A MODEL FOR THE STAFF RETENTION OF RADIOGRAPHERS EMPLOYED AT SELECTED TERTIARY HOSPITALS IN THE KWAZULU-NATAL PROVINCE OF SOUTH AFRICA

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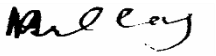
Date : July 2020

Declaration

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entirely my own and not that of any other person, unless explicitly acknowledged (including citations of published and unpublished sources).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



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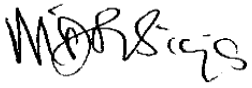

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Abstract

Background

Radiography as a profession is evolving, with an increased demand for the retention of radiographers. The staffing crisis in radiography is not only a global concern but also a South African one, with public hospitals in the KwaZulu-Natal province being evidence to the shortage. This crisis is exacerbated by the challenge in retaining radiographers. Various factors have led to the turnover of radiographers from the public to the private sectors, as well as emigration to other countries. Therefore, there is a dire need to identify these factors and retain radiographers in KZN's public hospitals. Therefore, the Herzberg's two-factor theory was used as a guide to the factors that influence the retention of staff.

Aim

The aim of this study was to explore the factors that influence the retention of radiographers employed by tertiary hospitals in the KZN province in order to develop a model to improve staff retention.

Methodology

The explanatory sequential mixed methods design was used to conduct this study in two phases. Phase 1 was conducted in the form of questionnaires with closed-ended questions. These questionnaires were answered by the radiographers and managers employed in public tertiary hospitals in the KZN province. A total of 138 questionnaires were completed, returned and analysed. The findings from phase 1 were used to develop a semi-structured interview with open-ended questions. A total of 10 participants from the five selected hospitals were included to participate in the interviews. The results of the two phases were then integrated. The Statistical Package for the Social Sciences (SPSS version 22) and statistical analysis tests were used to analyse the quantitative data, whilst thematic analysis was used to identify themes from the qualitative data.

Findings

The results from the two phases of data collection indicated that a lack of career pathing was the primary motivational factor affecting staff retention. There were also three hygiene factors that affected staff retention, namely the influence of working conditions on staff retention, government policies and inadequate remuneration. Factors that were identified as having a negative effect on staff retention were related to the increase in resignations and the factors that had a positive effect were related to a lesser intent to leave. The outcome of the study led to the development of a model for the staff retention of radiographers.

Key words: Herzberg's two-factor, hygiene factors, motivational factors, radiographers, staff retention.

Dedication

I thank almighty God for the strength and blessings for allowing me to complete my PhD studies. This study is dedicated to my husband Paven and my son Mason who have shown enormous support during the journey of my PhD studies. My heartfelt appreciation for the sacrifice they have made for me to complete my thesis. I thank my parents who entrenched the value of education and for their motivation, which has guided me.

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Table of Contents

	Page
Declaration	i
Abstract	ii
Dedication	iv
Acknowledgements	v
Table of contents	vi
List of tables	xix
List of figures	xix
List of appendices	xx
Glossary of terms	xxii
List of acronyms	xxvi
CHAPTER 1: ORIENTATION TO THE STUDY	1
1.1 INTRODUCTION AND BACKGROUND TO THE STUDY	1
1.2 PROBLEM STATEMENT	3
1.3 AIM OF THE STUDY	4
1.4 OBJECTIVES OF THE STUDY	4
1.5 RESEARCH QUESTIONS	4
1.5.1 Main research question	4
1.5.2 Sub-questions	4
1.6 SIGNIFICANCE OF THE STUDY	5
1.7 STRUCTURE OF THE THESIS CHAPTERS	5
1.8 SUMMARY OF THE CHAPTER	6
CHAPTER 2: LITERATURE REVIEW	7
2.1 INTRODUCTION	7
2.2 PROCESS OF SOURCING RELEVANT LITERATURE	7

2.3 A GLOBAL CONTEXT OF STAFF RETENTION IN RADIOGRAPHY IN THE PUBLIC HEALTHCARE SECTOR	8
2.4 CONTEXT IN AFRICA ON THE STAFF RETENTION OF RADIOGRAPHERS IN THE PUBLIC HEALTHCARE SECTOR	11
2.5 CONTEXT IN SOUTH AFRICA ON THE STAFF RETENTION OF RADIOGRAPHERS IN THE PUBLIC HEALTHCARE SECTOR	12
2.6 FACTORS AFFECTING THE RETENTION OF RADIOGRAPHERS IN THE PUBLIC HEALTHCARE SECTOR	17
2.6.1 Changing demographic nature of the radiography workforce	17
2.6.2 Working environment	18
2.6.3 Resources and infrastructure	18
2.6.4 Stress and burnout	19
2.6.5 Lack of professional and leadership support	20
2.6.6 Staff turnover	20
2.6.7 Remuneration, compensation and benefits	21
2.6.8 Migration of radiographers	21
2.6.9 Continuing education, training and professional development	21
2.7 STRATEGIES TO ADDRESS THE STAFF RETENTION OF RADIOGRAPHERS IN THE PUBLIC HEALTHCARE SECTOR	22
2.8 SUMMARY OF THE CHAPTER	24
CHAPTER 3: THEORETICAL FRAMEWORK	26
3.1 INTRODUCTION	26
3.2 THEORETICAL FRAMEWORK USED AS A GUIDE IN THIS STUDY	26
3.3 SELECTION OF THE THEORETICAL FRAMEWORK FOR THE STUDY	27
3.4 APPLYING THE THEORETICAL FRAMEWORK IN THIS STUDY	29
3.5 SUMMARY OF THE CHAPTER	31
CHAPTER 4: RESEARCH DESIGN AND METHODOLOGY	32
4.1 INTRODUCTION	32
4.2 RESEARCH DESIGN	32
4.3 PHILOSOPHICAL UNDERPINNING OF THE MIXED METHODS APPROACH	34
4.4 EXPLANATORY SEQUENTIAL MIXED METHODS	35
4.5 RESEARCH PARADIGM	36

4.6 NATURAL SETTING	39
4.7 TARGET POPULATION	40
4.8 SAMPLING PROCESS AND TECHNIQUE	41
4.8.1 Sampling technique and sample size in the quantitative phase	41
4.8.2 Sampling technique and sample size in the qualitative phase	42
4.8.3 Inclusion criteria for participants for hospitals and radiographers	42
4.8.4 Exclusion criteria for participants for hospitals and radiographers	43
4.9 PRE-TESTING OF THE DATA COLLECTION TOOLS	43
4.10 DATA COLLECTION PROCESS	44
4.10.1 Phase 1: Quantitative data collection	44
4.10.2 Phase 2: Qualitative data collection	45
4.11 DATA ANALYSIS AND INTEGRATION	46
4.11.1 Analysis of quantitative data	46
4.11.2 Analysis of qualitative data	47
4.12 TRIANGULATION	49
4.13 RESEARCH RIGOUR (QUANTITATIVE PHASE)	49
4.13.1 Validity	50
4.13.2 Reliability	51
4.14 TRUSTWORTHINESS (QUALITATIVE PHASE)	52
4.14.1 Credibility	52
4.14.2 Transferability	52
4.14.3 Dependability	53
4.14.4 Confirmability	53
4.15 ETHICAL CONSIDERATIONS	54
4.15.1 Respect	54
4.15.2 Beneficence	55
4.15.3 Justice	55
4.16 SUMMARY OF THE CHAPTER	55

CHAPTER 5: PRESENTATION OF RESULTS: PHASE 1	56
5.1 INTRODUCTION	56
5.2 DEMOGRAPHIC DATA OF RESPONDENTS	57
5.2.1 Gender	58
5.2.2 Age	58
5.2.3 Race	59
5.2.4 Marital status	60
5.2.5 Number of years qualified as a radiographer	61
5.2.6 Position occupied	61
5.2.7 The occupation of the participants in the study	62
5.3 RESPONSE RATE	63
5.4 FACTORS THAT INFLUENCE THE RESIGNATIONS OF RADIOGRAPHERS EMPLOYED BY TERTIARY HOSPITALS	65
5.4.1 Assessment of the factors that influence staff resignation	65
5.4.1.1 Significant agreement	65
5.4.1.2 Significant disagreement	68
5.4.2 Validity and reliability scores for factors influencing staff resignation	71
5.4.3 Assessment of the correlation between factors	72
5.5 FACTORS THAT CAUSE MOVEMENT OUT OF RADIOGRAPHY	73
5.5.1 Assessment of factors that cause movement out of radiography	73
5.5.1.1 Significant agreement	73
5.5.1.2 Significant disagreement	74
5.6 FACILITATORS OF STAFF RETENTION	75
5.6.1 Assessment of the facilitators of staff retention	75
5.6.1.1 Significant agreement	75
5.6.1.2 Significant disagreement	77
5.6.2 Validity and reliability score for facilitators of staff retention	81
5.6.3 Assessment of the correlation between factors	82
5.7 STAFF RETENTION	83
5.7.1 Assessment of staff retention	83

5.7.2 Mann Whitney U Test	84
5.7.3 Chi-square test of the gender of the participants in the study	85
5.7.4 Spearman's correlation of the age and years of the participants	85
5.7.5 Chi-square test for radiographers that worked in a KZN private hospital	86
5.7.6 Chi-square test for radiographers that worked in private practice	86
5.7.7 Chi-squared test for participants that left a public hospital to work in the private sector	87
5.7.8 The participants' number of years worked in a KZN private hospital	88
5.7.9 Participants' number of years in private practice as a radiographer	88
5.7.10 Number of years of participants that left a public hospital to work in the private sector	89
5.7.11 Assessment of race, marital status, position and occupation	89
5.8 SUMMARY OF THE CHAPTER	91
CHAPTER 6: PRESENTATION OF RESULTS: PHASE 2	92
6.1 INTRODUCTION	92
6.2 SAMPLE REALISATION	92
6.3 DESCRIPTION DATA OF RESPONDENTS	93
6.4 CONCEPTUALISATION OF STAFF RETENTION BY RADIOGRAPHERS	95
6.4.1 Theme 1: Influence of working conditions on staff retention	96
6.4.1.1 Sub-theme 1: Increased workload and staff shortage	96
6.4.1.2 Sub-theme 2: Lack of support from management	98
6.4.1.3 Sub-theme 3: Lack of hygienic factors	100
6.4.1.4 Sub-theme 4: Stressful or long working hours	101
6.4.1.5 Sub-theme 5: Poor infrastructure	102
6.4.1.6 Sub-theme 6: Malfunctioning equipment	103
6.4.2 Theme 2: Government policies	104
6.4.2.1 Sub-theme 1: Occupational Specific Dispensation (OSD)	105
6.4.2.2 Sub-theme 2: Employment Equity Act (EEA)	105
6.4.3 Theme 3: Inadequate remuneration	106
6.4.3.1 Sub-theme 1: Poor or unfair remuneration	106

6.4.3.2 Sub-theme 2: Lack of benefits	108
6.4.3.3 Sub-theme 3: Lack of overtime remuneration	109
6.4.3.4 Sub-theme 4: Lack of recognition	109
6.4.4 Sub-theme 4: Career pathing	110
6.4.4.1 Sub-theme 1: Career growth	111
6.4.4.2 Sub-theme 2: Opportunities for promotion	111
6.5 SUMMARY OF THE CHAPTER	112
CHAPTER 7: INTEGRATION OF RESULTS FROM PHASE 1 AND PHASE 2	113
7.1 INTRODUCTION	113
7.2 INTEGRATION OF RESULTS	113
7.3 INFLUENCE OF WORKING CONDITIONS ON STAFF RETENTION	114
7.3.1 Workload and staff shortage	114
7.3.2 Lack of support from management	116
7.3.3 Lack of hygienic factors	117
7.3.4 Stressful or long working hours	118
7.3.5 Poor infrastructure	118
7.3.6 Malfunctioning equipment	119
7.4 GOVERNMENT POLICIES	121
7.4.1 Occupational Specific Dispensation (OSD)	121
7.4.2 Employment Equity Act (EEA)	123
7.5 INADEQUATE REMUNERATION	123
7.5.1 Poor or unfair remuneration	124
7.5.2 Lack of benefits	125
7.5.3 Lack of overtime remuneration	127
7.5.4 Lack of recognition	127
7.6 LACK OF CAREER PATHING	128
7.6.1 Career growth	128
7.6.2 Opportunities for promotion	129
7.7 SUMMARY OF THE CHAPTER	130

CHAPTER 8: DISCUSSION OF FINDINGS	131
8.1 INTRODUCTION	131
8.2 INFLUENCE OF WORKING CONDITIONS ON STAFF RETENTION	131
8.2.1 Workload and staff shortage	131
8.2.2 Lack of support from management	134
8.2.3 Lack of hygienic factors	135
8.2.4 Stressful or long working hours	136
8.2.5 Poor infrastructure	137
8.2.6 Malfunctioning equipment	138
8.3 GOVERNMENT POLICIES	139
8.3.1 Occupational Specific Dispensation (OSD)	139
8.3.2 Employment Equity Act (EEA)	141
8.4 INADEQUATE REMUNERATION	143
8.4.1 Poor or unfair remuneration	143
8.4.2 Lack of benefits	144
8.4.3 Lack of overtime remuneration	145
8.4.4 Lack of recognition	146
8.5 LACK OF CAREER PATHING	147
8.5.1 Career growth	147
8.5.2 Opportunities for promotion	148
8.6 SUMMARY OF THE CHAPTER	149
CHAPTER 9: A MODEL FOR THE STAFF RETENTION OF RADIOGRAPHERS	150
9.1 INTRODUCTION	150
9.2 PURPOSE OF THE MODEL	150
9.3 PROCESS OF MODEL DEVELOPMENT	150
9.3.1 Identifying and defining concepts	151
9.3.2 Identifying assumptions included in the model	153
9.3.3 Clarifying the context within which the model is placed	154
9.3.4 Designing relationship statements	154

9.4 STRUCTURAL DESCRIPTION OF THE MODEL	155
9.4.1 Factors that increase staff retention	155
9.4.2 Factors that decrease intention to leave	157
9.5 SUMMARY OF THE CHAPTER	159
CHAPTER 10: LIMITATIONS, CONCLUSION AND RECOMMENDATIONS	160
10.1 INTRODUCTION	160
10.2 LIMITATIONS OF THE STUDY	160
10.3 CONCLUSIONS FROM THE STUDY	161
10.4 RECOMMENDATIONS	163
10.4.1 Retention of radiographers	163
10.4.2 Policy review	163
10.4.3 Management	164
10.5 Future research	164
REFERENCES	166
APPENDICES	189

List of tables

TABLE	Page
Table 1.1: Structure of the thesis chapters	6
Table 2.1: Radiography posts in KZN 2013-2018	15
Table 4:1: Research paradigm	39
Table 4:2: Target population	40
Table 4.3: Sample size	42
Table 4.4: Statistical tests	47
Table 5.1: Objectives illustrated with appropriate statistical analysis method	56
Table 5.2: Factors that influence staff retention	69
Table 5.3: KMO and Bartlett's test	71
Table 5.4: Correlation between factors	74
Table 5.5 Factors that cause movement out of radiography	68
Table 5.6: Facilitators to staff retention	79
Table 5.7 KMO and Bartlett's test	81
Table 5.8: Correlation between factors	82
Table 5.9: Staff retention	84
Table 5.10: Bivariate analysis by gender	84
Table 5.11: Mann Whitney U Test by gender	84
Table 5.12: Pearson Chi-square test for gender	85
Table 5.13: Spearman's correlation	85
Table 5.14: Participants worked in a KZN private hospital as a radiographer	86
Table 5.15: Pearson Chi-square test	86
Table 5.16: Participants that left a public hospital to work in the private sector	87
Table 5.17: Pearson Chi-square test for radiographers that worked in private practice	87
Table 5.18: Pearson Chi-square test	87
Table 5.19: The participants number of years worked in a KZN private hospital	89

Table 5:20: Pearson Chi-square test for the number of years of participants that worked in a KZN private hospital	88
Table 5.21: Number of years participants worked in private practice	88
Table 5.22: Pearson Chi-square test for participant's number of years worked in private practice	89
Table 5.23: Number of years of participants that left a public hospital to work in the private sector	89
Table 5.24: Fisher's exact test for years qualified for participants that left a public hospital	89
Table 5.25: Assessment of race	90
Table 5.26: Pearson Chi-square test for assessment of race	90
Table 5.27: Pearson Chi-square test for assessment of position	90
Table 5.28: Pearson Chi-square test for assessment of occupation	91
Table 6.1: Demographic data of the interviewed participants	94
Table 6.2: Table of categories, themes and sub-themes	95

List of Figures

FIGURES	Page
Figure 3.1: Herzberg's motivation-hygiene theory	28
Figure 4.1: Explanatory sequential mixed methods	35
Figure 5.1: The representation of gender	58
Figure 5.2: Representation of age	59
Figure 5.3: The distribution of race	60
Figure 5.4: Marital status	60
Figure 5.5: Experience of radiographers in years	61
Figure 5.6: The position occupied by radiographers	62
Figure 5.7: The representation of radiographers per occupation	63
Figure 5.8: The representation of radiographers in tertiary hospitals in the study	64
Figure 5.9: Response rate of radiographers	65
Figure 5.10: Factors influencing staff resignation: Mean responses	70
Figure 5.11: Correlation between factors: Mean responses	72
Figure 5.12: Factors that influence staff retention: Mean responses	75
Figure 5.13: Facilitators to staff retention: Mean responses	80
Figure 5.14: Correlation between factors: Mean responses	83
Figure 9.1: A model for staff retention amongst radiographers	158

List of appendices

Appendix	Page
Appendix 1: University ethics clearance	190
Appendix 2a: Letter of request for permission to the eThekwini District Manager	192
Appendix 2b: Approval letter from the eThekwini District Manager	193
Appendix 3a: Letter of request for permission to the uMgungundlovu District Manager	194
Appendix 3b: Approval letter from the uMgungundlovu District Manager	195
Appendix 4a: Letter of request for permission to the KZN Department of Health	196
Appendix 4b: Approval letter from the KZN Department of Health	197
Appendix 5a: Letter of request for permission to the King Cetshwayo District Manager	198
Appendix 5b: Approval letter from the King Cetshwayo District Manager	199
Appendix 6a: Letter of request for permission to the Hospital Manager of Addington Hospital	200
Appendix 6b: Approval letter from the Hospital Manager of Addington Hospital	201
Appendix 6c: Letter of request for permission to the Hospital Manager of King Edward VIII Hospital	202
Appendix 6d: Approval letter from the Hospital Manager of King Edward VIII Hospital	203
Appendix 6e: Letter of request for permission to the Hospital Manager of Inkosi Albert Luthuli Central Hospital	204
Appendix 6f: Approval letter from the Hospital Manager of Inkosi Albert Luthuli Central Hospital	205
Appendix 6g: Letter of request for permission to the Hospital Manager of Greys Hospital	206
Appendix 6h: Approval letter from the Hospital Manager of Greys Hospital	207
Appendix 6i: Letter of request for permission to the Hospital Manager of Ngwelezana Hospital	208
Appendix 6j: Approval letter from the Hospital Manager of Ngwelezana Hospital	209
Appendix 7a: Letter of information for the survey participants	210
Appendix 7b: Letter of information for the interview participants	212

Appendix 8: Consent	214
Appendix 9a: Questionnaire	215
Appendix 9b: Permission to use questionnaire	220
Appendix 10a: Demographic data of the interview participants	221
Appendix 10b: Interview guide	223
Appendix 11: Sample of the interview transcript	224
Appendix 12: Certificate of editing from the professional editor	228
Appendix 13: Turnitin report	229

Glossary of terms

Emigration: It is the act of leaving one's home country or place of residence to live in another country (Online Business Dictionary Definition 2019a: 1).

