givens that are assumed to be true. The authors further clarify that there are empirical and philosophical assumptions, which must be challenged according to the knowledge they present. Empirical models may be challenged philosophically, and they can be assessed empirically. However, philosophical assumptions form the grounding for a model and must therefore be challenged under philosophical knowledge. The philosophical assumption for the development of this model was that job satisfaction is great determinant of retaining employees in public tertiary hospitals.

9.3.3 Clarifying the context

According to Chinn and Kramer (2011: 179) theoretical relationships must be placed within a context if the model is to be used in practice and that the applicability of the model is dependent on the broadness or narrowness of the context. A model that is too broad may not be applicable to all the settings, whereas a model that is too narrow may not be applicable beyond that setting. The proposed model is meant for radiographers employed by public tertiary hospitals in the Gauteng province. However, its use could be extended to other public hospitals in South Africa since they are governed by the same policies and similarities could exist. However, it cannot be applied to the private sector since it is not governed by the exact policies.

9.3.4 Designing relationship statements

The significance of the constructing statements as an integral part of model development are recommended by both, Walker *et al.* 2011:60 and Chinn and Kramer 2011: 180. Walker *et al*. (2011: 60). They further describe statements as relational and non-relational. A relational statement suggests that there is some form of relationship between two or more concepts. Furthermore, relational statements either confirm the association or causality of statements. Associational statements group similar concepts and causal statements

demonstrate the cause and effect relationship (Walker and Avant 2011: 60). Non-relational statements assert the existence of concepts and are used by model developers to clarify the meaning of the model. In the development of the model, these were the statements that constructed and were found to have a causal relationship with job satisfaction and job dissatisfaction; and organizational commitment and intent to leave:

- Job satisfaction increases amongst radiographers when:
  - The departments have in-house structured CPD activities.
  - Radiographers work fixed working hours.
  - The government provides benefits such as maternity, annual, sick, paternity leave; housing allowance; pension fund; and medical aid allowance.
  - The Employment Equity Act is fairly implemented.

Therefore, this increases organisational commitment and reduces brain drain.

- Job satisfaction decreases amongst radiographers when:
  - There is a lack of physical safety while on duty.
  - Supervisors fail to acknowledge the effort they put into their work.
  - There is no team spirit or support from colleagues with work related matters.
  - Confronted with heavy workloads, while posts are frozen.
  - There are no clear structures for career pathing.
  - There is no opportunity to use skills gained from institutions of higher learning.
  - There is no salary recognition for training in specialized areas.
  - Selection processes for training in speciality are unfair.
  - There are no supervisory positions for radiographers working in sub-speciality.
  - They are unfairly rated by their supervisors in their PMDS, and miss the opportunity for accelerated grade progression which results in salary stagnation.

- The OSD Policy is not fairly and consistently implemented across different institutions by the HR department, and this results in salary stagnation.

Therefore, this increases the intention to leave and ultimately results in brain drain.

9.4 DESCRIPTION OF THE MODEL

The model is divided into two concepts which are job satisfaction and job dissatisfaction. Job satisfaction increases organizational commitment, whereas job dissatisfaction increases the intent to leave.

9.4.1 Job satisfaction factors

The factors that were identified to enhance job satisfaction and increase organizational commitment were structured CPD activities and benefits offered by the government. This was verified by the results of the one samples t-test, that had significant agreement that departments had structured CPD activities, $t(179) = 2.659$, $p<.009$. Respondents who were satisfied with CPD activities had no intention of leaving. In addition, the findings of Phase 1 also showed that participants were satisfied with the benefits they received from their employer, the Gauteng Department of Health. The identified benefits were medical aid allowance, housing allowance, pension fund and annual/ sick/ maternity/ paternity leave. In addition, the fixed number of working hours per week were identified by participants as a satisfying factor.

9.4.2 Job dissatisfaction factors

The factors that were identified to decrease job dissatisfaction and ultimately increase intent to leave were government policies, human elements, heavy workload and physical safety while on duty and the lack of career pathing. With regards to policies, two policies were correlated with intention to leave, namely, PMDS and OSD. The challenge with PMDS was that participants were not fairly

rated by their supervisors, which deprived them of their accelerated grade progression and resulted in salary stagnation. Similarly, the OSD was not fairly implemented and the interpretation of the document by HR was different across hospitals and this resulted in salary stagnation.

Human elements, which are supervisors and colleagues also had a negative effect on job satisfaction. Immediate supervisors failed to recognize their hard work nor were they supportive in work related matters and there was no team spirit amongst colleagues. These challenges together with heavy workloads, which was attributed to staff shortages, caused by posts that were frozen cause much dissatisfaction. Another major concern to the participants was the lack of career pathing associated with the profession and the lack of training opportunities in specialized areas. According to participants, the training opportunities were biased which prevented them from applying the knowledge that they had gained at University. Furthermore, radiographers employed in speciality such as radiation therapy, sonography, nuclear medicine, and mammography were not placed in posts that correlated with their qualification. In addition, there were no supervisory posts created for speciality by the OSD Policy which increased job dissatisfaction and intent to leave.