Employee retention: It is the process employed by an organisation to maintain a working environment that supports current employees in the organisation, utilising various retention policies to address the needs of employees (Online Business Dictionary Definition 2019b: 1).

Job satisfaction: Contentment or the lack thereof that arises out of the interplay of an employee's positive or negative feelings towards his or her work (Online Business Dictionary Definition 2019c: 1).

Occupational Specific Dispensation: It is a revised salary structure unique to each identified occupation in the public service (South African Government 2007: 1).

Radiation: A physical agent used to destroy cancer cells (Baskar *et al*. 2012: 194).

List of acronyms

Acronym	Full word/sentence
AIDS	Acquired immune deficiency syndrome
CPD	Continuous Professional Development
CT	Computed Tomography
EEA	Employment Equity Act
HCWs	Health Care Workers
HIV	Human Immunodeficiency Virus
HR	Human Resources
HRH	Human Resources for Health
ITL	Intention to leave
KZN	KwaZulu-Natal
KZN APP	KwaZulu-Natal Annual Performance Plan
MRI	Magnetic Resonance Imaging
NHI	National Health Insurance
PHC	Primary Health Care
OSD	Occupational Specific Dispensation
SORSA	Society of Radiographers of South African
SPSS	Statistical Package for Social Science
TB	Tuberculosis
UK	United Kingdom
US	Ultra-sonographer
USA	United States of America
WHO	World Health Organization
WHO	World Health Organization

CHAPTER 1: ORIENTATION TO THE STUDY

1.1 INTRODUCTION AND BACKGROUND TO THE STUDY

The existence of a global shortage of health professionals may be attributed to emigration (Smith 2008: 7) and changing healthcare requirements (Thambura and Amusa: 2016: 98). Radiographers are no exception. Moreover, radiography is a challenging and rapidly advancing profession, resulting in a high global demand for radiographers (Australian Department of Human Service 2005: 16). According to Mbembe, Gagnon and Hamelin-Brabant (2016: 565), the shortage of radiographers in rural and remote areas is a concern in both developed and developing countries. The Society of Radiographers of South Africa (SORSA), in South Africa, many radiographers leave the public health sector to find employment in the private health sector or emigrate to work in other countries (SORSA 2008: 2).

Radiographers are medical personnel who perform diagnostic imaging examinations and administer specialised radiation treatment. These professionals are educated in anatomy, patient positioning, examination techniques, equipment protocols, radiation safety and patient care. Diagnostic radiographers practice general radiography by using x-rays to produce images of patients' anatomy or they specialise in imaging techniques such as computed tomography (CT) or Magnetic Resonance Imaging (MRI) (American Society of Radiologic Technologists 2019: 1). Mammographers produce diagnostic images of breast tissue using special x-ray equipment (American Society of Radiologic Technologists 2019: 1). Nuclear medicine radiographers administer trace amounts of radiopharmaceuticals to patients and use special scanners to detect gamma rays emitted by the pharmaceuticals and create images of the examination area (American Society of Radiologic Technologists 2019: 1). Sonographers use sound waves to obtain images of organs and tissues in the body. Radiotherapists use linear accelerators to administer radiation doses to patients to treat cancer or other diseases (American Society of Radiologic Technologists 2019: 1).

Radiographers are registered and regulated professionals with the Health Professionals Council of South Africa (HPCSA) (Society of Radiographers UK 2019: 1). The current shortage of radiographers increases the burden of the public sector, which leads in turn to the shortage of skills and subsequent loss of capacity within the health system to deliver adequate healthcare (George,

Atujuna and Gow 2013: 2). The loss of radiographers places a strain on the remaining radiographers by increasing their workload due to the shortage of radiographers to offer the same services (George, Atuhuna and Gow 2013: 2).

According to the World Health Organisation (WHO) (2010a: 24), organisations should strive to retain knowledgeable, skilled and motivated staff to be responsible to organise, improve effectiveness and increase the productivity and quality of care of health services. Furthermore, staff employed in public hospitals should receive professional and personal support through the provision of a safe and supportive working environment; the implementation of outreach support activities from better served areas; the development and support of career development programmes; supporting the development of professional networks; and adopting public health recognition measures with awards and titles to be rewarded at a local, national and international level (WHO 2010a: 36).

In line with the WHO's mandate, the Department of Health has put the requisite policies in place (Portoghese *et al*. 2014: 153). The policy by the Department of Health on scarce skills was discontinued when the Occupation-Specific Dispensation (OSD) was implemented to create new salary structures for radiographers as a strategy to attract radiographers to the public health sector (SORSA 2008: 2). The OSD was planned to be a main strategy that was developed by the government to attract radiographers to public hospitals. However, the OSD has not sufficiently assisted in the retention of radiographers and still needs to be investigated (SORSA 2008: 2).

Additionally, South African Labour Law specifies that government healthcare workers (HCWs) must retire at age 65, but with an alternative early retirement opportunity accepted at between the ages of 55 to 60 years (Du Toit 2019: 1). Although radiographers can remain in their jobs till retirement age, many radiographers, especially the younger ones, feel the desire to leave their profession, move on and transition between jobs (Flinkman, Isopahkala-Bouret and Salantera 2013: 20).

Despite the suggestions by the WHO and retention policies by the Department of Health, the KwaZulu-Natal (KZN) Annual Performance Plan (APP) (2016b: 30) reported that the annual KZN radiography vacancy rate for 2016-2017 was 11%, with a turnover rate of 15%. The Department of Health and KZN Annual reports (2016a: 212) and statistics from 2015/2016 and showed that 704 radiography posts were approved and 616 posts were filled, with a vacancy rate of 12.5%. In 2016/2017, 721 radiography posts were approved and 633 posts were filled, with a vacancy rate of 12.21%. However, in 2016/2017, more posts became available,

yet the vacancy rate increased by 0.29% indicating an increase in resignations in KZN public hospitals.

A study conducted by Thambura (2016: 88) on 11 districts in KZN to investigate the factors impacting the retention of radiographers demonstrated the statistics collected from the Department of Health KZN in 2013 AND indicated a decrease in radiographers over the years 2008 to 2012. The findings of the study indicated that radiographers leave their jobs due to workload and emigration within 10 years of graduating. Radiographers leave public institutions for private practice as they seek lower workloads, better facilities and better financial rewards. There is therefore, a need to retain radiographers in this province.

The high turnover rate of staff influences service delivery and staff resignations affect the organisation by causing financial strain due to the higher cost of recruiting and training new staff (Shaw *et al*. 2005: 594). Radiographers need to be retained in order to enhance the productivity and service delivery of public hospitals. Retention will save costs and reduce continuous recruitment (Pillay 2017: 3). The current research focused on radiographers from all four disciplines that are employed in tertiary public hospitals in the province of KZN.

1.2 PROBLEM STATEMENT

Most organisations are confronted by challenges to formulate effective strategies to retain employees (Chiboiwa, Samuel and Chipunza 2010: 3). Luse (2013: 384) argues that management from the organisations should be able to identify staffing needs, recruit new talented employees and develop effective retention tools to increase service delivery. Naicker *et al.* (2009: 60) highlighted that there is a shortage of healthcare workers in Africa, including South Africa, which hinders the healthcare sector from providing effective service delivery. Labonte *et al.* (2015: 92) state that in the past, South African skilled professionals emigrated to seek better job opportunities creating a harmful employee shortage. This led to the creation of a skills gap and less experienced professionals had to take on higher positions in the hospitals (Labonte *et al.* 2015: 92). Since then, a global demand for HCWs decreased and domestic policies such as the new skilled health worker cadre and OSD policies were implemented. This resulted in the retention of employees to an extent but was still insufficient to meet the demands of service delivery (SORSA 2008: 2).

The KZN Department of Health's Annual Reports indicate that there is a challenge in relation to retaining radiographers in KZN public hospitals (KZN Annual Reports 2016a: 212). The staff shortages in radiography disciplines have

detrimental consequences such as negative impacts on service delivery, compromised quality of care to patients and long waiting lists (Gam 2015: 9). In South Africa, research was conducted in KZN and Gauteng to review the factors impacting the retention of radiographers, job satisfaction and the lived experience of radiographers. However, there has not been a study conducted with the development of a model to prevent the retention of radiographers in KZN public hospitals. Therefore, the researcher found this gap in the existing body of knowledge and embarked on the current study.

1.3 AIM OF THE STUDY

The main aim of the study was to explore the factors influencing staff retention in radiographers employed by tertiary hospitals in the KZN province in order to develop a model to improve staff retention.

1.4 OBJECTIVES OF THE STUDY

The objectives of the study were to:

- Analyse the retention of radiography staff employed by tertiary hospitals in KZN;
- Identify the factors that influence the resignation of radiographers employed by tertiary hospitals;
- Correlate the factors that influence the resignation of radiographers employed by tertiary hospitals;
- Explore the factors that are conductive to staff retention; and
- Develop a model for the staff retention of radiographers employed by tertiary hospitals.

1.5 RESEARCH QUESTIONS

The study was guided by the following questions:

1.5.1 Main research question

What factors influence the staff retention of radiographers employed by public tertiary hospitals in KZN?

1.5.2 Sub-questions

a) What are the barriers to the retention of radiography staff at KZN's tertiary hospitals?
b) What factors increased the staff retention of radiographers employed in KZN's tertiary hospitals?

c) What incentives improved the staff retention of radiographers employed by tertiary hospitals in KZN?
d) How can radiographers employed in tertiary hospitals be retained?

1.6 SIGNIFICANCE OF THE STUDY

Retaining skilled health professionals, including radiographers, is of great significance as they provide skilled services and complement other health professionals and medical services. Radiographers are trained to utilise specialised equipment as a diagnostic tool to detect problems and diseases, monitor treatment and predict the outcome. Other health professionals are dependent on radiographers to assist with the maintenance and management of their patients (European Society of Radiology 2010: 2). Therefore, employee retention should meet the population needs in order to enhance service delivery in any particular profession. As the population increases, Jones (2003: 2) suggests that employee retention strategies and recruitment should be adapted to meet the high demand of radiography skills.

This study can develop and propose a model to improve staff retention and ultimately mitigate the shortage of radiographers in the KZN public healthcare sector. This will benefit patients who have a right to access any radiography discipline of their choice in an attempt to obtain the best medical assistance. Hence, patients will be provided with the best quality of care and service delivery, and not be affected by staff shortages. The results of the study can assist in establishing strategies to retain radiographers, as well as in identifying the problems that cause resignations, while eliminating these problems. The outcome of the study offers a new strategy to the current staff retention strategies undertaken at tertiary hospitals in the eThekwini, King Cetshwayo and uMgungundlovu districts. Therefore, the current study was predominantly significant in improving the retention of radiographers over time and attracting more radiography students to the profession. The outcome of the study is relevant to the Department of Health in implementing strategies to retain radiographers, particularly as the government health sector is strategizing for the implementation of the National Health Insurance initiative to improve the current public health service delivery.

1.7 STRUCTURE OF THESIS CHAPTERS

This thesis is presented in eight chapters presented as outlined in Table 1.1 below.

Table 1.1: Structure of the chapters

Chapter	Title	Content Description
1	Orientation to the study	This chapter presents the background to the study, problem statement, the aim of the study, research questions and objectives of the study.
2	Literature review	This chapter presents a review of literature relevant to the study.
3	Theoretical framework	This chapter provides and explains the theoretical framework for the study.
4	Research design and methodology	This chapter presents the research design and methods of data collection and analysis.
5	Presentation of results: Phase 1	This chapter presents the findings of the study that emerged after the process of data analysis from Phase 1.
6	Presentation of results: Phase 2	This chapter presents the findings of the study that emerged after the process of data analysis from Phase 2.
7	Integration of results from Phase 1 and Phase 2	This chapter presents the integration of results from Phase 1 and Phase 2.
8	Discussion of findings	This chapter presents literature that either supports or refutes the findings as discussed in this chapter.
9	A model for the staff retention of radiographers	This chapter presents a model for the staff retention of radiographers.
10	Limitations, conclusions and Recommendations	This chapter concludes the research and presents recommendations.

1.8 SUMMARY OF THE CHAPTER

This chapter discussed the background to the study, the problem of staff retention of radiographers and identified the gap that the current study would fill. It then described the aim of the study, its objectives, significance and provided the structure of the study. The next chapter provides the literature review pertaining to staff retention in order to demonstrate the gap in literature.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

The preceding chapter provided the introduction and background to the study. The current chapter reviews literature pertaining to staff retention. Polit and Beck (2010: 95) describe a literature review as a process whereby the researcher evaluates the existing knowledge and background information about the topic under research in order provide the overall context and to discover the gaps for further knowledge in the study. The literature review is an academic paper endowed with current knowledge, with important findings to establish a theoretical framework and emphasise the methodology (Aveyard 2010: 7).

This chapter focused on the review of literature to assess the shortage and retention of radiographers globally, on the African continent, in South Africa and particularly in KZN. The literature was used as a guide to highlight the findings from other studies, as well as to identify the gap and how it needed to be filled to ensure the retention of radiographers in public hospitals in KZN. The chapter presents theories, terminology, methods and variables on the phenomenon under study.

2.2 PROCESS OF SOURCING RELEVANT LITERATURE

“A literature review is a process that involves researching, reading, understanding and forming conclusions about published literature on a specific topic” (Burns and Grove 2003: 399). The literature presented in this chapter was sourced from different search engines, namely Google Scholar and the DUT online library. International electronic databases were used, including PubMed and Science Direct, without any time limitation. The literature was identified by using key words such as staff retention in health care, radiography staff retention, staff shortage, workload, quality of care, satisfied and dissatisfied employees, service delivery in healthcare and job

satisfaction. Literature was also sourced from various journal articles found on Google Scholar, such as the South African Society of Radiographers and the Society of Radiographers. UK. Literature on staff retention as discussed by the World Health Organisation (WHO) was also sourced from Google Scholar. The research design and methods literature were sourced from books dealing with different research methods.

2.3 A GLOBAL CONTEXT OF STAFF RETENTION IN RADIOGRAPHY IN THE PUBLIC HEALTHCARE SECTOR

Employee turnover in a healthcare is fundamental to the success of the organisation and the quality of care it delivers (Collins and Collins 2004: 52). There is a projected demand for healthcare workers and organisations to develop more creative strategies to ensure adequate staffing levels for the future (Casady and Dowd 2002: 18). Lehmann *et al*. (2015: 2) emphasise that Radiographers are amongst the leading professionals experiencing a staffing crisis, which has an impact on the success of the organisation. The findings of the study in Switzerland found that in two-thirds of radiographers being employed for five or more years at the same workplace, half intend to stay for more than 10 years, based on their job satisfaction (Lehmann *et al.* 2015: 182). Ohagwu *et al*. (2011: 30) identify an inability to retain employees in the healthcare sector, with the commensurate shortage of radiographers being a global concern.

There is a crisis due to the shortage of skilled healthcare professionals in both developed and developing countries, according to the migration policy (Stewart, Clark and Clark 2007: 1). According to an Australian Report in 2002 (citied in Australian Department of Human Resources 2005: 58), there is a shortage of professionals in Australia in the diagnostic and ultrasound disciplines. Therefore, in Australia, a Skills Mix Model was introduced, which was also implemented by the UK. This model provided radiographers with opportunities to develop their roles and achieve their potential and contribute to a positive impact towards the retention of radiographers, with good

influence in gaining their confidence, competence and future sustainability (Field and Snaith 2013: 12).

In Australia and New Zealand, radiographers had high reports of occupational burnout due to demographic and work-related factors (Schneider 2017: 304). This affected their psychological and physical well-being and had an impact on service delivery to patients. According to Schneider (2017: 305),emotional exhaustion and de-personalisation affected all workers and they were unable to continue working There are not enough radiographers entering the profession, but rather too many who are leaving for retirement, increased salaries, less stressful jobs and career advancements, creating a concern about employee retention (Gerson 2002: 19). Therefore, in any healthcare organisation, staffing is only successful as far as their ability to engage and retain the best healthcare professionals goes. The organisation needs to be vigilant to the needs of their employee's and develop talent carefully in order to keep employees engaged and committed to their jobs (Gerson 2002: 19).

Australia faced a key challenge in retaining healthcare professionals to meet the increasing demand for healthcare, such as the ageing population living longer with difficult problems, rising costs of technology and treatment with increasing customer expectations (Health Workforce Australia 2014: 7). Australia encountered an increase in competition for its future workforce supply, which resulted in fewer people being able to enter the labour force. Migration has increased, assisting the supply concern. A strategy was suggested to change the skill mix or roles, redesign work, increase the number of males working in the health profession, increase salaries, provide better working conditions and improve the status of healthcare career gaps (Health Workforce Australia 2014: 20). These factors have been found to influence the attrition and emigration of healthcare workers who are able to pursue available opportunities in their own countries (Paradath *et al.* 2003: 16). The identification of potential workforce gaps provides the government, professional bodies, employers, regulatory bodies, higher education and

training providers the opportunity to develop and implement plans (Health Workforce Australia 2014: 20).

In Europe, there is a lack of visibility in the development of radiotherapy radiographers as a profession, leading to a shortage of radiographers (Nightingale, McNamara and Posnett 2019: 1). Moreover, Nightingale, McNamara and Posnett (2019: 2) state that there is evidence of vacant posts but no staff to fill in the posts and the employed staff are not able to cope with an extension of their work hours. The authors iterate that this critical shortage affects the training of students and patient care and causes increased waiting times. Therefore, the current training model has to be re-done to recruit radiographers, retain students and assist their transition to the workforce in order for the workforce to grow (Nightingale, McNamara and Posnett 2019: 2).

The WHO (2010a: 25) emphasises that the capability of a country to meet its health goals is dependent on the knowledge, skills, motivation and deployment of the individuals responsible for organising and delivering healthcare services. In many countries, there is an absence of human resources to provide vital health interventions for many reasons, including limited production ability; the migration of health professionals within and with other countries; a poor mix of skills; and an imbalance of demographics. As a result, there is a need for comprehensive, reliable and timely information on human resources for health that includes numbers, demographics and skills ,and that provides services and factors that could influence recruitment and retention (WHO 2010a: 25). Consequently, there is a need to view international efforts to improve the education and training of healthcare professionals in order to retain them (WHO 2010a: 25).

In the United Kingdom (UK), a study showed that factors impacting retention and strategies to retain radiographers have been considered by linking student retention factors to effective marketing and recruitment; selecting appropriate candidates for the profession; student first-year experience and course expectations; effective student support; clinical placement issues and

relationships; organisational and course issues. Retention goals and guidelines were provided for each factor, with evidence from literature (The Society of Radiographers UK 2019: 6). However, in South Africa there is limited research on the retention of radiographers and no study has been done on how to retain radiographers in KZN (Thambura 2016: 49). From the statistics depicting the vacancy rate, it is evident that there is a need to explore the retention problems in KZN public hospitals. Therefore, the rationale of the current study is to focus on the analysis of the retention of radiographers by understanding their significance in public health, exploring and correlating the factors that are conducive to staff retention.

2.4 CONTEXT IN AFRICA ON THE STAFF RETENTION OF RADIOGRAPHERS IN THE PUBLIC HEALTHCARE SECTOR

There is a shortage of trained and skilled radiographers in African countries, which poses many challenges, resulting in these countries being unable to retain these professionals (Mbembe *et al.* 2016: 565). The reasons are ascribed to opportunities for professional advancement, professional support networks, managerial support, professional autonomy, maintenance of clinical skill, resource availability, hospital management and hospital infrastructure, social or environmental factors, general living conditions and financial incentives to motivate staff to remain in their jobs (Mbembe *et al.* 2016: 565).

The WHO states that the international attrition of healthcare professionals in African countries expatriation rate was above 50 per cent in Sierra Leone, Tanzania, Mozambique, Angola and Liberia. This led to shortages of health professionals in these respective countries, leaving the hospitals with lesser staff to attend to patients (WHO 2010b: 1). Nigeria had only 1058 radiographers serving a high population of 150 million people. It was evident that the radiography profession was unable to attract young professionals to the career due to the poor professional image of the radiographer (Ohagwu *et al.* 2011: 31), created from the radiographers' lifestyles, lack of self-esteem and poor dress code (Ohagwu *et al*. 2011: 31). In Botswana, a perceived

shortage of radiographers was compounded by an increase in the need for health services due to an unbalanced distribution of staff, migration and too few trained staff (Nkomazana *et al*. 2015: 1). Radiographers were perceived to be emigrating due to personal or family factors, ineffective healthcare, human resource management, low salaries and inadequate incentives for rural and remote services (Nkomazana *et al*. 2015: 1).

The Ugandan healthcare sector faced a shortage of radiographers in the country and the Ugandan government intervened with a change in salaries and allowances, but the status quo remained (Shemdoe *et al.* 2016: 1). This was due to radiographers relocating and leaving their posts in rural or remote areas. Moreover, in the United Republic of Tanzania, there is a problem with the recruitment and retention of staff (Shemdoe *et al*. 2016: 1). This has led to additional costs to recruit and train new staff and pay additional overtime costs to cover the staff shortage.

There is still a challenge in training interventions in rural radiology in Sub-Saharan Africa due to the lack of human resources and a shortage of skilled radiographers in the rural areas (Kawooya 2012: 37). Although countries in Sub-Saharan Africa, including Uganda, Kenya, Tanzania, Rwanda, Zambia, Ghana, Malawi and Sudan, have had the implementation of favourable national policies involving imaging to increase the utilisation of facility based rural health services and to impact management decisions, they still encounter challenges in training interventions (Kawooya 2012: 37).

2.5 CONTEXT IN SOUTH AFRICA ON THE STAFF RETENTION OF RADIOGRAPHERS IN THE PUBLIC HEALTHCARE SECTOR

According to Human Resources for Health South Africa (HRHSA), many issues affect the attrition rate of health professionals from South Africa, which is estimated at an annual rate of 25%. Factors that affect migration are HIV and AIDS, working conditions, workload in the public sector, workplace security, relationships with management in the public sector, morale in the

workplace, the risk of contracting TB and personal safety (Department of Health 2011: 24). The working environment and management relationships are critical factors that affect the reasons that health professionals leave. Therefore, the high-level attrition of health professionals from South Africa creates a shortage of health professionals in the country, despite the number being trained (Department of Health 2011: 24).

The legislative mandate governed by the South African Health Act explains that new categories are to be created for HCWs in order to ensure sufficient skills, competencies and expertise; identify shortages and find ways to fill them through local and foreign recruitment; and prescribe strategies for retention (Department of Health 2011: 19). There appears be a need to increase the availability of funded public posts for all health professionals, as well as the expansion in output of HCWs from training institutions to be managed as it does not exceed absorptive capacity and affordability (Department of Health 2011: 23). Proactive planning is necessary in order to have sufficient funding for clinical posts to grow the health profession. The recruitment management process needs to improve on the mass advertisement of provincial vacancies, professional websites and information on post location (Department of Health 2011: 23).

The Health Professions Council of South Africa (HPCSA) indicates that there are 7838 individuals registered as radiographers in South Africa, which includes the private and public sectors. The Annual Performance Plan (2016b: 31) indicates 633 radiographers employed in KZN's public hospitals. However, an estimated 210 radiographers are employed in the KZN public tertiary hospitals selected for the study. In chapter 4, Table 1 outlines the target population of radiographers and management and Table 2 outlines the sample size calculated by the statistician for this study.

The movement of HCWs, both within and outside of South Africa, has been known to be a major problem for healthcare (George *et al.* 2013: 1). In 2003, 5880 UK work permits were issued to South African health professionals due

to the shortage of health professionals in the UK (Naicker *et al*. 2009: 62). The Human Resources Division of the South African Department of Health reported that in the 2007/2008 period, only 30 per cent of South African healthcare professionals were employed in the health sector (South Africa 2009: 7). This resulted in a staff shortage crisis in South Africa.

However, in recent years, the innovations of domestic policies such as newly employed health worker cadres and the Occupation-Specific Dispensation (OSD) have assisted in reducing the shortage to some extent. Regardless of the evidence that skilled South African healthcare workers are not as predominant as peaked in the 1990s and 2000s, the intention of the HCWs remains very common due to dissatisfaction with the economic and political situation (Labonte *et al*. 2015: 92). According to the Society of Radiographers of South Africa (2009: 1), South African radiographers are leaving the public sector for the private sector, whilst others are emigrating. Statistics released by the HRHSA in 2012 presented a higher percentage of South African radiographers working in the private than the public sector (Department of Health 2011: 23). Hence retaining radiographers in the public sector would improve the service to patients. Furthermore, the public hospitals must not lag due to insufficient staff.

The KZN Department of Health's Annual Performance Plans from 2010/2011 to 2018/2019 have indicated a steady increase of the healthcare professionals in KZN. However, the vacancy percentage rate has increased in KZN public hospitals (KZN APP 2010/2011 and KZN APP 2018/2019), resulting in a critical shortage of radiographers in the KZN province. Table 2.1 below is an indication of an increase in vacancy rates of radiographers from 2013/2014 to 2017/2018. The steady increase in vacant posts from 2013 to 2018 and a 3.49% increase in vacancy rates from 2016/2017 to 2017/2018 highlight the need for radiographers. The increase is an indication that the shortage of radiographers in KZN has not been adequately addressed.

Table 2.1: Radiography posts in KZN 2013-2018

Year	No. of posts	No. of posts filled	No. of posts vacant	Vacancy rates
2013/2014	652	565	91	13.3%
2014/2015	676	590	86	12.7%
2015/2016	704	616	88	12.5%
2016/2017	721	633	88	12.21%
2017/2018	719	606	113	15.7%

Source: KZN Department of Health website (accessed 2019)

The South African health system had a poor performance rating when compared to countries of similar income level, exacerbated by the country's quantum of spending more, especially in public hospitals (Rispel 2016: 19). The factors identified were tolerance of ineptitude; leadership; management; governance failures; and a lack of fully functional district health systems (being primary health care PHC) and the inability or failure to deal with health workforce crises. Rispel (2016: 19) claims that these factors have a negative impact on patients, workers and policy implementation, whilst unsupportive management, staff shortages and health system deficiencies made it unfavourable to uphold professional codes of ethics to provide good quality care.

Public hospitals play a critical role in delivering healthcare to the population. Strong allegations have been made by the media regarding negative issues specifically relating to healthcare service delivery at public hospitals in KZN (Govender, Proches and Kader 2018: 158). Allegations of fraud and corruption; a lack of modern medical equipment and medical supplies; critical staff shortages; high mortality and morbidity rates; poor management; long patient queues; poor infrastructure; and the high rate of litigation due to clinical negligence reflect that the healthcare system in South Africa is in need of urgent transformation, especially affecting the radiography disciplines (Govender, Proches and Kader 2018: 158).

Although there have been implemented mandates by the Department of Health, issues around service delivery due to the retention of radiographers remain. A study was conducted on radiographers in Gauteng South Africa in terms of retention and attraction strategies as elements that add to a radiographer's job fulfilment (Khoza 2018: 26). According to the study, other elements that create a great impact, in addition to remuneration, are professional support, working conditions and career development structures. After students complete their studies and community service, South African radiographers choose to work in the public or private sectors. From the KZN Annual Report (2016a: 212), it was evident that more radiographers want to work in the private sector, leaving limited employees in the public sector. This can affect service delivery due to the increased workload of radiographers employed by public institutions (Khoza 2018: 26).

A research study was conducted on the lived experience of radiographers in Gauteng, the aim of which was to explore the experiences of radiographers in Gauteng and address the retention of diagnostic radiographers. Data was collected through focus group interviews (Britton, Pieterse and Lawrence 2017: 28). The study concluded that radiographers were committed to providing excellent patient care and they also valued positive interpersonal relationships with their co-workers. The participants believed that due to a lack of professional recognition, the radiographic profession was overwhelmed by stagnation. The radiographers experienced poor salary and poor student behaviour. However, they were willing to work towards creating a positive self-image and introducing more dependence in the profession (Britton *et al.* 2017: 28). The literature findings have shown the same pattern of the retention of radiographers in all countries, be it globally, in Africa or within South Africa. There were a limited number of studies done on the retention of radiographers in South Africa, especially in KZN.

2.6 FACTORS AFFECTING THE RETENTION OF RADIOGRAPHERS IN THE PUBLIC HEALTHCARE SECTOR

Many studies have scrutinised the factors that influence the retention on healthcare workers (Michael 2008: 1; Huber 2010: 596 and Liu *et al.* 2016: 67). Klaas (2007: 3) claims that the various factors contributing to the staff retention of radiographers connects to Herzberg's motivation-hygiene theory. These include demographic factors such as an aging workforce, an unfavourable working environment, recruitment policies and challenges in the organisation. However, retaining a skilled workforce is significant in order for a health sector to function adequately and improve their service outcomes, as they have increased experience, knowledge, skills in providing continuity of service and care (Humphreys and Wakeman 2009: 1). Therefore, a well-functioning department has the transparency of well-motivated staff. Motivation and retention are a concern for healthcare staff as these staff are open to push factors such as pay and working conditions and pull factors such as satisfaction and economic forecasts (Mayende and Musenze 2018: 6). There are very few trained HCWs in remote areas due to the lack of infrastructure and opportunities for staff and families, poor living conditions, lack of safety and no continuous professional development, which is significant to retention (Mayende and Musenze 2018: 6). The factors that affect the retention of radiographers will be discussed in the next sub-sections.

2.6.1 Changing demographic nature of the radiography workforce

Retention in radiography is imperative as the profession affects service delivery to patients and the care they receive (Britton *et al.* 2017: 1). Demographic change in western societies is one of the most prominent changes that shape work and organisations. Age and gender are also pivotal demographics. There has also been an increase in well-educated women in the workforce, especially in male dominated jobs (Dormann, Brod and Engler 2017: 57).

In researched literature, demographic factors such as age, gender, occupation, education, health status and income levels are found to be related to retention and turnover intentions (Liu *et al*. 2016: 67 and Furnham *et al*. 2009: 1). These factors are known to have an impact on employee retention, turnover overtime and employee retention strategies. Furnham *et al.* (2009: 1) posit that researchers in previous studies have found that demographic factors are used to explore job satisfaction and job attitudes, which are the leading predictors of turnover intentions.

According to studies done on retention, younger HCWs have a lower level of job fulfilment and older healthcare workers above 40 years of age have high levels of job fulfilment (Blaauw *et al*. 2013: 128 and Griffeth *et al*. 2000: 463). Education or qualification has a positive effect on turnover, and it is found that the more educated the staff are, the more likely they are to resign. The relation between pay and retention is associated with larger salaries and lower rates of attrition (Kelly 2004: 196).

2.6.2 Working environment

Many retention factors, which include unpredictable schedules, overtime, high workloads and a lack of flexibility in the workplace, have an effect on low employee engagement in radiography (Vincent 2013: 1). It was imperative for radiographers to work in an environment that was secure with the necessary physical infrastructure and resources to perform their tasks (Sarode and Shirsath 2014: 358).

2.6.3 Resources and infrastructure

It is evident that globally and locally, healthcare workers work in horrendous environments in public hospitals (Sarode and Shirsath 2014: 358; Manyisa and van Aswegen 2016: 29). Sarode and Shirsath (2014: 358) describe these facilities as offering inadequate equipment; being over-populated with very ill patients; and employees having to work with poor working equipment that needs maintenance or to be replaced. The working environment and

conditions are imperative to retention, productivity and job satisfaction. Sarode and Shirsath (2014: 358) emphasise that the lack of resources and poor-quality infrastructure impact healthcare worker retention tasks.

Insufficient amenities and equipment influence the service delivery and quality of patient care, leaving the public hospitals undesirable to work in. This was due to the raising costs of health at private hospitals and the ever-increasing population, with many individuals going through poverty and associated diseases, which have raised the need for public hospitals. The shortage of appropriate resources to perform daily tasks adequately had a great impact on staff retention, especially of radiographers. The remaining staff had to carry the workload and experienced exhaustion and burnout (Manyisa and van Aswegen 2016: 29).

2.6.4 Stress and burnout

Radiographers are affected by work stress, burnout, job satisfaction and poor general health, both physically and mentally. These variables affect work productivity and the quality of patient care. Poor supervision, conflict with colleagues and patients, increased job demands and overtime are related to burnout (Khamisa *et al.* 2015: 652). The Maslach Burnout Model suggests that environmental and situational stressors relate to work stress, emotional exhaustion, divesting and a lack of accomplishment that translates to poor staff retention (Khamisa *et al*. 2015: 652).

The WHO dictates that healthy workplaces allow the collaboration between radiographers, management and continuous development, or promotes health, safety and well-being and sustains a workable environment. However, having stress in the workplace is a risk for staff health and safety. Healthcare is evolving with an increase in working conditions that becomes demanding and that leads to stress (Portoghese *et al*. 2014: 152).

2.6.5 Lack of professional and leadership support

Managers have to manage and retain their employees in order to maintain a good workplace and sustain the growth and development of its employees. Employees perceive satisfaction and retention as a positive work environment with leaders who are visible, accessible, vocal with staff, provide praise and recognition when due and allow flexible work schedules (Duffield *et al*. 2011: 30). According to Sfantou *et al*. (2017: 73), an effective leader can strengthen the quality and integration of care. However, poor leadership can play a negative role on staff retention and turnover (Roy and Brunet 2005: 422). Poor management can affect retention as these managers dictate and do not listen to employees' opinions. Poor management skills can lead to unethical guidance that can cause employees to leave their workplaces (Brandenburg 2019: 1).

2.6.6 Staff turnover

Staff turnover implies the number of employees that leave the organisation due to retirement, resignations, dismissals or employees that demise (Booyens and Bezuidenhoudt 2014: 234). Mayhew (2018: 1) states that employees who leave their workplaces are replaced by new employees. Involuntary turnover occurs when an employee's service is terminated because of poor job performance, absenteeism or violation of policies, while voluntary turnover transpires when employees leave the organisation of their own will. Staff turnover affects the workplace when there is a loss of experimental and valuable knowledge, as well as incorrect staff combinations, whilst overtime to temporarily fill staff vacancies causes extra costs, vacancy advertisements, interview processes, orientation and induction processes (Huber 2010: 613).

2.6.7 Remuneration, compensation and benefits

Employees are not only driven by passion for their careers, but also by money and the benefits that come with the job (Samoszuk 2019: 1). Compensation and benefits from an organisation affect retention and motivation. When employees are satisfied with their benefits, they will work harder and tend to stay longer in the organisation. Therefore, organisations need to stay competitive with compensation and benefits (Samoszuk 2019: 1). Compensation provides an advantage over the employee as employers can use incentives and monetary rewards to retain employees and enhance retention. According to Mayhew (2018: 1), development opportunities with incentives, retention bonuses and compensation entice talented employees to stay within the organisation.