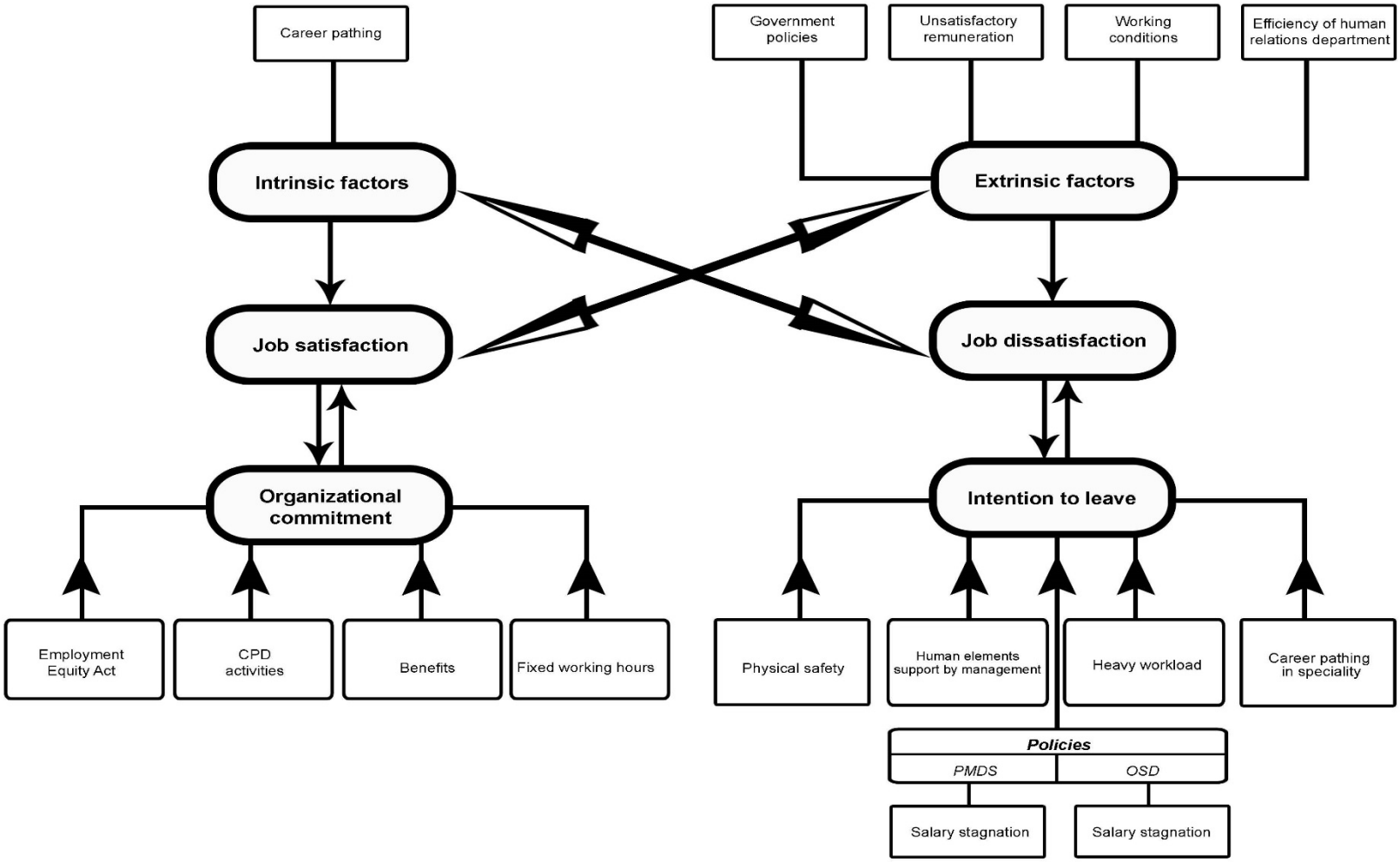

Figure 9.1: A model to enhance job satisfaction amongst radiographers

9.5 SUMMARY OF THE CHAPTER

This chapter presented the steps that were followed in developing the model. The data that was used to develop the model was collected over two phases. In phase 1 of the study, interviews were used as method of data collection and in Phase 2, a questionnaire was used. Thereafter, the themes and factors that were of significant to job satisfaction were used as the key points in the development of the model. In Chapter 10, the limitations, conclusion and recommendations of the study will be presented.

CHAPTER 10: LIMITATIONS, CONCLUSION AND RECOMMENDATIONS

10.1 INTRODUCTION

The aim of the study was to explore the intrinsic and extrinsic factors of job satisfaction amongst radiographers employed by public tertiary hospitals in the Gauteng province. This was achieved over 2 phases of data collection and a model to enhance job satisfaction was developed. The final chapter is used to acknowledge the limitations that were encountered, areas that still need to be researched in the future and recommendations that were guided by the findings of the study.

10.2 LIMITATIONS OF THE STUDY

Limitations are barriers or constraints that weaken or decrease the credibility of the study results. These could be the research design, sample of the study or research methods (Botma *et al*. 2010: 107; Burns and Grove 2011: 48). According to de Vos *et al*. (2011: 288), limitations of the study are to be explicit so that precautionary measures may be applied to reduce any possible negative impact that the study could have. The limitations experienced in this study were:

- In Phase 2, the questionnaire was only distributed to radiographers who were on duty at the time of data collection and this could have introduced response bias. According to Johnson and Christensen (2017:253), this is the type of bias that is systematically different from the population. Therefore, participants who were not duty at the time of data collection could have been systematically excluded.
- The questionnaire, under the category of ‘experience as a radiographer’ did not have an option of a supervisory chief, and this could have verified the lack of supervisory posts in speciality. Participants could have

exaggerated their response with a hope that the study would affect immediate changes to their work situation.

- The study was only conducted in the public sector; hence the findings cannot be generalized to the private sector.
- The sample size could have been a limiting factor analysis if the large sample size method was followed. According to Pallant (2011:182), a large sample size consists of a minimum cases of 300 and in this study a total of 292 cases were and only 182 cases were obtained. Therefore, this fall within the range of a small sample size, thus limiting the sample size.

10.3 CONCLUSIONS DRAWN FROM THE STUDY

The results of this mixed methods study showed that there were four extrinsic factors and one intrinsic factor that significantly affected job satisfaction amongst radiographers employed by public tertiary in hospitals in the Gauteng province. The intrinsic factor that negatively affected job satisfaction was the lack of career pathing. The four extrinsic factors that negatively affected job satisfaction were government policies; working conditions, infrastructure and supervision and the efficiency of the human relations department. Most of the concerns that were raised by participants could have been addressed by proper implementation government policies.

In particular, the OSD Policy has failed to recognize radiographers employed in speciality without dual qualification, thus negatively affecting job satisfaction. In addition, the OSD Policy has not created supervisory posts for speciality within radiography, thus limiting career growth in terms of promotion. Furthermore, accelerated grade progression introduced by the OSD Policy is directly linked to the PMDS rating received by an individual. However, participants have cited that they were not fairly rated by managers which resulted in salary stagnation, remaining in one position for a period of 10 years.

It is also worth noting that supervisors were identified as the leading human factor affecting the intent to leave, while colleagues were reported to be unsupportive with work-related matters. Although the HRD was not readily available to assist with work related issues, participants expressed satisfaction with benefits provided by the HRD. These benefits were working hours; housing allowance; medical leave and the different types of leave. The benefits combined with structured CPD activities, were found to enhance organisational commitment. It is also worth noting that despite the multiple factors that were cited for job dissatisfaction, there was an overall significant disagreement that participants had intentions to leave. This provides an opportunity for the Gauteng Department of Health to address the prominent issues that lead to job satisfaction. The findings of this study will be forwarded to MEC of Health in the Gauteng province and further attempts would be made to submit the findings to the Minister of Health at the South African Department of health, for a possible national impact.

10.4 RECOMMENDATIONS

The recommendations, based on the findings of the study, relate to the categories of policy review, training and capacity building, management and further research.

10.4.1 Policy review

- The OSD Policy should be reviewed to cater for radiographers in speciality without a dual qualification and create supervisory posts to broaden the career structure for radiographers. In addition, the Department of Health should ensure that there is a standardized method in implementation of the OSD Policy. Similar sentiments of reviewing the OSD Policy have been shared in other fields such as nursing, citing that is has not adequately addressed unsatisfactory salaries and it was not fairly implemented.
- Departments should develop clear safety protocols to handle security, especially after hours. Participants cited security concerns when working

weekends and after hours. The security threats were caused by patients and their family members. Similar security threats have been cited by amongst nurses in the Free State province. Therefore, the security concerns are not unique to radiographers.

- The Gauteng Department of Health should review the process involved in obtaining a purchase order number for broken equipment to minimize the downtime. Managers cited that the process of obtaining authorization took so long that it had negative effects on waiting times for patients. Waiting times have been the third most critical issue in public hospitals.
- The method used for accelerated grade progression that was introduced with the OSD Policy should be reviewed. In other words, either than purely relying on the PMDS ratings other methods should be considered. A much more inclusive approach may be used, where peer reviews are also included in the decision for accelerated grade progression. Currently, it is directly linked to the PMDS ratings and supervisors failed to rate their subordinates fairly, according to the participants. This could result in participants being in a post for a period of 10 years, where automatic accelerated grade progression applies. For this reason, previous authors have also recommended that managers and personnel should attend PMDS workshops to gain full understanding of the tool, even though the PMDS tool has been reported as outdated and fails to provide a platform for development.

10.4.2 Management

- Managers cited that freezing posts led to severe staff shortages. Therefore, the Gauteng Department of Health should create more funded posts. This would be in line with Department of Health's Strategic Plan to retain and recruit health care professionals.
- Hospital management should consider instituting seamless processes authorization for remunerated overtime, to alleviate the problem of staff shortage cited by radiography managers.

10.4.3 Training and capacity building

- Career ladder programs should be established between radiography training universities and the government to officially recognize radiographers who are trained in speciality incentives. Career ladders have been recommended and acknowledged by authors to enhance job satisfaction and increase retention within the field of radiography.
- Radiography managers should develop a standardized and transparent training protocol for specialized areas. Participants cited unfair selection process by management for training in specialized areas. This was reported to be a source of job satisfaction amongst health care professionals in Malawi.
- Team building exercises should be organised by departments to strengthen team work.
- Radiographers should organise themselves in a structure that would be recognized by the bargaining council to have direct representation in the bargaining chambers.

10.4.4 Future research

- Leadership traits used by radiography managers should be explored to identify a management style suitable for the current workforce.
- Explore the levels of burnout amongst radiographers caused by heavy workloads.
- Explore the coping mechanism used by radiographers to deal with work-related stress, since multiple factors were identified as the source of job dissatisfaction.
- Establish a ratio of patient to radiographer to fully demonstrate the effect of the shortage of radiographers in the public sector.
- Radiation therapists reported the greatest intent to leave in comparison to other professionals. Therefore, further research is needed to ascertain the factors that contribute to this phenomenon.

- Grade 1 radiographers, which is a classification of newly qualified radiographers, showed the greatest intent to leave. Hence, this problem needs to be investigated.

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APPENDICES

Appendix 1: University Ethics clearance

Institutional Research Ethics Committee
Research and Postgraduate Support Directorate
2nd Floor, Berwyn Court
Gate 1, Steve Biko Campus
Durban University of Technology

P O Box 1334, Durban, South Africa, 4001

Tel: 031 373 2375
Email: lavishad@dut.ac.za
http://www.dut.ac.za/research/institutional_research_ethics

www.dut.ac.za

5 November 2018

Mr T Khoza
P O Box 800
Bergville
3350

Dear Mr Khoza

A model to enhance job satisfaction for radiographers employed at the selected public tertiary hospitals in the Gauteng province, South Africa.

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

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

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

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

Yours Sincerely

Professor J K Adam
Chairperson: IREC

DUT DURBAN UNIVERSITY OF TECHNOLOGY
2013 -11- 05
INSTITUTIONAL RESEARCH ETHICS COMMITTEE
P O BOX 1334 DURBAN 4000 SOUTH AFRICA

Appendix 2a: Letter of permission to the Gauteng Department of Health

PO. Box 800
Bergville
3350

Chairperson of the Research Ethics Committee
Gauteng Department of Health
Private Bag X 74
Marshalltown
2107

Dear Dr. I Ikalafeng

I am a registered student for a PhD in Health Sciences at the Durban University of Technology. The title of my research study is: *A model to enhance job satisfaction for radiographers employed at the selected public tertiary hospitals in the Gauteng province, South Africa*.

I hereby seek for permission to conduct a study with the radiographers at Charlotte Maxeke Johannesburg Academic Hospital, Chris Hani Baragwanath Academic Hospital, Dr George Mukhari Hospital and Steve Biko Pretoria Academic Hospital. An exploratory sequential mixed methods approach will be used to guide the study. Phase 1 of the study will be conducted through focus group discussions. The findings of Phase 1 will be used to develop a questionnaire for phase 2 of the study. The focus group discussions will last for about an hour. A questionnaire will be distributed to radiographers employed by these hospitals, with an estimation time of 20 minutes to complete. Arrangements will be made with the Head of the respective departments to minimize disruptions to the work flow during data collection.

Please find herewith a copy of my research proposal, letter of information, consent and provisional ethics clearance from the Institutional Research ethics Committee. The supervisor of this project is Prof M.N. Sibiya and could be contacted on 031-373 2704, nokuthulas@dut.ac.za.

Sincerely,

……

Mr T Khoza
PhD: Health Sciences Candidate
Email: thandokuhlek@dut.ac.za
Cell No: 073 236 6982
Work No: 031-373 3092

Appendix 2b: Approval letter from the Gauteng Department of Health

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

OUTCOME OF PROVINCIAL PROTOCOL REVIEW COMMITTEE (PPRC)

Researcher's Name (Principal investigator)	Mr Thando Khoza
Organization / Institution	Durban University of Technology
Research Title	A model to enhance job satisfaction for radiographers employed at selected public tertiary hospitals in Gauteng Province, South Africa
Contact number	thandokuhlek@dut.ac.za Cell: 0732366982
NHRD Reference number	GP201808_044
Sites	Steve Biko Academic Hospital and Charlotte Maxeke Academic Hospital

Permission granted ☒

Permission denied ☐

The Department of Health request that you submit a report after completion of your study and present your findings to the Gauteng Health Department.