2.6.8 Migration of radiographers

The WHO states that the migration of radiographers is on the rise internationally (WHO 2019: 1). Forecasts predict a continuous rise in migration over the years, which will cause a mismatch between the supply and demand for HCWs. Poppe *et al.* (2014: 1) state that the international migration of radiographers from lower to higher income countries occurs due to a lack of opportunity for professional development; inadequate supplies and equipment; increased workload; low wages; low job satisfaction; political instability; and conflict. Hence, workers explore jobs for better remuneration, better working conditions and opportunities for professional development. Walton-Roberts *et al*. (2017: 28) explain that research done on migration suggests that shortages of skilled workers should be examined relative to domestic policies on training, recruitment and retention.

2.6.9 Continuing education, training and professional development

Continuing Professional Development (CPD) describes different learning activities through which HCWs can develop their careers and maintain their skills to practice safely, effectively and legally in their evolving scope of

practice (Elshami *et al*. 2016: 68). CPD enables a broadening of knowledge and skills to develop one's personal qualities to perform professional and technical duties throughout one's working life. Bourgain, Pieretti and Zou (2009: 2) state that depending on budgetary resources, training and development can assist with the emigration problem and reduce the shortage of HCWs. The development of a training infrastructure and reimbursement of educational expenses in the public sector can increase the number of qualified healthcare workers that remain in their jobs.

2.7 STRATEGIES TO ADDRESS THE STAFF RETENTION OF RADIOGRAPHERS IN THE PUBLIC HEALTHCARE SECTOR

The HRH in South Africa states that the Department of Health in South Africa introduced a policy on scarce skills and rural allowances to encourage the retention of radiographers in public hospitals (KZN Annual Performance Plan 2001/2002: 154). A Community Service Policy was also implemented in South Africa in March 2004 to assist with service delivery, including radiography. However, this did not seem to address the issue of retention (Department of Health 2009: 39).

The WHO (2009: 1) recommends recruitment and the retention of staff in rural and remote areas by following certain guidelines, such as admission policies to enrol students with a rural background in education programmes for different health disciplines. The revision of undergraduate and postgraduate curricula with rural health topics and clinical rotations to enhance the competencies of health professionals, as well as living conditions being improved for health professionals and their families, is recommended by the WHO (2009: 1). Employees need a good and safe working environment with equipment, supplies and supportive supervision and mentoring. Career development needs to be implemented to grow employees so that they can move up their career paths with experience, education and training. Professional networks also need to be supported, such as health associations

and journals, so that employees can grow and not feel stagnant and isolated. Public recognition measures can also be adopted (WHO 2009: 1).

There was collaboration on staff retention matters between KZN, Australia, Victoria and New South Wales (Australian Department of Human Services 2005: 59). It was proposed that through policy reform, improved planning, implementation of innovative strategies, incentives and motivation, employees could be retained (Australian Department of Human Services 2005: 59). The Australian Department of Human Services (2005: 59) claimed that there were more vacancies than diagnostic Radiography graduates in Australia, Victoria and New South Wales. These difficulties are very similar to the circumstances in KZN.

Half (2018: 1) states that all employees are different, with exclusive desires and goals, hence when an employer considers retention strategies, the employee's needs and views have to be considered. According to Half (2018: 1), the strategies that could be used to improve the retention of radiographers are as follows:

- On-boarding and orientation for all new staff members to learn the organisation's culture;
- Mentorship programs to allow a new member to be paired with a mentor with greater knowledge;
- Employee compensation should be competitive and attractive;
- Recognition and rewards systems will allow employees to feel appreciated;
- Work life-balance, as burnout is real. Employers should encourage staff to take leave;
- Communication and feedback are crucial for retention. The lines of communication need to be opened;
- Change should be dealt with efficiently as staff look up to leaders for reassurance;
- Fostering teamwork by nurturing employees with different work styles to work together and let their talents shine;

- Team-building is vital to keep the team together and build close relationships; and
- Flexible working hours to increase the number of employees.

The researcher has 15 years of experience as a radiographer, and has therefore seen the need for the current study. In this study, she was the principal investigator under the guidance of supervisors. The researcher designed the study, conducted the literature review, prepared the questionnaire and interview protocol, recruited participants, gained ethical clearance for the study, collected and analysed and reported on the findings of the study.

It is evident from the literature that there a shortage of radiographers, hence the need to retain these professionals not only in South Africa, but globally as well. Research has been conducted in international countries such as the UK, Australia, New Zealand, Europe and African countries. The literature review suggests that the shortage of radiographers is noted globally, in South Africa and predominantly in KZN. However, in Australia and New Zealand, Singh *et al.* (2017: 306) identified that those radiographers who burnout, resign or are dissatisfied with their jobs have a great impact on service delivery and imposes a challenge to retain staff. Likewise, this could have been the similar or mirrored challenge in KZN public hospitals that observed a decrease in radiographers over the years.

2.8 SUMMARY OF THE CHAPTER

The chapter presented the theories, terminology, methods and variables of the phenomena in the study. The literature covered topics pertaining to employee retention globally, in African countries, in South Africa and particularly in KZN. The gap in the literature showed that no study has been conducted in KZN on implementing a model for the retention of radiographers. While many studies have been undertaken to better understand the impediments of retention, there has been no conclusive theoretical framework

for the retention of radiographers in KZN. The next chapter discusses the theoretical framework that guided this study.

CHAPTER 3: THEORETICAL FRAMEWORK

3.1 INTRODUCTION

The preceding chapter reviewed literature relevant to this study. This chapter will focus on the theoretical framework guiding this study. The theoretical framework is a fundamental part of every study as it plays an essential role in orienting the research process (Fawcett 2005: 3). The theory that drove this research is Herzberg's motivation-hygiene theory, also referred to as the Motivation-hygiene theory.

3.2 THEORETICAL FRAMEWORK USED AS THE GUIDE IN THIS STUDY

Gabriel (2008: 173) postulates that theories are articulated to explain, predict and understand phenomena in challenges and existing knowledge within expectations. The theoretical framework is the structure that supported the theory of this research study. It consisted of concepts, definitions, references to relevant scholarly literature and existing theories used in other studies (Gabriel 2008: 173). The theoretical framework was rooted in a specific theory that had validity in relation to this study, as will be discussed in the next sub-section.

The theoretical framework was the base of this study to build the justification, highlight problems, clarify its purpose and significance, research questions, literature review, methodology, results, interpretations and recommendations of the research. Fawcett (2005: 3) states that frameworks are used to design and conduct investigations. They provide a comprehensible, integrated and systematic way of predicting interrelated procedures or processes pertinent to a discipline.

The theory describes that there is always a difference in opinions of the nature, purpose and benefits of frameworks. These differences from researchers may create confusion. Although perceptions differ, the researcher was persuaded that the theoretical framework would be valuable and be built on credibility in this study, based on the aims and objectives.

Herzberg's theory was created by Fredrick Herzberg in the 1950s to understand employee motivation and job satisfaction and to develop factors for satisfaction (motivators) and dissatisfaction (hygiene). The motivator factors include work challenges, talent recognition, increased responsibility, value of employee input in decision-making, achievement and growth, while hygiene factors include job security, pay, benefits and workplace conditions (Alshmemri, Shahwan-Akl and Maude 2017: 12). The theory demonstrates how human behaviour is influenced by these two factors (Juneja 2019: 1). If hygiene factors are not present, it can lead to job dissatisfaction, yet with the combination of both factors; it can lead to job satisfaction and motivation in the workplace. When either factor is at risk, then employee dissatisfaction increases and motivation decreases (Damij *et al.* 2015: 641). Herzberg's theory is best suited to effectively eliminate dissatisfaction amongst radiographers and ensure that the hygiene factors are met in order to aid the retention of radiographers in KZN public hospitals.

3.3 SELECTION OF THE THEORETICAL FRAMEWORK FOR THE STUDY

To guide this research study, the theoretical framework underpinning Herzberg's motivation theory was used in a systematic way to develop a model for the retention of radiographers employed in KZN public tertiary hospitals. Herzberg's two-dimensional paradigm was created with factors to influence employees' attitude towards work (Alshmemri, Shahwan-Akl and Maude 2017: 12). Juneja (2019: 1) explains that Herzberg's theory implied that some job factors influenced satisfaction, while the other job factors prevented dissatisfaction. Based on the theory, Frederick Herzberg pointed

out the two components that contribute to the state of satisfaction and dissatisfaction: hygiene factors and motivational factors, as illustrated in Figure 3.1.

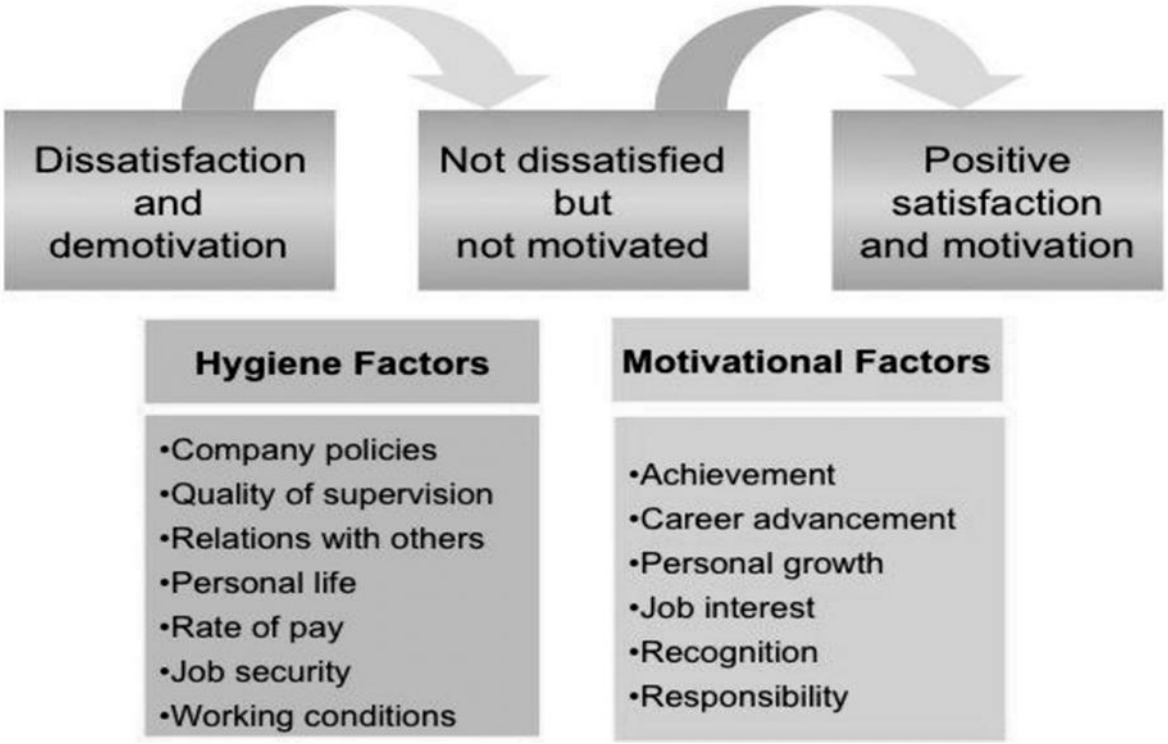

Figure 3.1: Herzberg's motivation-hygiene theory Source: Bromley (2018: 1)

This theory was applicable to the retention of radiographers. The hygiene factors correlated to a radiographer's dissatisfaction in the workplace. These factors included pay, company policies, fringe benefits, physical working conditions, status, interpersonal relations and job security. Motivational factors correlated with recognition and achievement that enhanced radiographers to be productive, creative, committed and positively satisfied (Javed 2013: 14). These factors allowed radiographers to meet their psychological needs, such as recognition, a sense of achievement, growth and promotional opportunities, responsibility and meaningfulness of their work.

3.4 APPLYING THE THEORETICAL FRAMEWORK IN THIS STUDY

The problem of radiographers resigning and the shortage of these skilled professionals in public hospitals made the researcher question what these radiographers are feeling and whether they are satisfied or dissatisfied with their jobs. The findings of a study by Thambura (2016: 95) indicated that the factors contributing to radiographers resigning are inadequate allowances, poor working conditions, inadequate facilities and equipment, weak management support, heavy workload and limited opportunities for professional development. However, the findings suggested that radiographers remain in their jobs due to work shifts being flexible; it is also not easy to be dismissed from the public sector and there is no direct intimidation from employees or managers (Thambura 2016: 96). As a result, Herzberg's Motivation-Hygiene Theory was found to be appropriate to guide this study. Herzberg's Motivation-Hygiene Theory is an employee retention strategy to address the causes of employee turnover as explored in this study. The theory is applied to address the retention of radiographers in KZN public tertiary hospitals.

Many characteristics of a job are dependably related to job satisfaction, while other factors are associated with job dissatisfaction. These factors are motivators and hygiene factors. Motivator factors, including personal achievement, status, recognition, the work itself, responsibility, growth, promotion and opportunity for advancement, are defined as intrinsic factors (Pardee 1990: 10). Intrinsic factors incline towards being intangible and deal more with emotional needs by participating in doing something with interest and enjoyment. The existence of motivator factors can lead to an increase in motivation, satisfaction and consequently, higher commitment, but the absence of it will not certainly reduce motivation (Pardee 1990: 14).

However, hygiene factors also consist of interpersonal relationships; company policies and administration; working conditions; quality of supervision; job security; salary, wages and other benefits; and work-life balance, all of which

are considered as extrinsic factors (Pardee 1990: 14). Extrinsic factors are tangible and classified as basic needs as they subsequently refer to doing something for external rewards such as money, fame or status. It is opposite to intrinsic factors, which influence a person's behaviour by one's inner desire and motivation. Likewise, unlike its motivators and hygienic factors, the existence of hygienic factors will not motivate, but could avoid dissatisfaction, and their absence will certainly lead to de-motivation (Nguyen 2017: 24).

Consequently, the theory is of relevance to the Department of Health and radiography management as it reinforces the significance of providing hygiene factors appropriate to the employees as a way of motivation to ensure a result of satisfaction. The absence of hygiene factors will lead to demotivation, yet the existence of it are not sufficient to motivate radiographers. Therefore, the theory is effective in terms of the removal of hygiene factors that cause dissatisfaction, namely the lack of poor and obstructive company policies that need to be reviewed, lack of supervision that needs to be effective and supportive, lack of supportive cultures with respect and dignity for employees, lack of salary that is competitive, as well as lack of meaningful work for all positions to create job status and provide job security.

Radiographers should be given the recognition needed by improving motivator factors such as job enrichment, opportunities to advance through internal promotions, increased competences and responsibilities and experiencing new challenges such as training and development opportunities. These factors will allow radiographers to feel a sense of achievement, feel secure in their jobs, be committed, positively satisfied and productive and want to stay employed in their jobs.

3.5 SUMMARY OF THE CHAPTER

The chapter discussed the theoretical framework used as a guide in the study to build the justification, highlight problems, its purpose, significance, research questions, literature review, methodology, results, interpretations and recommendations of the research. The theoretical framework is underpinned by Herzberg's Motivation Theory. The next chapter would discuss the research design and methodology of the study.

CHAPTER 4: RESEARCH DESIGN AND METHODOLOGY

4.1 INTRODUCTION

The preceding chapter discussed the theoretical framework that guided this study. This chapter focuses on the research design and methodology conducted hereinafter. Mouton (2011: 56) states that methodology concentrates on the research process, tools and processes that are useful to the research study. Moreover, it includes the design, setting, sample, limitations, data collection and analysis techniques in the study (Burns and Grove 2003: 488). According to Henning, van Rensburg and Smit (2004: 36), methodology is a logical collection of methods that complement each other to deliver data and findings that reflect the research questions and research purpose.

In this chapter on methodology, the researcher discusses how the research was conducted and the sequence of steps followed. The core purpose of the study was to explore and correlate the factors affecting the retention of radiographers. Therefore, the research was a mixed methods approach. The researcher had chosen a quantitative study first using questionnaires, followed by a qualitative study with interviews. Thereafter, the results were derived. The research design was applied in order for the research methods to be used to confirm the fulfilment of the objectives set out in Chapter 1.

4.2 RESEARCH DESIGN

The research design refers to the overall strategy selected to integrate the different components of the study in a comprehensible and logical way, thus ensuring that it will be effective in addressing the research problem (De Vaus 2016: 267). De Vaus (2016: 267) posits that it creates the blueprint for the collection, measurement and analysis of data. According to Akhtar (2016: 68), research design is a structure to hold all the essentials together in a research

study. Additionally, Creswell and Creswell (2018:19) explains that information obtained that is significant to the research problem involves a specific type of evidence to test a theory, to evaluate a program or to precisely describe and assess meaning related to an evident phenomenon.

Mixed methods research is described by Guetterman *et al*. (2019: 554) as the collection and analysis of both qualitative and quantitative data and integration to gain the strengths from both approaches. The quantitative and qualitative data are interdependent in addressing the common research questions and hypothesis. The integration displayed the true benefits of mixed methods to produce a whole through integration that was greater than the sum of having an individual qualitative and quantitative phase (Guetterman *et al*. 2019: 555).

The mixed method design was appropriate for the current study. According to Creswell and Creswell (2018: 14), mixed methods includes the combination or integration of qualitative and quantitative research and data in a research study by using distinctive designs that may include philosophical assumptions and theoretical frameworks. The primary philosophy of this method is the triangulation of data sources to combine the quantitative and qualitative approaches to provide a more complete understanding of the research problem than either approach alone (Creswell and Creswell 2018: 15). The mixed method research design was chosen for the current study due to one data source not being adequate to completely answer the research questions. In addition, the results of the quantitative data required clarity; therefore, the qualitative phase followed the quantitative phase of the study.

4.3 PHILOSOPHICAL UNDERPINNING OF THE MIXED METHODS APPROACH

Creswell and Plano Clark (2011: 20) date the beginning of the mixed methods research back to the 1980s. However, its origins go back further. Many methodology experts and writers from across the world worked simultaneously on similar ideas regarding the combination of quantitative and qualitative methods. Although there were disbeliefs and concerns amongst the experts, the value of the approach was recognised when quantitative researchers saw that qualitative data could play a significant role in research. However, over the past decade, there has been an attentiveness to the use of mixed methods research for educational topics and the phenomenon has grown substantially (Creswell and Plano Clark 2011: 21).