Dr. B. Ikalafeng
(On behalf of PPRC)

Date: 31/10/2018

Appendix 3a: Letter of permission to the CEO of CMJAH

PO. Box 800
Bergville
3350

The Chief Executive Officer
Charlotte Maxeke Johannesburg Academic Hospital
Parktown
Johannesburg
2196

Dear Ms Bogosi

I am a registered student for a PhD in Health Sciences at the Durban University of Technology. The title of my research study is: *A model to enhance job satisfaction for radiographers employed at the selected public tertiary hospitals in the Gauteng province, South Africa*.

I hereby seek for permission to conduct a study with the radiographers at your facility. An exploratory sequential mixed methods approach will be used to guide the study. Phase 1 of the study will be conducted through focus group discussions. The findings of Phase 1 will be used to develop a questionnaire for phase 2 of the study. The focus group discussions will last for about an hour. A questionnaire will be distributed to radiographers employed by your hospital, with an estimation time of 20 minutes to complete. Arrangements will be made with the Head of the respective departments to minimize disruptions to the work flow during data collection.

Please find herewith a copy of my research proposal, letter of information, consent and provisional ethics clearance from the Institutional Research ethics Committee. The supervisor of this project is Prof M.N. Sibiya and could be contacted on 031-373 2704, nokuthulas@dut.ac.za.

Sincerely,

……

Mr T Khoza
PhD: Health Sciences Candidate
Email: thandokuhlek@dut.ac.za
Cell No: 073 236 6982
Work No: 031-373 3092

Appendix 3b: Approval letter from the CEO of CMJAH

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

CHARLOTTE MAXEKE JOHANNESBURG ACADEMIC HOSPITAL

Enquiries: Ms. N. Mzila
Office of the Clinical Director
011 488 4812

Dear Mr. T. Khoza

STUDY TITLE A Model to Enhance Job Satisfaction for Radiographers Employed at the Selected Public Tertiary Hospitals in the Gauteng Province, South Africa.

DEPARTMENT: Diagnostic Radiography

	DOCUMENTS REQUIRED FOR STUDENT RESEARCH	**TICK**
1.	Covering letter from the APPLICANT	**X**
2.	Research protocol	**X**
3.	Support letter from the Head of Department	**X**
4.	Ethics clearance certificate	
5.	NHRD Registration	
	DOCUMENTS REQUIRED FOR COMPANY RESEARCH	
1.	Covering letter from the APPLICANT/COMPANY	
2.	Research protocol	
3.	Support letter from the Head of Department	
4.	Ethics clearance certificate	
5.	Approval from the Department of Health	

CHECKED BY: **Ms. N. Mzila** **SIGNATURE:** **DATE:** **04/09/2018**

CHECKED BY: [illegible] **SIGNATURE:** **DATE:** [illegible]

RECEIVED CEO
04 -03- 2018
CMJAH

Page 1 of 1

Appendix 3b: Approval letter from the CEO of CMJAH

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

CHARLOTTE MAXEKE JOHANNESBURG ACADEMIC HOSPITAL

Enquiries:
Ms. N. Mzila
Office of the Clinical Director
Email:Nolwazi.Mzila@gauteng.gov.za
Tell: (011): 488-4812
04 September 2018

Dear Mr. T. Khoza

STUDY TITTLE: A Model to Enhance Job Satisfaction for Radiographers Employed at the Selected Public Tertiary Hospitals in the Gauteng Province, South Africa.

Permission to conduct the above mentioned study is provisional approved. Your study can only commence once Ethics approval is obtained. Please forward a copy of your Ethics Clearance Certificate as soon as the study is approved by the Ethics Committee for the CEO's office to give you the final approval to conduct the study.

Supported / ~~not supported~~

Dr. M.I. Mofokeng
Clinical Director
DATE: 4/09/2018

Approved / not approved

Ms. G. Bogóshi
Chief Executive Officer
DATE: 04.09.2018

Appendix 3c: Approval letter from the Assistant Director in Diagnostic radiography of CMJAH

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

CHARLOTTE MAXEKE JOHANNESBURG ACADEMIC HOPITAL

Enquiries: Ms. S.P. Rapoho
Ref. No: 2/2/2
Telephone: (011) 488 3088
Fax: (011) 488 4690
Email: Salaelo.rapoho@gauteng.gov.za
Diagnostic Radiography Dept.
CMJAH

31st August 2018

To: Dr. M. Mofokeng

Re: Research recommendation for Mr. T. Khoza

This serves to inform you that the department of Diagnostic Radiography management welcomes the research proposal and will give support as required without compromise to service delivery.

Ms. S.P. Rapoho
ADDR

Appendix 3d: Approval letter from the Assistant Director of Radiation Therapy in CMJAH

Private bag X39, Johannesburg 2000, South Africa
Tel: +27 (0) 11 488 4911, Fax: +27 (0) 11 643 1612
www.johannesburghospital.org

Gauteng Department of Health

Permission to conduct a study with the Radiographers Radiation Therapy at CMJAH

31/8/18

Dear Mr T E Khoza

I do not have a problem in allowing you to do a study to Radiographer Therapy in radiation therapy department at Charlotte Maxeke Hospital as long as the study is not going to affect/delay patient treatment.

I have read all your documents you send me.

Wishing you all the best

31/8/18

Mrs. Thakane Violet Ndlebe
Acting Assistant Director : Radiation Therapy
Quality Assurance Radiation Therapist
O11 4812218
0713443167
Email. Thakane.ndlebe@gauteng.gov.za

Appendix 3e: Approval letter from the Assistant Director of Nuclear Medicine Radiography in CMJAH

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

CHARLOTTE MAXEKE JOHANNESBURG ACADEMIC HOSPITAL (CMJAH)

Department of Radiation Sciences
Nuclear Medicine & Molecular Imaging
Area 559

Private Bag X39
Johannesburg 2000

Date: **31 August 2018**
Phone: +27 11 488-3583/3560/3559/3500
Fax: +27 11 488-3501

To: Dr M Mofokeng

RE: RESEARCH RECOMMENDATION FOR MR T KHOZA

This serves to inform you that the department of Nuclear Medicine management welcomes the research proposal and will give support as required without compromise to service delivery.

Yours Faithfully

DESMOND MALEEME
(ASS DIRECTOR – NUCLEAR MEDICINE)

1

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

PO. Box 800
Bergville
3350

The Chief Executive Officer
Steve Biko Academic Hospital
Voortrekker Road & Malan Street
Prinshof 349 Jr
Pretoria
0002

Dear Dr Mangwane

I am a registered student for a PhD in Health Sciences at the Durban University of Technology. The title of my research study is: *A model to enhance job satisfaction for radiographers employed at the selected public tertiary hospitals in the Gauteng province, South Africa*.