Mixed methods research consists of different types of design categories, including explanatory, exploratory, parallel and nested designs and is also known for using both quantitative and qualitative studies while drawing potential strengths from both methods (Subedi 2016: 570). Therefore, the key word is “mixed” as an important step in the mixed methods approach is data linkage or integration at a suitable phase in the research process. A mixed methodology may be applied to increase the understanding of connections or contradictions between qualitative and quantitative data and to permit different possibilities of exploration that enrich the evidence and empower questions to be answered in depth. A combination of qualitative and quantitative methods is used one study, hence adding complexity to conducting research (Shorten and Smith 2017: 74).

This research design was selected for the current study as it provided better interpretations, minimised uni-method bias and increased the opportunity for a better variety of divergent views (Teddlie and Tashakkori 2009: 63).

4.4 EXPLANATORY SEQUENTIAL MIXED METHODS

The mixed method design selected for the current study is the explanatory sequential mixed method. The rationale of using this method is to use the quantitative data to explore the qualitative findings and to determine how and why the retention of radiographers occurs in public hospitals. It consists of a two-phased data collection in which the first conducts the quantitative research, analyses the results and then builds on the results to describe it in more detail with the qualitative research (Subedi 2016: 572). Figure 4.1 below illustrates the explanatory sequential mixed methods design for this study.

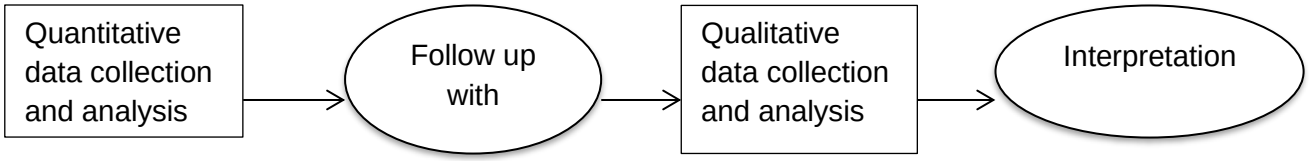

Figure 4.1: Explanatory sequential mixed methods Source: Subedi (2016: 573)

In this study, the quantitative (questionnaire results) and qualitative data (interview results) are analysed separately. Thereafter, the data was integrated to connect the quantitative results to the qualitative data collection. This is the point of integration in the explanatory sequential design (Creswell and Creswell 2018: 222). The results from the quantitative phase were used to develop the qualitative follow-up. The quantitative results directed the types of qualitative questions that the participants were asked in the second phase (Creswell and Creswell 2018: 223).

Therefore, the intent of the design was significant to this study as it was used in the qualitative phase to explain the initial quantitative results in greater detail. It was important to integrate the quantitative results with the qualitative data collection to get the best outcome (Creswell and Creswell 2018: 222). The researcher sought an opportunity for a greater variety of divergent views

by using the explanatory sequential mixed methods. This research design will increase the understanding of the researcher on the study by connecting ideas gained from the quantitative study to understand the cause and effect of the retention of radiographers and the explanatory sequential mixed methods to confirm contradictory ideas. The conclusive results will allow the researcher to determine how and why the lack of retention of radiographers occurs in public hospitals.

4.5 RESEARCH PARADIGM

A research paradigm is a method of observing the world and is composed of certain philosophical assumptions that guide and direct thinking and action (Mertens 2005: 7). Likewise, Neuman (2006: 81) describes a paradigm as a general framework for theory and research that includes basic assumptions, key issues and models. The research paradigm contains the researcher's epistemological, ontological and methodological evidences (Rehman and Alharthi 2016: 52). The research is interpretive and guided by the researchers set of beliefs and feelings about the world and how it should be studied. Therefore, the rationale for using a research paradigm in a study is to understand the reality of the problems.

According to Creswell and Creswell (2018: 6), there are four research paradigms, namely post-positivism, transformativism, constructivism and pragmatism. This study uses pragmatism as it is the philosophical partner for the mixed methods approach and is significant to determine the research philosophy of staff retention. It offers a set of assumptions about knowledge and investigation that supports the mixed methods approach and which distinguishes it from the quantitative and qualitative approaches that are based on a philosophy of post-positivism and quality approaches that are based on a philosophy of interpretivism or constructivism (Johnson, Onwuegbuzie and Turner 2007: 126). It is argued that pragmatism is an established and attractive philosophy for integrating approaches (Johnson,

Onwuegbuzie and Turner 2007: 126). Pragmatism was suitable for the study as it dealt with the staff retention problem in a practical way.

Tong *et al.* (2012: 181) argued that the experiences, opinions, perceptions and attitudes of individuals and how they view the world describes the philosophical views in the study. Other authors used the term 'research paradigm' when looking at views from the world in the study and understand the concept as a set of common beliefs and agreements and how problems should be understood and addressed. Research paradigms are characterised by their ontology (what is reality?), epistemology (how do you know something?) and methodology (how do you go about finding out?) and axiology (ethical requirements and researcher's perspective) (Patel 2015: 1). One may therefore argue that a research paradigm refers to a research culture. There is a trilogy of major research paradigms: quantitative research, qualitative research and mixed methods research (Johnson, Onwuegbuzie and Turner 2007: 131).

The use of these philosophical assumptions in this mixed method research study supported the researcher in conducting the quantitative and qualitative phases of the study.

- **Ontology:** Ontology is defined by Dudovskiy (2019: 1) as the science or study of being and it deals with the nature of reality. "It is a structure of beliefs that reflects an understanding by an individual about what establishes a fact" (Dudovskiy 2019: 1). In the current study, it is believed that there is a shortage of radiographers in KZN public tertiary hospitals. This is evident from the KZN Annual Performance Plan statistics over the years showing a higher radiography vacancy rate.
- **Epistemology:** Epistemology is the theory of knowledge on the methods, validity and division between belief and opinion and is concerned with possibilities, nature, sources and limitations of knowledge in the study (Dudovskiy 2019: 1). From other studies done in KZN, evidence has

shown a shortage of radiographers in KZN. The current study was conducted and the analysis of the results from the data collection allowed themes to be formed and strategies to be devised in order to enhance the staff retention of radiographers.

- **Methodology:** Research methodology is a systematic way to solve the research problem. It is the science of studying how much research is done scientifically. According to Kothari (2004: 7), research methods refer to the behaviour and instruments used to select a research technique. For the current study, the mixed method approach was selected and the research design is the explanatory sequential mixed method. This method consists of a two-phase data collection in which the researcher conducts the quantitative research, analyses the results and then builds on the results to describe it in more detail with the qualitative research.

- **Axiology:** Axiology refers to the aim of the research and is the philosophy that studies decisions about value and valuation (Dudovskiy 2019: 1). Dudovskiy (2019: 1) describes it as the assessment of the role of the researcher's own value of the research process. The study aimed to explore the factors of staff retention for radiographers employed by tertiary hospitals in the KZN province in order to develop a model to improve staff retention and ultimately enhance the research on staff shortages in the public healthcare sector. The researcher ensured that the study was fair, with trustworthiness, validity and reliability.

Table 4.1 below illustrates the relationships between the term's, states and the method that guided this study's design.

Table 4.1: Research paradigm (Adapted from Patel 2018: 1)

Ontology	Epistemology	Theoretical perspective	Methodology	Methods	Sources
There was a problem with the retention of radiographers in KZN.	Reviewed studies done in KZN, with evidence showing that there is a shortage of radiographers in KZN. Analysed the results from the data collection, formed themes and strategies that enhance staff retention of radiographers. Created a model with the results.	Other studies on staff retention were researched	Explanatory sequential mixed method study was conducted.	Quantitative (phase one) data was collected from the participants via questionnaires. Qualitative (second phase) participants were selected for an interview to explain contradictory questionnaire responses. The data from both phases were integrated.	Answers from the questions were addressed in the interviews.

4.6 NATURAL SETTING

A research setting is an environment in which research is carried out and where data is collected (Fox and Bayat 2007: 71). The individuals are likely to have experience of the phenomenon or may be in different areas or the same area, but are able to provide contextual information about the aspect being studied (Fox and Bayat 2007: 71). Creswell (2014: 173) further indicates that researchers intentionally select sites for the purpose of obtaining the necessary and required information. According to Creswell and Creswell (2018: 185), the researcher had to identify the selected sites and individuals for the study.

The research setting is KZN public tertiary hospitals that include Hospital A, Hospital B and Hospital D situated in the eThekwini district. Hospital A and

Hospital B provide all radiography services, which include diagnostic, ultrasound, mammography, nuclear medicine and radiotherapy. Hospital D provides radiography services that include diagnostic, ultrasound, mammography and nuclear medicine. Hospital C is situated in the uMgungundlovu district and provides radiography services that include diagnostic, ultrasound, mammography and radiotherapy. Hospital E is situated in the King Cetshwayo district and provides radiography services that include diagnostic, ultrasound and mammography.

4.7 TARGET POPULATION

The Target population refers to all the fundamentals which meet the specific criteria to be included in the study and is also the accessible target population that researchers can draw samples from to make conclusions (Creswell and Creswell 2018: 152). The target population for the study consisted of radiographers and radiography managers employed in the radiography departments of the five tertiary hospitals in the eThekwini, King Cetshwayo and uMgungundlovu districts (Table 4.2).

Table 4.2: Target population

Population	Hospital A	Hospital B	Hospital C	Hospital D	Hospital E	Total
Radiotherapy Manager and Director	1	2	1	0	0	**4**
Radiation Therapists	8	7	11	0	0	**26**
Diagnostic Manager and Director	1	2	1	1	1	**6**
Diagnostic Radiographers	35	35	20	20	13	**123**
Nuclear Medicine Manager	1	1	0	0	0	**2**
Nuclear Medicine Radiographers	4	9	0	0	0	**13**
Ultrasound Managers	1	1	1	1	0	**4**
Sonographers	2	2	1	2	1	**8**
Mammographers	5	5	6	5	3	**24**
Total	**58**	**64**	**41**	**29**	**18**	**210**

4.8 SAMPLING PROCESS AND TECHNIQUE

Sampling is a method where individuals or sampling units are selected from a sample frame (Creswell and Creswell 2018: 150). Lavrakas (2008: 752) describes a sample size as the number of units chosen from the data gathered, which can be defined in many ways, such as designated sample size and final sample size. This sampling size allows the sampler to believe that any sample selected can represent the whole population and the results will be accurate. The selection of participants is significant in both quantitative and qualitative design and the researcher has already documented the rationale for the selection of such samplings and discloses any preferences. In the current study, the researcher explained the sampling of tertiary hospitals and radiographers working in those hospitals for the quantitative and qualitative phases.

4.8.1 Sampling technique and sample size in the quantitative phase

Sampling in the quantitative study was achieved by the simple random probability sampling technique (Elfil and Negida 2017: 52). As per the statistician's calculations, the total population of 210 radiographers working in the five tertiary public hospitals were used to select an average sample size of 138 radiographers for the study. Tables 4.2 and 4.3 depict the number of radiographers employed by the tertiary hospitals.

Table 4.3: Sample size

Sample	Hospital A	Hospital B	Hospital C	Hospital D	Hospital E	Total
Radiotherapy Manager and Director	1	1	1	0	0	**3**
Radiation Therapists	10	10	12	0	0	**32**
Diagnostic Manager and Director	1	1	1	2	1	**6**
Diagnostic Radiographers	18	18	15	12	5	**68**
Nuclear Medicine Manager	0	1	0	0	0	**1**
Nuclear Medicine Radiographers	0	7	0	0	0	**7**
Ultrasound Managers	0	0	0	0	0	**0**
Sonographers	5	2	0	0	1	**8**
Mammographers	5	3	2	1	2	**13**
Total	**40**	**43**	**31**	**15**	**9**	**138**

4.8.2 Sampling technique and sample size in the qualitative phase

Sampling in the qualitative phase was achieved by criterion purposive sampling in order to select tertiary hospitals with all five disciplines of radiography. The same sampling method is used to select a sample size of 10 participants from the five disciplines, where two will be managers and eight will be radiographers. Purposive sampling is a qualitative sampling strategy used to sample individuals who have experience on the phenomenon in the current study (Burns and Grove 2011: 580). The participants selected for this phase did not form part of the quantitative phase.

4.8.3 Inclusion criteria for participants for hospitals and radiographers

- Radiographers who were registered with the HPCSA in any of the five disciplines (diagnostic, nuclear medicine, radiotherapy, ultrasound and mammography);
- Radiographers who work in the selected tertiary hospitals in the public sector and who were willing to participate in the study;

- **Radiographers who had completed community service; and**
- Tertiary hospitals from the public sector in the eThekwini, King Cetshwayo and uMgungundlovu districts.

4.8.4 Exclusion criteria for participants for hospitals and radiographers

Student radiographers, as they are not yet employed, and non-tertiary hospitals from the private and public sector in the eThekwini, King Cetshwayo and uMgungundlovu districts, were excluded in the study.

4.9 PRE-TESTING OF THE DATA COLLECTION TOOLS

Creswell (2014: 207) states that in order to have the practical aspects of any study tested; a researcher has to conduct a pre-test. A pre-test is a critical analysis of the questionnaire that will help to determine if the questionnaire will function correctly as a valid and reliable research tool (Bolarinwa 2015: 195). The pre-test is conducted by including a few participants that meet the inclusion criteria, but who do not form part of the sample. The data collected is not included in the study.

A pre-test was conducted before the commencement of the core study in order to establish the reliability and validity of the data collection instruments (Creswell 2014: 207). The pre-test was also used to identify if there was a need to refine the methodology or the data collection processes (Creswell 2014: 207). The researcher requested five radiographers employed at public and private hospitals to participate in the quantitative phase, using the questionnaire that was developed (Appendix 9a). The radiographers completed the questionnaires in an average of 20 minutes. All data were collected and the radiographers provided the researcher with suggestions such as spelling corrections in order to improve the questionnaire. The changes were implemented in the questionnaire and the validity and reliability of the data instrument were maintained. The results of the pre-test were not included in the main study.

4.10 DATA COLLECTION PROCESS

Data collection is the process of collecting information that could answer the research problem and assess the outcomes (Creswell and Creswell 2018: 222). The study commenced after full ethical clearance was obtained from the Institutional Research Ethics Committee (IREC Number 080/19) (Appendix 1). Prior to commencing the study, the researcher requested and obtained gatekeeper permission from the district managers (Appendices 2b, 3b, 4b and 5b), KZN Department of Health (Appendix 4b) and hospital managers of the different hospitals (Appendices 6b, 6d, 6f, 6h and 6j). Data collection was conducted in two phases, namely the quantitative and qualitative phases.

4.10.1 Phase 1: Quantitative data collection

Data collection during this phase was in the form of a questionnaire with closed-ended questions (Appendix 9a). The validated questionnaire for staff retention uploaded to the internet, was used in the study. The author of the questionnaire, Mr M. J. Thambura had granted the researcher permission and access to utilise his questionnaire (Appendix 9b). The questionnaire included demographic data and a six-point Likert scale to measure the participant's responses to cover the rationale of the study, underpinned by literature. The six-point scale was used to provide the participants with more options and to obtain more direct rather than general responses. The six-point Likert scale has been found to reach the superior parameters of the scale's reliability and validity (Felix 2011: 156). The questionnaire included closed and open-ended questions, approved by an expert statistician. The themes from the quantitative phase of the study led to the development of the qualitative questions.

Prior to the data collection, the researcher made appointments with the radiographers to discuss the study. A letter of information describing the details of the study was provided to the radiographers (Appendix 7a). All consenting radiographers were requested to provide a written consent (Appendix 8). The researcher personally distributed the questionnaires to the

radiographers. Once completed, the researcher picked the questionnaires up in sealed envelopes and asked the radiographers to deposit the completed questionnaires in a sealed box. The radiographers were given one week to complete the questionnaires. In the quantitative and qualitative phases of the study, consenting radiographers and radiography management registered with HPCSA were included in the study. All radiographers and managers were able to speak English.

4.10.2 Phase 2: Qualitative data collection

The second phase of data collection is the qualitative phase. Thomas, Nelson and Stephen (2016: 1) state that the most common source of data in qualitative studies is interviews. The interview guide is to be developed once the analysis of data in phase 1 is completed face- to- face, one-on-one and semi-structured interviews using open-ended questions will be conducted with selected participants (Subedi 2016: 572). Before the interviews, the researcher requested permission to discuss participation with the managers in the radiography departments. The managers assisted the researcher to identify the potential participants. The researcher then made appointment with them to conduct interviews.

Before the interviews, the researcher gave potential participants a letter of information (Appendix 7b) about the study. They were requested to participate voluntarily in the study and were informed that they can withdraw at any time during the study if they so wish, without any penalty. The researcher also informed the participants that their names would be anonymous and that the information collected from them will be confidential. In so doing, the researcher used pseudonyms and the information collected from participants was only known to the researcher. Participants' names or contact details were kept confidential and remained unknown to the public to ensure no linkage of the individual responses with the participants' identities. According to Kaiser (2010: 1639), the researcher needs to protect the privacy and identity of

participants and collect data confidentially to protect all participants from any information that could identify them.

All radiographers who agreed to participate in the study signed an informed consent form (Appendix 8). The researcher then conducted the interviews using the interview guide that was developed from the results of Phase 1 data, which had been analysed. The interviews were audio-recorded with the permission of the participants. The researcher used notes to collect data for those that refused to be recorded. The interviews took between 30-45 minutes and data was collected until data saturation. Data saturation is a methodological approach in qualitative research as an indicator to end data collection when further data collection or analysis is unnecessary (Saunders *et al*. 2017: 1894).

Radiographers that consented and met the criteria were provided with information on the research and invited to participate. Radiography students, radiography assistants and radiography community services workers were excluded from the study. Participants who were selected were knowledgeable about the phenomenon being explored. The researcher recruited participants who were known to the researcher in order to provide clarity and valuable input to the study.

4.11 DATA ANALYSIS AND INTEGRATION

The study consisted of two data sets, namely quantitative and qualitative data, both of which needed to be analysed and interpreted in order to conclude the study findings and to develop a model for staff retention during the final stage of the study.