I hereby seek for permission to conduct a study with the radiographers at your facility. An exploratory sequential mixed methods approach will be used to guide the study. Phase 1 of the study will be conducted through focus group discussions. The findings of Phase 1 will be used to develop a questionnaire for phase 2 of the study. The focus group discussions will last for about an hour. A questionnaire will be distributed to radiographers employed by your hospital, with an estimation time of 20 minutes to complete. Arrangements will be made with the Head of the respective departments to minimize disruptions to the work flow during data collection.

Please find herewith a copy of my research proposal, letter of information, consent and provisional ethics clearance from the Institutional Research ethics Committee. The supervisor of this project is Prof M.N. Sibiya and could be contacted on 031-373 2704, nokuthulas@dut.ac.za.

Sincerely,

……

Mr T Khoza
PhD: Health Sciences Candidate
Email: thandokuhlek@dut.ac.za
Cell No: 073 236 6982
Work No: 031-373 3092

Appendix 4b: Approval letter from the CEO of SBAH

Permission to access Records/ Files/ Data base at the Steve Biko Academic Hospital

To: Chief Executive Officer/

DR. Mangwane

From: The Investigator

Mr. T. Khoza

Re: Permission to do research at Steve Biko Academic Hospital.

I am requesting permission to conduct a study on the Steve Biko Academic Hospital grounds that involves access to personnel from the Department of Radiography (Diagnostic Radiographers, Nuclear Medicine Radiographers, Radiation Therapist, Sonographers and Mammography Radiographers).

The request is lodged with you in terms of the requirements of the Promotion of Access to Information Act No. 2 of 2000. I request to be granted access to personnel.

The title of my research study is: A model to enhance job satisfaction for radiographers employed at the selected public tertiary hospitals in the Gauteng province, South Africa.

I intend to publish the findings of the study in a professional journal and/ or at professional meetings like symposia, congress, or other meetings of such nature.

I intend to protect the personal identity of participants to the study.

I undertake not to proceed with the study until we have received approval from the Institutional Research Ethics Committee, Durban University of Technology.

Permission to do the research study at this hospital/ clinic and access the information as requested, is hereby approved on condition that there will be no cost to the hospital.

Title and name of Chief Executive Officer Dr JS Mangwane

Steve Biko Academic Hospital

Signature of the CEO

Appendix 4c: Approval letter from the Head of Radiology at SBAH

Permission to access Records / Files / Data base at ....Hospital

TO:
The [CEO] Chief Executive Officer of Steve Biko Academic Hospital

Re: Permission to do research at Steve Biko Academic **Hospital**

TITLE OF STUDY: A model to enhance job satisfaction for radiographers employed at the selected tertiary hospitals in the Gauteng Province: SA

This study is approved by the relevant Head of Department [HOD]: ...[Print Name and Surname] ... Signature......................

This request is lodged with you in terms of the requirements of the Promotion of Access to Information Act. No. 2 of 2000.

I am a researcher / student at the Department of Radiography DUT at the ~~University of~~ Pretoria / ________________ Hospital.
I am working with ________________. I herewith request permission on behalf of all of us to conduct a study on the above topic on the hospital / clinic grounds. This study involves access to patient records. This study involves clinical research.

The researchers request access to the following information: clinical files, record books and data bases.

We intend to publish the findings of the study in a professional journal and/ or to present them at professional meetings like symposia, congresses, or other meetings of such a nature.

We intend to protect the personal identity of the patients by assigning each individual a random code number.

We undertake not to proceed with the study until we have received approval from the Faculty of Health Sciences Research Ethics Committee, University of Pretoria.

Yours sincerely

Print Name Thandokuhle Signature ________________
Principal Investigator

Permission to do the research study at this hospital / clinic and to access the information as requested, is hereby approved, on condition that there will be no cost to the hospital.

Title and name of Chief Executive Officer: Signed by

Name of hospital / clinic: Dr. Mangwane

See attached.
awaiting Ethics approval from University

Signature: ________________ Date: ________________

Pretoria
27.09.2018.

Appendix 4d: Approval letter from the University of Pretoria to gain access in SBAH

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Health Sciences

The Research Ethics Committee, Faculty Health Sciences, University of Pretoria complies with ICH-GCP guidelines and has US Federal wide Assurance.

- FWA 00002567, Approved dd 22 May 2002 and Expires 03/20/2022.
- IRB 0000 2235 IORG0001762 Approved dd 22/04/2014 and Exoires 03/14/2020.

22 November 2018

Approval Certificate
New Application

Ethics Reference No.: 643/2018
Title: A model to enhance job satisfaction for radiographers employed at the selected public tertiary hospitals in the Gauteng province, South Africa.

Dear T khoza

The **New Application** as supported by documents received between 2018-11-15 and 2018-11-22 for your research, was approved by the Faculty of Health Sciences Research Ethics Committee on its quorate meeting of 2018-11-21.

Please note the following about your ethics approval:

- Ethics Approval is valid for 1 year and needs to be renewed annually by 2019-11-22.
- Please remember to use your protocol number (643/2018) on any documents or correspondence with the Research Ethics Committee regarding your research.
- Please note that the Research Ethics Committee may ask further questions, seek additional information, require further modification, monitor the conduct of your research, or suspend or withdraw ethics approval.

Ethics approval is subject to the following:

- The ethics approval is conditional on the research being conducted as stipulated by the details of all documents submitted to the Committee. In the event that a further need arises to change who the investigators are, the methods or any other aspect, such changes must be submitted as an Amendment for approval by the Committee.

We wish you the best with your research.

Yours sincerely

Dr R Sommers
MBChB MMed (Int) MPharmMed PhD
Deputy Chairperson of the Faculty of Health Sciences Research Ethics Committee, University of Pretoria

The Faculty of Health Sciences Research Ethics Committee complies with the SA National Act 61 of 2003 as it pertains to health research and the United States Code of Federal Regulations Title 45 and 46. This committee abides by the ethical norms and principles for research, established by the Declaration of Helsinki, the South African Medical Research Council Guidelines as well as the Guidelines for Ethical Research: Principles Structures and Processes, Second Edition 2015 (Department of Health)

Research Ethics Committee
Room 4-60, Level 4, Tswelopele Building
University of Pretoria, Private Bag X323
Arcadia 0007, South Africa
Tel +27 (0)12 356 3084
Email deepeka.behari@up.ac.za
www.up.ac.za

Appendix 5a: Letter of permission to the CEO of DGMAH

PO. Box 800
Bergville
3350

The Chief Executive Officer
Dr George Mukhari Academic
Sekwati Street
Ga-Rankuwa
Unit 2
Gauteng

Dear Dr F. Kgongwana

I am a registered student for a PhD in Health Sciences at the Durban University of Technology. The title of my research study is: *A model to enhance job satisfaction for radiographers employed at the selected public tertiary hospitals in the Gauteng province, South Africa*.