4.11.1 Quantitative data analysis

In Phase one, the questionnaire results were analysed using analytical software, the latest Statistical Package for the Social Science (SPSS) version 26. The SPSS is a package of programs for manipulating, analysing and presenting data (Landau and Everitt 2004: 1). It was used as it had an advantage of broad coverage of formulas and statistical routines, data files that could be imported through other programs and it had annual updates to increase sophistication (Dudovskiy 2019: 1). The numeric information produced results from the data. Descriptive analysis was used to analyse the basic qualities when the data included descriptive statistics such as range, minimum, maximum and frequency. It also included the measures of central tendency, such as mean, median, mode and standard deviation, to illustrate the data (Field 2011: 1). Table 4.4 lists the different statistical tests that were used in the study. A significance level of 0.05 was used throughout.

Table 4.4: Statistical tests (Field 2011: 1)

Type of Test	Use
Pearson correlation	Tests for the strength of the association between two continuous variables
Spearman correlation	Tests for the strength of the association between two ordinal variables (does not rely on the assumption of normally distributed data)
Chi-square	Tests for the strength of the association between two categorical variables
Paired T-test	Tests for the difference between two related variables
Independent T-test	Tests for the difference between two independent variables
ANOVA	Tests the difference between group means after any other variance in the outcome variable is accounted for

4.11.2 Qualitative data analysis

In Phase 2, the data analysis for the qualitative research progressed hand-in-hand with the data collection and write up of the findings. During the interview, the researcher analysed the interview that was collected prior, wrote memos

that were included as a narrative in the final report and structured the final report (Creswell and Creswell 2018: 192). The researcher had to winnow data that could not be included in the study due to the text being dense and rich.
The researcher was guided by the following steps in analysing the qualitative data (Creswell and Creswell 2018: 193):

- Read and looked at all the data;
- Coded all the data;
- Generated a description and themes; and
- Represented the description and themes.

Creswell and Creswell (2018: 196) further explained that there are eight steps used to form codes listed below. The types of codes were used to develop the analysis of a text transcript or a picture. The eight steps undertaken by the researcher are as follows:

- Read the transcripts carefully and recorded ideas;
- Selected one interview that was the most interesting, shortest or on top of the pile. Analysed it and thought about the substance of the information but also the underlying meaning. Recorded thoughts in the margin;
- After the task was completed with several participants, the researcher made a list of topics. She clustered the topics and distributed the topics into columns in order of major, unique and leftover topics;
- Went back to the data and abbreviated the topics as codes. The researcher recorded the codes next to the segments of the text in order to organise the scheme to check if the categories and codes emerge;
- Selected the most descriptive topics and formed categories. The researcher found ways to decrease the list by grouping related topics. She also drew lines between categories to show interrelationships;
- Made a final decision on abbreviations for each category according to alphabetical codes.
- Assembled the data material from each category in one place and executed a preliminary analysis; and

- When necessary, re-coded the existing data.

4.12 TRIANGULATION

All data collected during the study were triangulated and the results of the triangulation are presented in Chapter 7 and Chapter 8. Triangulation is described as a process or outcome that includes the combination and comparison of multiple data sources, data collection and analysis, research methods and interferences that transpire at the end of the study (Teddlie and Tashakkori 2009: 32). Four types of triangulation are used by researchers to enhance the objectivity, truth and validity of the research. Data saturation is suggested for correlating people, time and space. Investigator triangulation correlates the findings from multiple researchers in a study. Theory triangulation correlates multiple theoretical strategies and methodological triangulation correlates data from multiple data collection methods (Fusch, Fusch and Ness 2018: 22). According to Creswell and Creswell (2018: 200), triangulation complements productivity in the study and substantiates selected aspects of the text. The researcher used the process of triangulation by gathering the different data sources, examining the evidence from the sources and perspectives of the participants and building a coherent justification for themes that added validity to the study.

In the current study, data from the quantitative phase were triangulated with the qualitative phase to achieve the purpose of checking validity and seeking complementary information. The use of triangulation for the data collection from the quantitative and qualitative phases contributed to a more comprehensive and in-depth representation of the phenomenon under investigation.

4.13 RESEARCH RIGOUR (QUANTITATIVE PHASE)

Research rigour in the quantitative phase of the study was ensured by observing the validity and reliability of the methods used for data collection and data analysis. Validity and reliability of the study refer to its trustworthiness and are concerned with the quality of research (Gerrish and Lacey 2006: 139).

4.13.1 Validity

Validity is a significant factor in the development, selection and application of a data collection instrument (Teddlie and Tashakkori 2009: 210). According to De Vos *et al.* (2011: 96), validity is the degree to which an instrument measures the actual questions and the accuracy of questions. Hesse-Biber (2010: 86) further explains that validity defines the extent to which the rationale of the findings and conclusions of the study are complete, and the data instrument measures the truth or accuracy of scientific findings.

In this study, the questionnaire was validated by face, content, construct and criterion validity. *External validity* refers to the extent to which the study findings can be generalised beyond example (Polit and Beck 2010: 378). *Internal validity* refers to the conclusions and outcomes in the study that reflect what are being studied and no other variables (Polit and Beck 2010: 371). The participants were sampled to accurately represent the total study population using purposive sampling for the results to be generalised. A pre-test was conducted on a neutral population with the same properties as the study population in order to assess the questionnaire and make amendments.

Polit and Beck (2010: 379) state that *face validity* refers to a measuring instrument measuring what it is supposed to measure. Face validity was confirmed through the submission of the questionnaire to professionals for evaluation. The statements and questions in the questionnaire reflected all the concepts developed through the literature study.

According to Teddlie and Tashakkori (2009: 210), *content validity* refers to the amount of measure covered in a range of meanings that are included in a concept. *Content validity* was ensured through the wide range of relevant literature as outlined in Chapter 2, where each concept is clearly described. Data was collected from the radiographers and management that completed the questionnaires and who work in public tertiary hospitals.

Construct validity refers to the verification of the relationship between variables (Teddlie and Tashakkori 2009: 339). This type of validity is concerned with whether or not the data instrument is measuring the constructs. Construct validation is accomplished through analysing and conceptualising a construct or variable (Teddlie and Tashakkori 2009: 339). The data collection tool was structured to obtain the required information and was developed based on the study's objectives. The researcher ensured that the tool appeared professional and uncomplicated to complete. The researcher consulted with her supervisors, who ensured that the variables and concepts under study were appropriately operationalised. The researcher also sought input from the statistician on whether the construct validity was appropriate for statistical purposes.

4.13.2 Reliability

Polit and Beck (2010: 452) describe reliability as the accuracy and consistency of information acquired by the study, which is associated with the methods used to measure the research variables. Creswell and Creswell (2018: 154) further explains that reliability refers to the internal consistency and repeatability of the data instrument. The instrument scale items should be assessing the same underlying construct for the items to have suitable correlations. Reliability was ensured by allowing radiographers to render inputs into the data collection instrument during pre-testing.

4.14 TRUSTWORTHINESS (QUALITATIVE PHASE)

Lincoln and Guba (1985) cited in (Loh 2013: 5) define trustworthiness as a criterion of credibility, transferability, dependability and confirmability in terms of the comparable, predictable quantitative and qualitative assessment criteria of validity and reliability.

4.14.1 Credibility

Credibility is concerned about validity and truth-value (Korstjens and Moser 2018: 120). To ensure the credibility of this study, confidence was placed in the truth of the findings. Lincoln and Guba (1985) cited in Shenton (2004: 64) argue that credibility is one of the most significant factors in creating trustworthiness. In the study, the researcher ensured the credibility of data by recording all the interviews with the participants and using their direct quotations and narratives during data reporting. During the report writing, voice recordings were replayed repeatedly to ensure that all information was transcribed to establish confidence in the truth of the findings. Credibility was also ensured by allowing the data from the recorded interviews to be taken as is. The researcher remained neutral during the interviews to ensure that she did not influence the participants' responses. Prolonged engagement was maintained with the participants by staying in the field of study until data saturation was reached (Polit and Beck 2010: 584). The researcher spent sufficient time with the participants, which increased the level of trust between the researcher and the participants.

4.14.2 Transferability

Transferability allowed the results of the research to be transferred to other contexts or settings with other participants (Korstjens and Moser 2018: 120). Data was collected and analysed in sufficient detail to provide an understanding of work to be done; for comparison with other similar studies and to generalise to the larger population. The researcher ensured the trustworthiness of the qualitative data through efforts to confirm that the

findings accurately reflect the experiences and viewpoints of participants, rather than the researcher's perceptions. The richness of the quantitative findings was used to develop the qualitative tool.

4.14.3 Dependability

Dependability refers to the stability or reliability of data over time and conditions and is reliant on credibility (Polit and Beck 2010: 175). The reliability of the data collected during the qualitative phase was ensured through triangulation of the data methods in which the researcher covered the different data methods to ensure trustworthiness. A thick and dense description of the research methodology used to conduct the study and a dense description of sample characteristics, context of the study, data collection methods and data analysis processes were detailed. An audit trail was maintained through the safe-keeping of the raw data of each interview transcript for future reference (Lincoln and Guba 1985 cited in Loh 2013: 5).

4.14.4 Confirmability

Confirmability refers to the point to which the researcher can demonstrate neutrality of the research interpretations (Nowell *et al*. 2017: 3). Confirmability focuses on the characteristics of the data gathered in the qualitative study and through the establishment of an audit trail. A confirmability audit trail was conducted to confirm the findings, interpretations and recommendations supported by data (Nowell *et al*. 2017: 3). An audit trail was created to include the following measures:

- All the raw data, analysed data, reconstructed data and drafts of final reports were kept and are secured in safe-keeping;
- The researcher collected data until data saturation was reached; and
- The researcher used independent data coding.

4.15 ETHICAL CONSIDERATIONS

According to Yip, Han and Sng (2016: 685), when sources of data are collected, researchers have a duty to protect the life, health, dignity, integrity, right to self-determination, privacy, confidentiality and personal information of research subjects. Research misconduct occurs when there is mistreatment of research subjects, namely no ethical approval, failure to follow approved protocols, absent or inadequate informed consent, exposure of subjects to physical or psychological harm, exposure to unacceptable research practices or a failure to maintain confidentiality. Legal and ethical issues are significant in clinical research that involves human participants; hence ethical principles must be followed (Yip, Han and Sng 2016: 685). Researchers have ethical concerns such as respect for privacy, honest and open interactions and misinterpretations. Choosing from different methodological strategies can cause challenging conflicts. Sanjari *et al.* (2014: 14) outline some of the ethical concerns in a research study as anonymity, confidentiality and informed consent.

The researcher subscribed to the following ethical principles (Han and Sng 2016: 685):

- Respect for other persons with acknowledgment and protection;
- Beneficence that had the welfare of the participant as a goal to do no harm and maximise possible benefits; and
- Justice on individual and societal levels.

4.15.1 Respect

In research, there must be respect for other persons with acknowledgment and protection (Yip, Han and Sng (2016: 685). Individuals were treated with respect from the time they were approached to be participants in the study, throughout and after participation ended. Participants' information was kept confidential and their privacy was respected (Grady 2016: n.p.). In this study, the researcher treated all participants with respect and ensured that all

information was kept confidential. All information and data collected was not shared with unauthorised personnel.

4.15.2 Beneficence

Beneficence in a research study is to do no harm and maximise possible benefits (Yip, Han and Sng 2016: 685). The research benefited the participants, contributed to their wellbeing and benefits society. The participants were not harmed in any way. The researcher had an ethical duty to minimise potential risks to the greatest extent possible, as well as to safeguard and protect the participants (Nursing and Midwifery Board of Ireland 2015: 7). The letter of information (Appendix 7a and Appendix 7b) stipulated that the researcher would ensure that the participants would not be harmed and that the participants would remain anonymous and be protected from any potential risks.

4.15.3 Justice

Yip, Han and Sng (2016: 685) state that justice is a moral obligation to act in a manner based on fairness and equality on an individual and societal level. The researcher used integrity during the data collection process. The questions were subjective and the decisions were transparent and comparable, in line with the research guidelines. The researcher was fair and equal with every participant.

4.16 SUMMARY OF THE CHAPTER

Chapter 4 presented the research design, methods of data collection and analysis. The chapter explored and correlated the factors impacting the retention of radiographers. The researcher applied a mixed method approach using both quantitative and qualitative data sets and data instruments. The research design was applied and the research methods used to confirm the fulfilment of the objectives set out in Chapter One. The next chapter will present the results of the study.

CHAPTER 5: PRESENTATION OF RESULTS: PHASE 1 (QUANTITATIVE DATA)

5.1 INTRODUCTION

The previous chapter outlined the research methodology adopted in conducting the study. The results of the study are presented in this chapter. The aim of the study was to explore the factors impacting staff retention for radiographers employed by tertiary hospitals in the KZN province in order to develop a model to improve staff retention and ultimately minimise the staff shortages in the public healthcare sector. A mixed methods study was conducted and therefore the results were reported in two phases. This chapter presents the results of the data analysis for phase one, the quantitative phase of the study. The quantitative data aimed to achieve the first three objectives, which are to analyse the staff retention of radiographers employed by tertiary hospitals in KZN; to identify the factors that influence the resignation of radiographers employed by tertiary hospitals; and to correlate the factors that influence the resignation of radiographers employed by tertiary hospitals. This chapter focused on the results of the data obtained through electronic/ manual surveys, which was subsequently analysed as depicted in Table 5.1.

Table 5.1: Objectives illustrated with the appropriate statistical analysis method

Objective	Statistical analysis method
Analyse staff retention of radiographers employed by tertiary hospitals.	Descriptive statistics using version 25.0 of the SPSS
Identify the factors that influence the resignation of radiographers employed by tertiary hospitals.	Chi-square test
Correlate the factors that influence the resignation of radiographers employed by tertiary hospitals.	Wilcoxon Signed Ranks Test Kruskal Wallis Test Mann Whitney U Test Binomial test Spearman's Correlations

These statistical methods are described as follows:

- Descriptive statistics including means and standard deviations where applicable frequencies are represented in tables, bar charts or graphs;
- The Wilcoxon Signed Ranks test is a non-parametric test used to test, whether the average value in this study is significantly different from a value of 3.5 (the central score), which was applied to the Likert scale questions and used in the comparison of the distributions of two variables;
- A Chi-square test of independence was conducted on cross-tabulations to compare whether a significant relationship exists between the two variables represented in the cross-tabulation. When conditions were not met, the Fisher's exact test was used;
- The Kruskal Wallis Test is a non-parametric equivalent to ANOVA, a test for several independent samples that compares two or more groups of cases in one variable;
- The Mann Whitney U Test is a non-parametric equivalent to the independent samples t-test;
- Binomial tests assess whether a significant proportion of respondents select one of a possible two responses. This can be extended when data with more than 2 response options is split into two distinct groups; and
- Spearman's Correlations measure how variables or rank orders are related.

The level of significance was set at $p<.0005$.

5.2 DEMOGRAPHIC DATA OF RESPONDENTS

The demographics section was used to ascertain who the respondents were in terms of their gender, age, race, marital status, years qualified as a radiographer, position held, occupation and tertiary hospital where employed. This section is used to present the demographics of all the participants as follows:

5.2.1 Gender

The results of the study showed that of the radiographers who participated in the study, there were 21.7% (n=30) males and 78.3% (n=108) females, as illustrated in Figure 5.1.

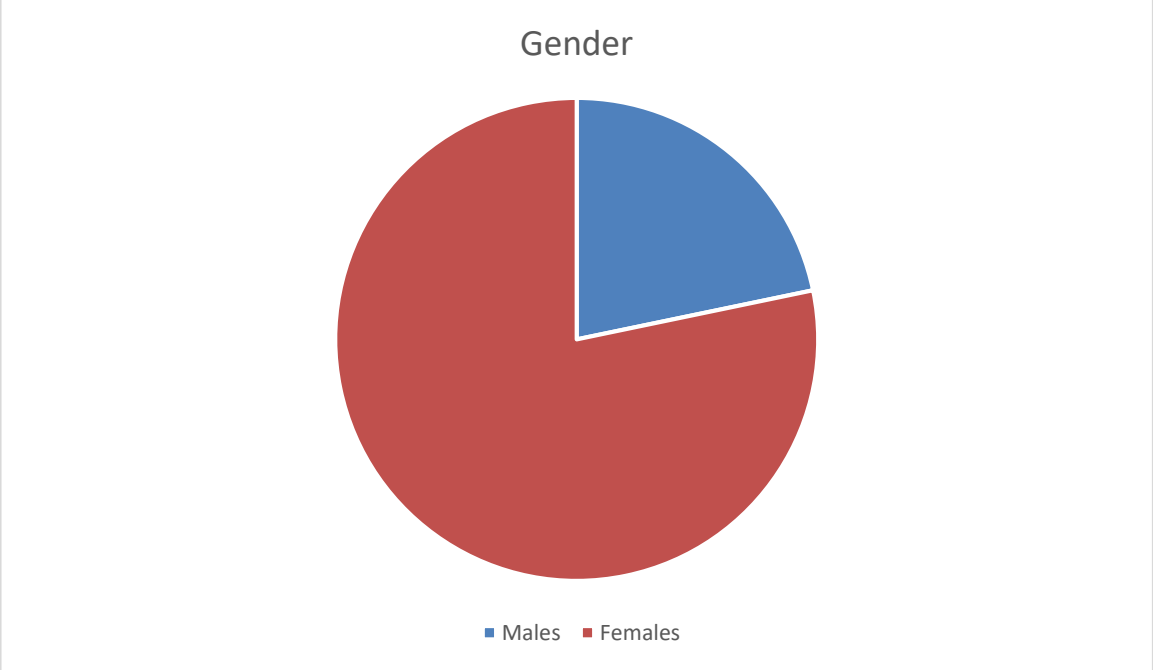

Figure 5.1: Representation of gender (n=138)

5.2.2 Age

The results of the study showed that there were 63.8% (n=88) who were 21-33 years, 29.7% (n=41) who were 34-49 years and 6.5% (n=9) who were 50 and more years old, as illustrated in Figure 5.2.