I hereby seek for permission to conduct a study with the radiographers at your facility. An exploratory sequential mixed methods approach will be used to guide the study. Phase 1 of the study will be conducted through focus group discussions. The findings of Phase 1 will be used to develop a questionnaire for phase 2 of the study. The focus group discussions will last for about an hour. A questionnaire will be distributed to radiographers employed by your hospital, with an estimation time of 20 minutes to complete. Arrangements will be made with the Head of the respective departments to minimize disruptions to the work flow during data collection.

Please find herewith a copy of my research proposal, letter of information, consent and provisional ethics clearance from the Institutional Research ethics Committee. The supervisor of this project is Prof M.N. Sibiya and could be contacted on 031-373 2704, nokuthulas@dut.ac.za.

Sincerely,

……

Mr T Khoza
PhD: Health Sciences Candidate
Email: thandokuhlek@dut.ac.za
Cell No: 073 236 6982
Work No: 031-373 3092.

Appendix 5b: Approval letter from the CEO of DGMAH

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

Dr. George Mukhari Academic Hospital

Office *of the Director Clinical Services*
Enquiries : Dr. C Holm
Tel : (012) 529 3691
Fax : (012) 560 0099
Email:Christene.Holm @gauteng.go.za
keitumetse.mongale@gauteng.gov.za

To Mr T Khoza
Department of Radiography
Durban University Of Technology
PO Box 800
Bergville
3350

Date :01 April 2019

PERMISSION TO CONDUCT RESEARCH

The Dr George Mukhari Academic Hospital hereby grants you permission to conduct research on "A model to enhance job satisfaction for radiographers employed at the selected public tertiary hospitals in the Gauteng province, South Africa " at Dr George Mukhari Academic Hospital

This permission is granted subject to the following conditions:

- [x] That you obtain Ethical Clearance from the Human Research Ethics Committee of the relevant University
- [x] That the Hospital incurs no cost in the course of your research
- [x] That access to the staff and patients at the Dr George Mukhari Hospital will not interrupt the daily provision of services.
- [x] That prior to conducting the research you will liaise with the supervisors of the relevant sections to introduce yourself (with this letter) and to make arrangements with them in a manner that is convenient to the sections.
- [x] Formal written feedback on research outcomes must be given to the Director: Clinical Services
- [x] Permission for publication of research must be obtained from the Chief Executive Officer

Yours sincerely

DR. C. HØLM
ACTING DIRECTOR CLINICAL SERVICES
DATE: 1/4/19

Appendix 6a: Letter of permission to the CEO of CHBAH

PO. Box 800
Bergville
3350

The Chief Executive Officer
Chris Hani Baragwanath Academic Hospital
26 Chris Hani Road
Johannesburg
1864

Dear Dr F. Kgongwana

I am a registered student for a PhD in Health Sciences at the Durban University of Technology. The title of my research study is: *A model to enhance job satisfaction for radiographers employed at the selected public tertiary hospitals in the Gauteng province, South Africa*.

I hereby seek for permission to conduct a study with the radiographers at your facility. An exploratory sequential mixed methods approach will be used to guide the study. Phase 1 of the study will be conducted through focus group discussions. The findings of Phase 1 will be used to develop a questionnaire for phase 2 of the study. The focus group discussions will last for about an hour. A questionnaire will be distributed to radiographers employed by your hospital, with an estimation time of 20 minutes to complete. Arrangements will be made with the Head of the respective departments to minimize disruptions to the work flow during data collection.

Please find herewith a copy of my research proposal, letter of information, consent and provisional ethics clearance from the Institutional Research ethics Committee. The supervisor of this project is Prof M.N. Sibiya and could be contacted on 031-373 2704, nokuthulas@dut.ac.za.

Sincerely,

……

Mr T Khoza
PhD: Health Sciences Candidate
Email: thandokuhlek@dut.ac.za
Cell No: 073 236 6982
Work No: 031-373 3092.

Appendix 6b: Approval letter from the CEO of CHBAH

GAUTENG PROVINCE
HEALTH
REPUBLIC OF SOUTH AFRICA

MEDICAL ADVISORY COMMITTEE

CHRIS HANI BARAGWANATH ACADEMIC HOSPITAL

PERMISSION TO CONDUCT RESEARCH

Date: 14th May 2019

TITLE OF PROJECT:

A model to enhance job satisfaction for radiographers employed at the selected public tertiary hospitals in the Gauteng province, South Africa.

UNIVERSITY: Durban University of Technology

Principal Investigator: Thandokuhle Khoza

Department: Radiography

Supervisor : Prof M N Sibiya

Permission Head Department (where research conducted): Yes

The Medical Advisory Committee recommends that the said research be conducted at Chris Hani Baragwanath Academic Hospital. The CEO / management of Chris Hani Baragwanath Academic Hospital is accordingly informed and the study is subject to:-

- **Permission having been granted by the DUT Intsttutional Research Ethics Committee.**
- The Hospital will not incur extra costs as a result of the research being conducted on its patients within the hospital
- The MAC will be informed of any serious adverse events as soon as they occur
- Permission is granted for the duration of the Ethics Committee Approval.

Recommended
(On behalf of the MAC)
Date: 14/5/2019

Approved/~~Not Approved~~
Hospital Management
Date: 17/05/2019

Appendix 6c: Approval letter from the Head of Radiology at CHBAH

Chris Hani Baragwanath Academic Hospital
26 Chris Hani Road
Johannesburg
1864
South Africa

To whom it may concern,

RE: RESEARCH PROJECT IN CHRIS HANI BARAGWANATH ACADEMIC HOSPITAL

We hereby support Mr. T Khoza's application, a PhD candidate from the Durban University of Technology, to conduct research on Radiographers employed by the institutions for purposes of a PhD in Health Sciences.

A questionnaire will be distributed to radiographers employed by the institution for a minimum of three months at the time of data collection.

Permission is granted to Mr. T Khoza subject to him obtaining ethical clearance to conduct research from the Ethics Committee of the Durban University of Technology and by abiding to its terms.