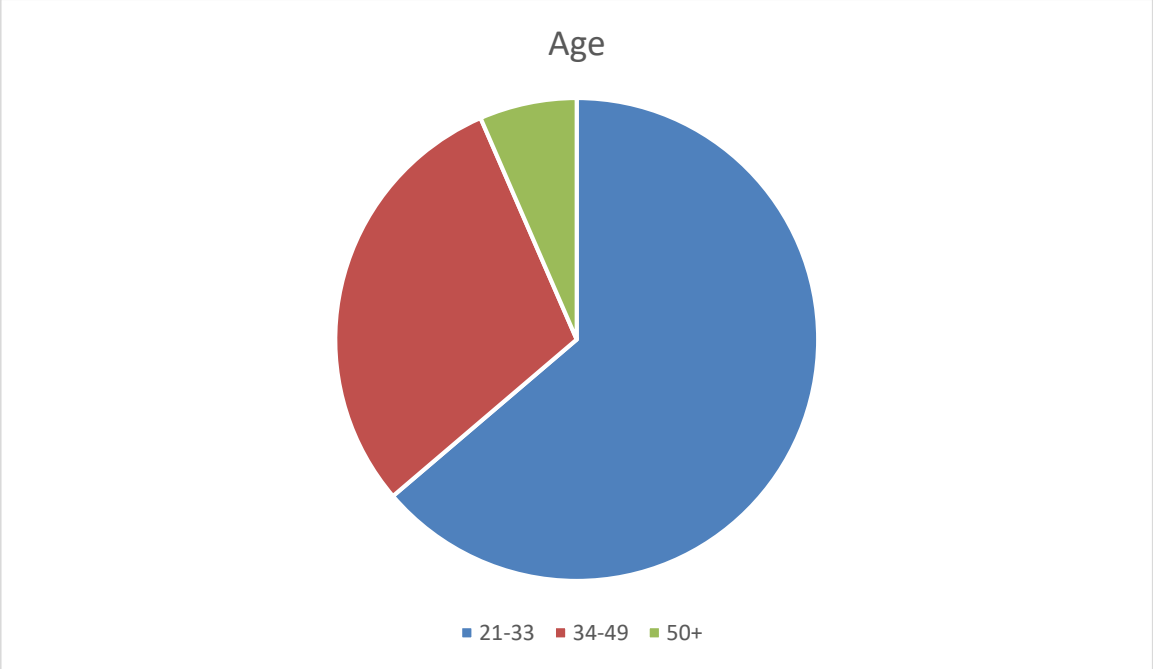

Figure 5.2: Representation of age (n=138)

5.2.3 Race

The results of the study showed that there were 52.9% (n=73) Black, 41.3% (n=57) Indian, 4.3% (n=6) Coloured and 1.4% (n=2) White participants, as illustrated in Figure 5.3.

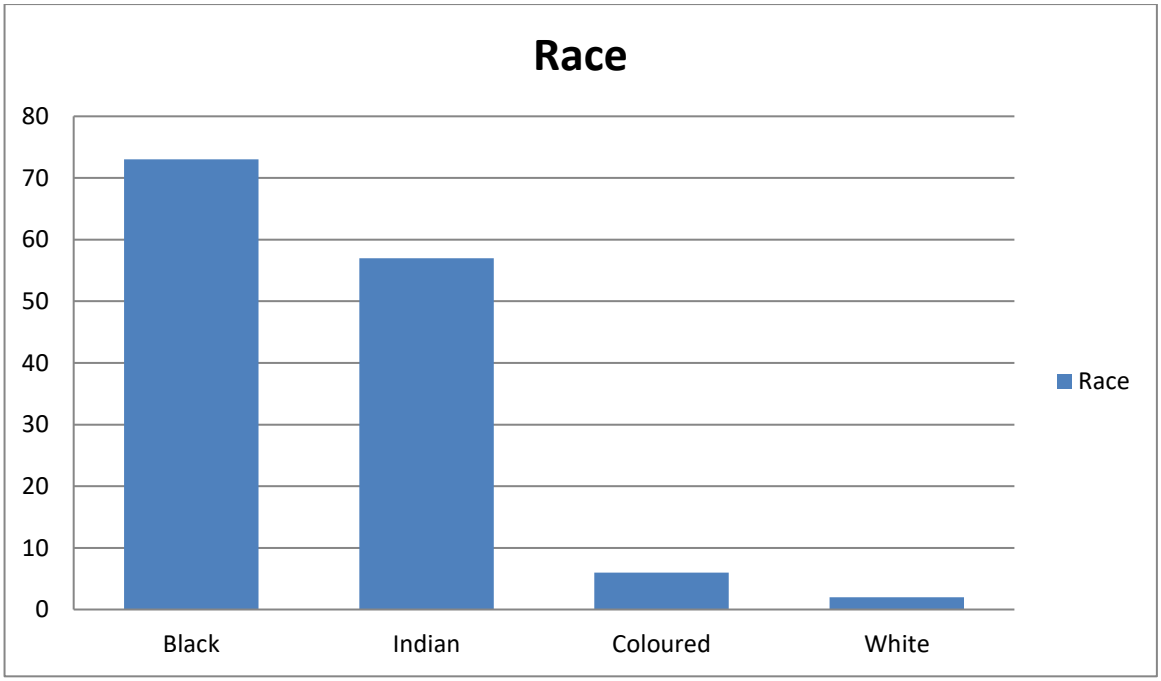

Figure 5.3: Distribution of race (n=138)

5.2.4 Marital status

The results of the study showed that there were 55.1% (n=76) single, 34.8% (n=48) married, 7.2% (n=10) divorced or separated and 2.9% (n=4) widowed participants, as illustrated in Figure 5.4.

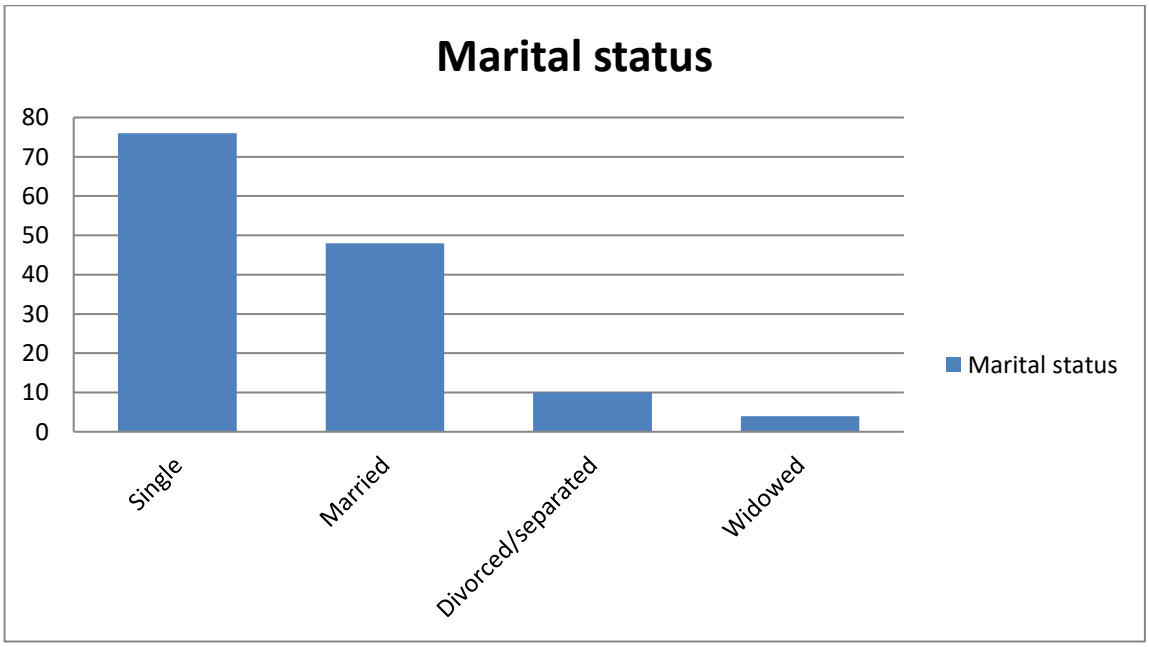

Figure 5.4: Marital status (n=138)

5.2.5 Number of years qualified as a radiographer

The results of the study showed that there were 5.1% (n=7) who were <1 year qualified; 59.4% (n=82) who were 1-10 years qualified; 21.7% (n=30) who were >10-20 years qualified; and 13.8% (n=19) who were >20 years qualified as illustrated in Figure 5.5.

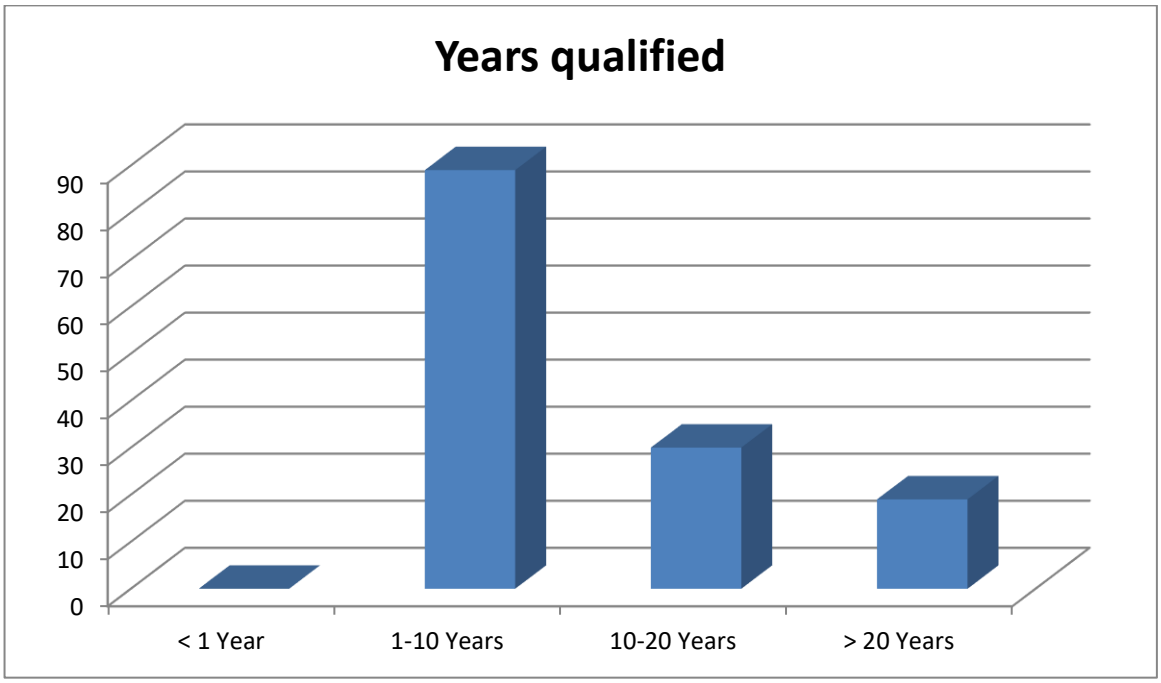

Figure 5.5: Experience of radiographers in years (n=138)

5.2.6 Position occupied

The results of the study showed that there were 55.8% (n=77) grade 1 radiographers, 22.5% (n=31) grade 2 radiographers, 13% (n=18) radiographers, 8% (11) assistant directors and 0.7% (n=1) did not respond to this question, as illustrated in Figure 5.6.

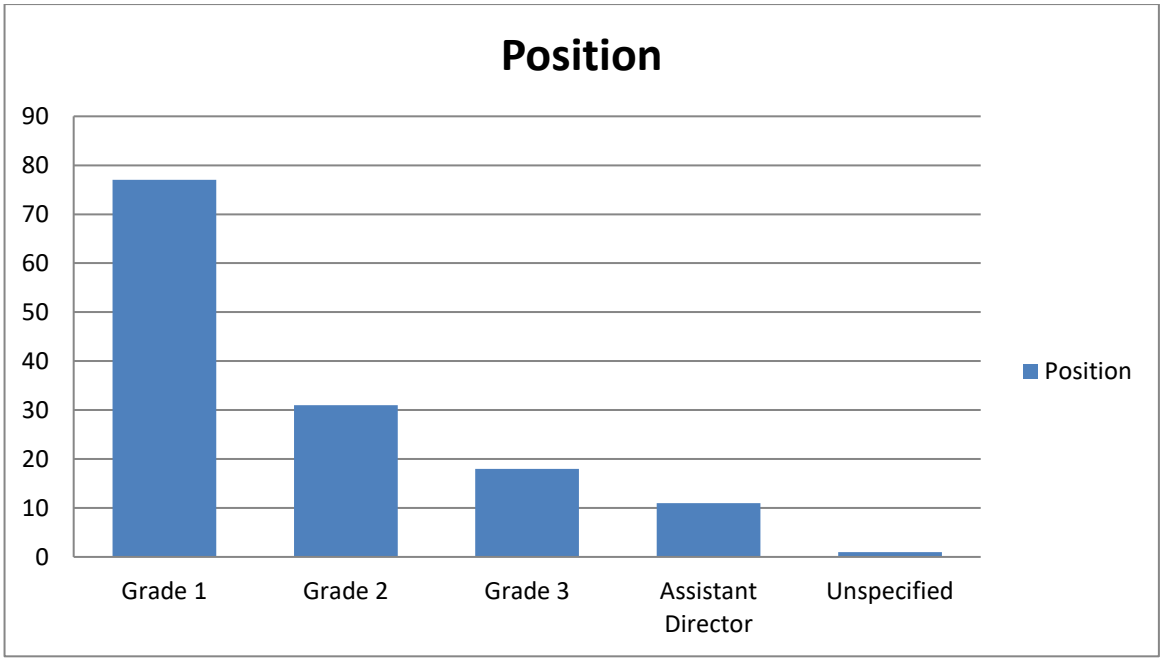

Figure 5.6: Position occupied by radiographers (n=138)

5.2.7 Occupation of the participants in the study

All participants were requested to state their occupation in their employed hospital. The overall results of the study showed that there were 54.3% (n=75) diagnostic radiographers, 10.1% (n=14) mammography radiographers, 7.2% (n=10) nuclear medicine radiographers, 5.1% (n=7) sonographers and 23.2% (n=32) radiotherapists across all five hospitals, as illustrated by Figure 5.7.

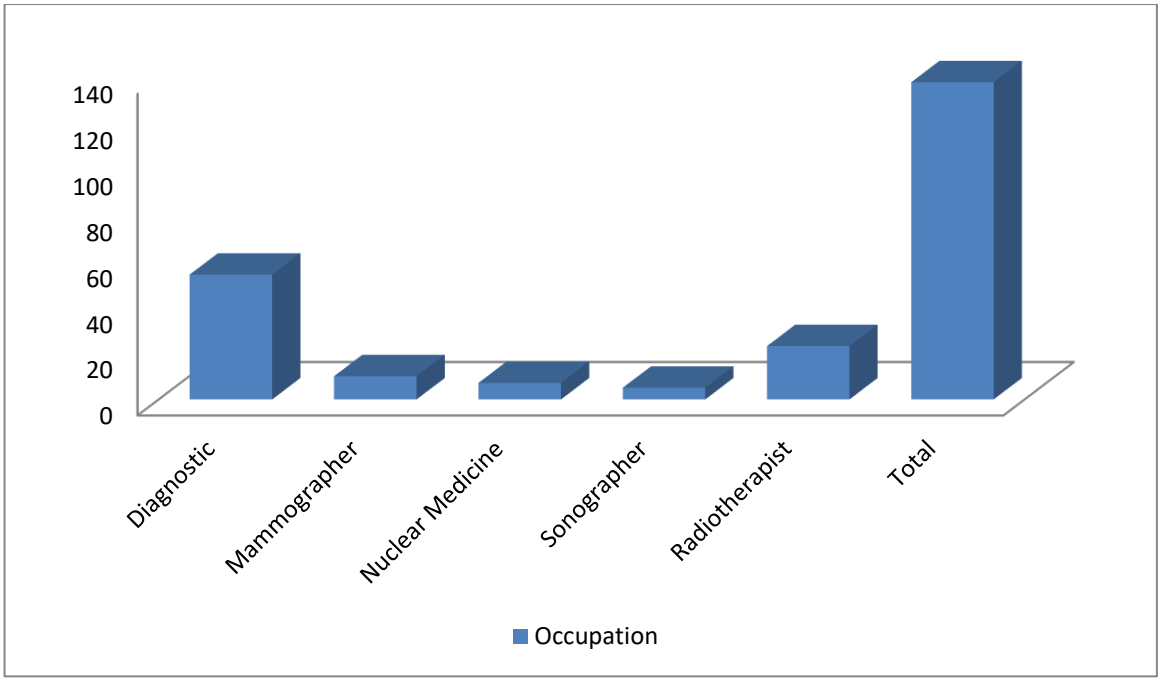

Figure 5.7: Radiographers per occupation (n=138)

5.3 RESPONSE RATE

Participants in the quantitative phase were from five tertiary hospitals, coded as Hospital A, B, C, D and E (Figure 5.8). A total of 208 questionnaires were distributed. The total number of questionnaires received and included in the data analysis and interpretation was 138, from all five hospitals. The response rate was measured at 66.35%, which is viable for this study. According to Fincham (2008: 43), an expected response rate in research is approximately 60%. The results of the study showed that 29% (n=40) were from Hospital A; 31.2% (n=43) were from Hospital B; 22.5% (n=31) were from Hospital C; 10.9% (n=15) were from Hospital D; and 6.5% (n=9) were from Hospital E, as illustrated in Figure 5.8.