I have been informed about Mr. T. Khoza line of research.

Kind regards,

Prof. Victor Mngomezulu
Academic Head: Division of Diagnostic Radiology
Head: Interventional Neuro Radiology
Faculty of Health Sciences
University of The Witwatersrand, Johannesburg

Head of Clinical Department: Diagnostic Radiology
Chris Hani Baragwanath Academic Hospital

Date 13/05/2019

Appendix 7a: Letter of information for the focus group discussion participants

Thank you for agreeing to participate in this study.

Title of the Research Study: A model to enhance job satisfaction for radiographers employed at the selected tertiary hospitals in Gauteng Province, South Africa.

Principal Investigator/s/researcher: Mr Thandokuhle Khoza, M. Tech: Diagnostic Radiography.

Co-Investigator/s/supervisor/s: Prof M.N. Sibiya (D Tech: Nursing) and Dr P.B. Nkosi (PhD: Health Sciences).

Brief Introduction and Purpose of the Study: There is a maldistribution of radiographers between the public and the private sector and this in contrast to the needs of the majority of citizens who rely on government to provide health care. Job satisfaction is known to affect health care professional's commitment to a particular organization. Hence the aim of study is to explore the influence job satisfaction of radiographers employed at the selected tertiary hospitals in the Gauteng province in order to enhance retention.

Outline of the Procedures: I would like to invite you to participate in a group discussion based on job satisfaction of radiographers, which will take place at your place of employment. Invited to participate in the study are diagnostic radiographers, radiation therapist, sonographers, nuclear medicine radiographers and mammography radiographers. The discussions will require a minimum of 6 participants and one from each discipline. Time and venue of the interviews will be finalized once an agreement has been reached with the Head of Department at your hospital. The group discussion is estimated to last for an hour. The discussions will be facilitated by the lead researcher and will require your permission to audio-record the discussions.

Risks or Discomforts to the Participant: There is no anticipated risk or discomfort for participating in this study.

Benefits: Based on the findings, recommendations will be made to the Gauteng Department of Health for consideration, which could result in enhanced job satisfaction. The model of job satisfaction of radiographers will also be shared with the Gauteng Department of Health.

Reason/s why the Participant May Be Withdrawn from the Study: You have the right to withdraw at any time and no adverse reaction will be encountered for withdrawal.

Remuneration: There is no remuneration for participating in the study.

Costs of the Study: You will not to pay anything for participating in the study.

Confidentiality: During focus group discussions, you will not be asked to disclose your name. In the final thesis, the name of your hospital will not be documented; a code will be used to identify the participants and the hospitals.

Research-related Injury: There is no anticipated research-related injury for participating in this study.

Persons to Contact in the Event of Any Problems or Queries: Please contact the researcher: Mr. Thandokuhle Khoza 073 236 6982/ 031-373 3092/ thandokuhlek@dut.ac.za, my supervisor: Prof M.N. Sibiya 031-373 2704 or the Institutional Research Ethics Administrator on 031-373 2375. Complaints can be reported to the Director: Research and Postgraduate Support, Prof C. Napier on 031 373 2577 or carinn@dut.ac.za

Appendix 7b: Letter of information for the survey participants

Thank you for agreeing to participate in this study.

Title of the Research Study: A model to enhance job satisfaction for radiographers employed at the selected tertiary hospitals in Gauteng Province, South Africa

Principal Investigator/s/researcher: Mr Thandokuhle Khoza, Master's Degree in Diagnostic Radiography.

Co-Investigator/s/supervisor/s: Prof M.N. Sibiya (D Tech: Nursing) and Dr P.B. Nkosi (PhD: Health Sciences).

Brief Introduction and Purpose of the Study: There is a maldistribution of radiographers between the public and the private sector and this in contrast to the needs of the majority of citizens who rely on government to provide health care. Job satisfaction is known to affect health care professional's commitment to a particular organization. Hence, the aim of study is to explore the influence job satisfaction of radiographers employed at the selected tertiary hospitals in the Gauteng province in order to enhance retention.

Outline of the Procedures: You are kindly requested to complete a questionnaire that will take you about 20 minutes to complete. I will personally distribute and collect the questionnaire. In order to ensure confidentiality, please do not write your name on the questionnaire.

Risks or Discomforts to the Participant: There is no anticipated risk or discomfort for participating in this study.

Benefits: Based on the findings, recommendations will be made to the Gauteng Department of Health for consideration, which could result in enhanced job satisfaction. The model of job satisfaction of radiographers will also be shared with the Gauteng Department of Health.

Reason/s why the Participant May Be Withdrawn from the Study: You have the right to withdraw at any time and no adverse reaction will be encountered for withdrawal.

Remuneration: There is no remuneration for participating in the study.

Costs of the Study: You will not to pay anything for participating in the study.

Confidentiality: Please do not write your name in the questionnaire. In the final thesis, your details as well as the name of the hospital will not be documented; a code will be used.

Research-related Injury: There is no anticipated research-related injury for participating in this study.

Persons to Contact in the Event of Any Problems or Queries: Please contact the researcher: Mr. Thandokuhle Khoza 073 236 6982/ 031-373 3092/ thandokuhlek@dut.ac.za, my supervisor: Prof M.N. Sibiya 031-373 2704 or the Institutional Research Ethics Administrator on 031-373 2375. Complaints can be reported to the Director: Research and Postgraduate Support, Prof C. Napier on 031 373 2577 or carinn@dut.ac.za

Appendix 8a: Consent

Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, Mr T. Khoza about the nature, conduct, benefits and risks of this study - Research Ethics Clearance Number: _____,
- 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, Mr Thandokuhle Khoza herewith confirm that the above participant has been fully informed about the nature, conduct and risks of the above study.

_____	_____	_____
Full Name of Researcher	**Date**	**Signature**
_____	_____	_____
Full Name of Witness (If applicable)	**Date**	**Signature**
_____	_____	_____
Full Name of Legal Guardian (If applicable)	**Date**	**Signature**

Appendix 9a: Demographic data for focus group participants for interviews

Section A: Demographics

This section of the questionnaire refers to background or biographical information. Please indicate the relevant answer by indicating with (X) in the box provided below.

1. Gender

Male	
Female	
Other	

2. Age

21-33	
34-49	
50 years and older	

3. Race

African	
Asian	
Coloured	
White	
Other	

4. Marital Status

Single	
Married	
Divorced	
Widowed	

5. Number of years as a qualified radiographer

3 months – 1 year	
2 – 10 years	
10 – 15 years	
More than 15 years	

6. Current position occupied

Community service radiographer	
Grade 1 radiographer	
Grade 2 radiographer	
Grade 3 radiographer	

7. Occupation (in case of dual practice, select the one you currently work in)

Diagnostic radiographer	
Mammography radiographer	
Nuclear medicine radiographer	
Sonographer	
Radiation therapist	

Appendix 9b: Focus Group Discussions Guide

Section B

Ice breaker: Welcome everyone and thank you for taking the time to participate in the focus group discussion. I am interested in understanding job satisfaction amongst radiographers. I would like to understand how has your career been as a radiographer for you?

1. **What do you find most important in your job as a radiographer?**

   Probing questions:
- Do you consider patient care to be the most important aspect of your job?
- Is salary the most important aspect of your job?

2. **What is satisfying to you in your job as a radiographer?**

   Probing questions:
- What are your views regarding the conditions of work?

3. **What is dissatisfying about your job as a radiographer?**

   Probing questions:
- What are your views regarding calls on regular basis or overtime?
- Would you like more overtime?

4. **Do you get recognition from management for tasks that you complete and the manner in which these are executed?**

   Probing questions:
- For example, do you get any recognition for submission of departmental statistics on time?

5. **Are there clear structures for promotion?**

   Probing questions:
- Are you aware of the procedure followed to get promoted?
- Do you consider the promotion process to be fair?

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

Appendix 10: The questionnaire

Section A: Demographics

This section refers to background or biographical information. Please indicate the relevant answer by placing a cross (X) in the box provided below.

8. Gender

Male	
Female	

9. Age

21-33	
34-49	
50 years and older	

10. Race

Black	
Indian	
Coloured	
White	
Other	

11. Marital Status

Single	
Married	
Divorced/Separated	
Widowed	

12. Number of years as a qualified radiographer

1 – 10 years	
>10 – 20 years	
More than 20 years	

13. Current position occupied.(Select **ONE** option only)

Grade 1 radiographer	
Grade 2 radiographer	
Grade 3 radiographer	
Assistant Director	

14. Occupation (In case of dual practice, select the **ONE** you currently practise).

Diagnostic radiographer	
Mammography radiographer	
Nuclear medicine radiographer	
Sonographer	
Radiation therapist	

Section B: Conceptualization of job satisfaction

Indicate your agreement with following statements:

	Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
1	My salary has improved since the introduction of occupational specific dispensation (OSD).					
2	My OSD was fairly implemented.					
3	The system of PMDS ratings used in my department is fair.					
4	I am fairly rated by my supervisor in my PMDS.					
5	The interview process for vacant posts is fair.					
6	The employment equity act ensures that suitable candidates are selected to fill posts.					
7	In this hospital, a vacant post is always filled by the best candidate for the job.					
8	I am satisfied with the way my performance is recognized by my supervisor.					
9	I am satisfied with the salary scales that apply to me.					
10	My department pays for overtime work.					
11	Working overtime is not compulsory in my department.					

	Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
12	My grade/accelerated progression has been implemented on time.					
13	I am satisfied with the benefits I receive from my employer, e.g. leave, medical aid and housing allowance.					
14	I can use my leave days as I wish.					
15	I am being paid a fair amount for the work I do.					
16	I am being paid a fair amount for the qualifications I have.					
17	I am satisfied with the remuneration received for working overtime.					
18	I do not mind working overtime as long as I am paid for it.					
19	I would prefer NOT to work overtime – even if I am paid for it.					
20	I am satisfied with my working hours.					
21	I receive support from my colleagues with work related problems.					
22	I receive recognition from my supervisor for the effort I put into my work.					
23	There are enough staff members to handle the workload in my department.					
24	I feel safe at work.					
25	My work place is hygienic.					
26	The machinery I work with is kept in good working order.					
27	The machinery I work with is serviced on a regular basis.					
28	When machinery breaks down it is repaired quickly.					
29	Machinery that reaches its end of life' is replaced when necessary.					
30	I am satisfied with the condition of the facilities (e.g. air conditioning and patient linen) in my					
31	HR is available to address my work related problems, when needed.					
32	I have been placed in a correct post according to my qualification.					
33	I am satisfied that I am adequately represented at the bargaining council.					
34	I am satisfied with the way HR process my overtime claims.					
35	I am satisfied with the way HR monitors my leave and working hours.					

	Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
36	I am satisfied with the way HR has implemented OSD.					
37	My post graduate qualification is recognized in my salary.					
38	People with skills in specialized areas, such as Planning (therapy), MRI and CT, are remunerated fairly for their skills.					
39	I am provided with an opportunity to train in specialized areas such as Planning (therapy), MRI, CT, angiography and catheterization laboratory.					
40	My department has Continued Professional Development (CPD) activities.					
41	The CPD activities have relevant topics for me.					
42	The CPD activities in seminars are inclusive of all the disciplines within radiography.					
43	I intend/ would like to vacate my post within the next 12 months.					
44	I am actively looking for a job.					
45	I have distributed my curriculum vitae in the last 3 months.					
46	I am looking for a job in another government hospital.					
47	I am satisfied with the management style used by my immediate manager.					
48	There is adequate support staff to assist with operational needs of patients.					

Section C: Additional information

1. Provide any additional information that contributes to your **job satisfaction** that the researcher could have left out.

_____

_____

_____

_____

_____

_____

_____

2. Provide any additional information that contributes to your **job dissatisfaction** that the researcher could have left out.

_____

_____

_____

_____

_____

_____

_____

_____

_____

3. Provide any additional information that could be used to enhance your retention at your current hospital.

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

Thank you for your time and participation

Appendix 11: Letter from the statistician

Gill Hendry B.Sc. (Hons), M.Sc. (Wits), PhD (UKZN)
Mathematical and Statistical Services

Cell: 083 300 9896
email : hendryfam@telkomsa.net

11 June 2019

Re: Assistance with statistical aspects of the study

Please be advised that I have assisted Thandokuhle Khoza (Student number 20610389), who is presently studying for a PhD: Health Sciences at DUT, with the sampling as well as the development and validation of the questionnaire for his study.

Yours sincerely

Gill Hendry (Dr)

Appendix 12: Letter from the professional editor

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

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EDITING CERTIFICATE

A MODEL TO ENHANCE JOB SATISFACTION FOR RADIOGRAPHERS EMPLOYED AT THE SELECTED PUBLIC TERTIARY HOSPITALS IN THE GAUTENG PROVINCE, SOUTH AFRICA

Thandokuhle Khoza (20610389)

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.
- Masters 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) 27 August 2019