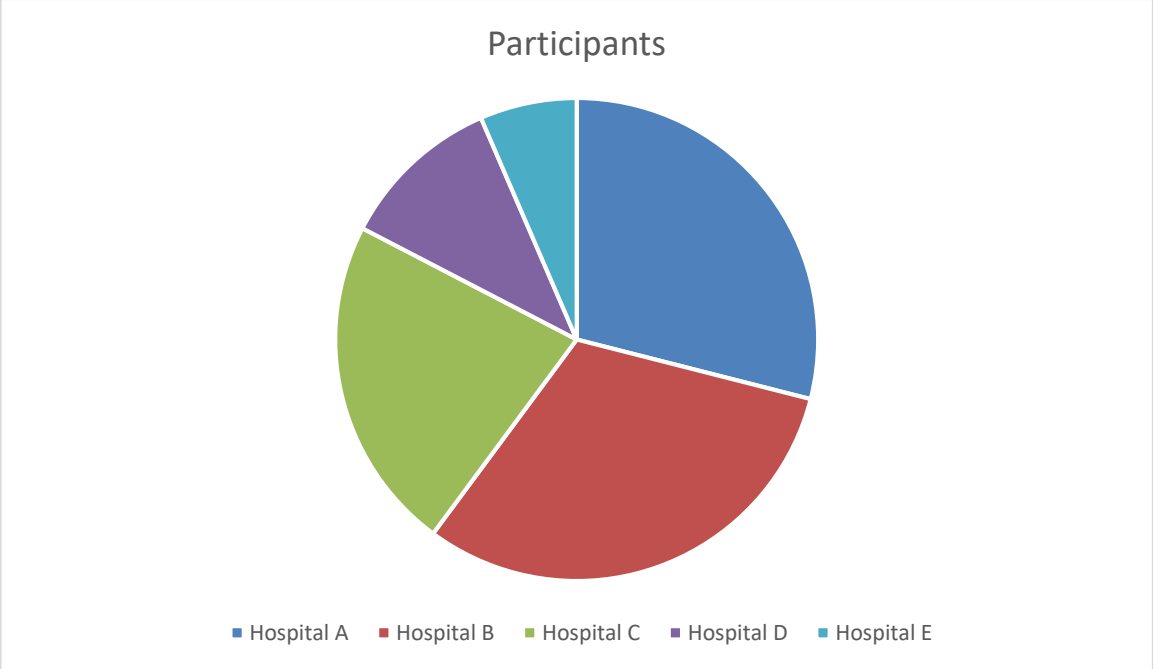

Figure 5.8: Representation of radiographers in tertiary hospitals in the study

The results of the study also illustrated that the overall return rate in the quantitative phase of the study was measured at 66.35%, are shown in Figure 5.9.

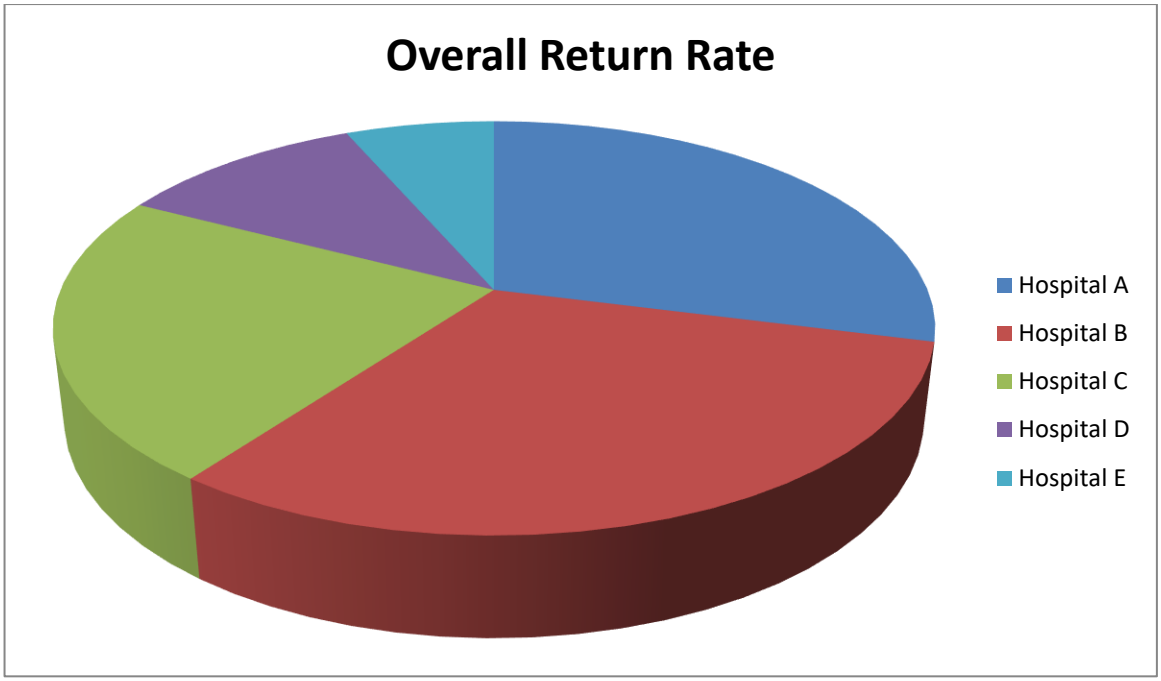

Figure 5.9: Response rate of radiographers

5.4 FACTORS THAT INFLUENCE THE RESIGNATIONS OF RADIOGRAPHERS EMPLOYED BY TERTIARY HOSPITALS

5.4.1 Assessment of the factors that influence staff resignation

The following mean responses were received for the various standards within the sub-domain across all five hospitals. The data was analysed using non-parametric tests. A univariate analysis was applied on each item to test for significant agreement or disagreement with the statements by using the Wilcoxon signed ranks test.

5.4.1.1 Significant agreement

There is significant agreement that moving to another radiography position in South Africa or overseas would be precipitated by the following:

Item B1.1: There is significant agreement (M=4.65) that poor working conditions cause radiographers to move to another position, Z= -7.376, p<.0005.

Item B1.2: There is significant agreement (M=4.15) that an unhygienic working environment causes radiographers to move to another position, Z= -4.318, p=.001.

Item B1.3: There is significant agreement (M=4.83) that high stress levels cause radiographers to move to another position, Z= -8.275, p=.048.

Item B1.4: There is significant agreement (M=4.33) that a lack of personal safety causes radiographers to move to another position, Z= -5.281, p<.0005.

Item B1.5: There is significant agreement (M=5.27) that uncompetitive salaries cause radiographers to move to another position, Z= -9.893, p<.0005.

Item B1.6: There is significant agreement (M=5.08) that the inability to negotiate salaries causes radiographers to move to another position, Z= -9.893, p<.0005.

Item B1.7: There is significant agreement (M=4.10) that poor/inadequate cause radiographers to move to another position, Z= -4.118, p<.0005.

Item B1.8: There is significant agreement (M=4.44) that malfunctioning equipment causes radiographers to move to another position, Z= -6.011, p<.0005.

Item B1.9: There is significant agreement (M=4.19) that out-dated equipment negatively causes radiographers to move to another position, Z=-4.250, p<.0005.

Item B1.10: There is significant agreement (M=4.76) that poor management and leadership cause radiographers to move to another position, Z= -7.858, p<.0005.

Item B1.12: There is significant agreement (M=4.07) that the inability to take leave when required causes radiographers to move to another position, Z= -4.294, p<.0005.

Item B1.13: There is significant agreement (M=4.26) that a lack of adequate training facilities causes radiographers to move to another position, Z= -5.614, p<.0005.

Item B1.14: There is significant agreement (M=4.94) that better opportunities elsewhere cause radiographers to move to another position, Z= -8.835, p<.0005.

Item B1.15: There is significant agreement (M=4.21) that ongoing exposure to crime causes radiographers to move to another position, Z= -4.659, p<.0005.

Item B1.16: There is significant agreement (M=4.76) that poor promotion prospects cause radiographers to move to another position, Z= -7.686, p<.0005.

Item B1.17: There is significant agreement (M=4.07) that poor infrastructure causes radiographers to move to another position, Z= -4.114, p<.0005.

Item 1.18: There is significant agreement (M=4.12) that down/out-dated facilities cause radiographers to move to another position, Z= -4.170, p<.0005.

Item B1.19: There is significant agreement (M=4.21) that working flexible hours causes radiographers to move to another position, Z= -5.003, p<.0005.

Item B1.20: There is significant agreement (M=4.02) that the inability to take study leave causes radiographers to move to another position, Z= -3.960, p<.0005.

Item B1.21: There is significant agreement (M=3.81) that not being allowed to attend conferences/courses causes radiographers to move to another position, Z= -2.380, p<.017.

Item B1.22: There is significant agreement (M=4.59) that unfair implementation of OSD causes radiographers to move to another position, Z= -6.501, p<.0005.

Item B1.23: There is significant agreement (M=4.96) that compensation for working overtime causes radiographers to move to another position, Z= -8.116, p<.0005.

Item B1.25: There is significant agreement (M=4.81) that having to work irregular shifts causes radiographers to move to another position, Z= -2.151, p<.031.

5.4.1.2 Significant disagreement

Item B1.26: There is significant disagreement (M=3.94) that job insecurity causes radiographers to move to another position, Z= -3.070, p<.0002.

The significant agreements and disagreement are illustrated in Table 5.2 and Figure 5.10. There was no significant agreement or disagreement to bad perceptions associated with working in the public healthcare system; therefore, no reporting was formally done.

Table 5.2: Factors that influence staff retention

Factors	Mean	Median	Standard Deviation	Z value	P value
Poor working conditions	4.65	5.00	1.407	-7.376	.000
Unhygienic working environment	4.15	5.00	1.669	-4.318	.001
High stress levels	4.83	5.00	1.34	-8.275	.048
Lack of personal safety	4.33	5.00	1.65	-5.281	.000
Uncompetitive salaries	5.27	6.00	1.071	-9.893	.000
Inability to negotiate salaries	5.08	6.00	1.233	-9.157	.000
Poor/inadequate benefit	4.10	4.00	1.618	-4.118	.000
Malfunctioning equipment	4.44	5.00	1.589	-6.011	.000
Equipment that is out dated	4.19	5.00	1.711	-4.250	.000
Poor management and leadership	4.76	5.00	1.321	-7.858	.102
Bad perception with working in the public sector	3.54	3.00	1.553	-.187	.000
Inability to take leave	4.07	4.00	1.473	-4.294	0.852
Lack of adequate training	4.26	5.00	1.395	-5.614	.000
Better opportunities elsewhere	4.94	5.00	1.254	-8.835	.000
On-going exposure to crime	4.21	5.00	1.645	-4.659	.000
Poor promotion prospects	4.76	5.00	1.448	-7.686	.000
Poor infrastructure	4.07	4.00	1.574	-4.114	.000
Run down/out dated facility	4.12	4.00	1.676	-4.170	.000
Inability to work flexible hours	4.21	4.00	1.5	-5.003	.000
Inability of take study leave	4.02	4.00	1.45	-3.960	.000
Not allowed to attend conferences/courses	3.81	4.00	1.512	-2.380	0.017
Unfair OSD implementation	4.59	5.00	1.588	-6.501	.000
Inadequate overtime compensation	4.96	6.00	1.527	-8.116	.000
Work irregular shift hours	3.81	4.00	1.68	-2.151	.031
Dissatisfaction with job insecurity	3.94	4.00	1.618	-3.070	.002

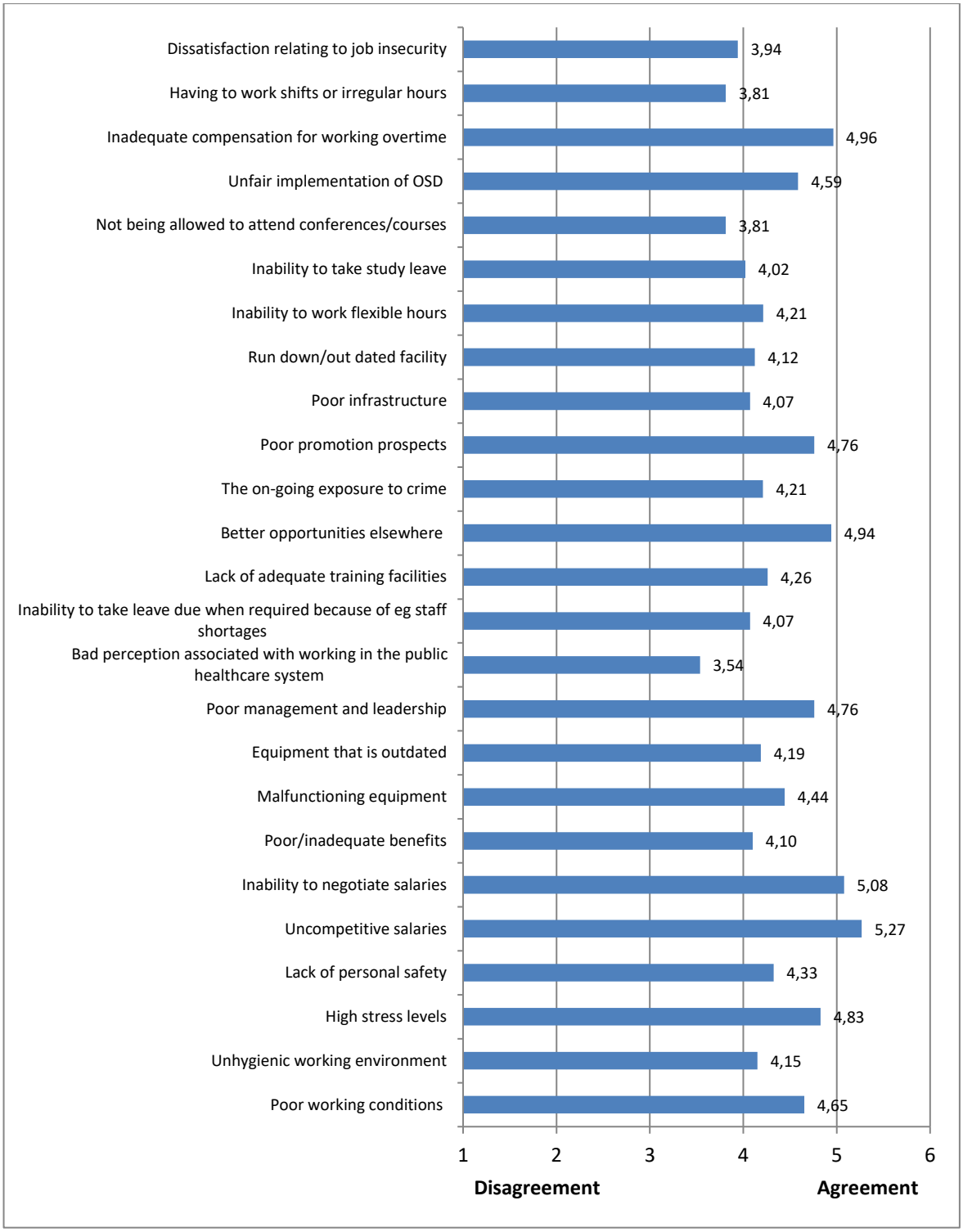

Figure 5.10: Factors influencing staff resignation: Mean responses

5.4.2 Validity and reliability score for factors influencing staff resignation

For the validity and reliability scores for factors influencing staff resignation using factor analysis to show convergent and discriminant validity, promax rotation was applied. The results of the study showed that there was a successful extraction of factors, with distinct and reliable factors being extracted as indicated by the Kaiser Meyer Olkin (KMO) and Bartlett's test illustrated in Table 5.3. The KMO of .809 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. Three factors were extracted which account for 55.79% of the variance in the data.

Table 5.3: KMO and Bartlett's test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	.809
Bartlett's Test of Sphericity – Sig	.000

Factors influencing staff resignation **Factor 1** items included standards B1.1, B1.2, B1.8, B1.9, B1.10, B1.11, B1.13, B1.17 and B1.18 as these are all measures of factors that influence staff resignation and that are directly applied to *environmental conditions*. **Factor 2** included standards B1.12, B1.14, B1.15, B1.21, B1.22, B1.25 and B1.26 as these are all measures of factors that influence staff resignation that are directly applied to *personal conditions*. **Factor 3** included standards B1.3, B1.5, B1.6 and B1.23 as these are all measures of factors that influence staff resignation that are directly applied to *stress and remuneration*. Factors were tested for reliability using Cronbach's alpha. Alpha>.7 is considered to indicate a reliable measure. The factors are described below.

Factor 1 Environment/conditions (ENV) alpha = .903
Factor 2 Personal/conditions (PER) alpha = .833
Factor 3 Stress and remuneration (REM) alpha = .657

5.4.3 Assessment of the correlation between factors

The data was analysed using non-parametric tests. A univariate analysis was applied on each item to test for significant agreement or disagreement to the statement by using the Wilcoxon signed ranks test. There are positive correlations between the three factors which are environmental conditions, personal conditions and stress and remuneration. Personal reasons for moving are correlated with environmental reasons, rho = .406, p<.0005; personal/conditions, rho = .391, p<.0005; stress and remuneration, rho = .328, p<.0005 as illustrated in Table 5.4.

Table 5.4: Correlation between factors

		ENV	PER	REM
Spearman's rho	Correlation Coefficient	.406	.391	.328
	Sig.	.000	.000	.000

The Wilcoxon ranks test was applied. The mean value for environmental is 4.2432; personal/conditions mean value is 4.1832; and the most influential factor is stress and remuneration with a mean value of 5.0332, as illustrated in Figure 5.11.

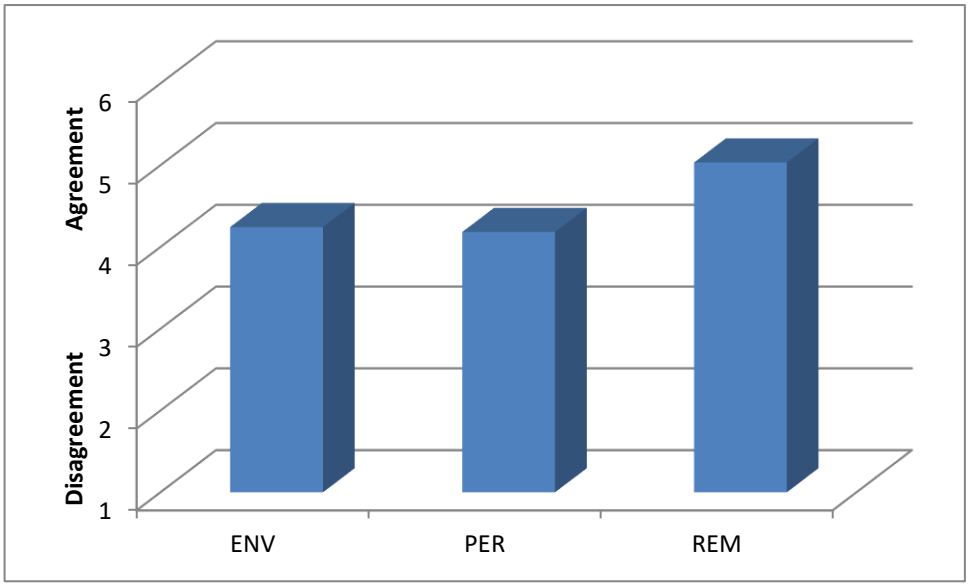

Figure 5.11: Correlation between factors: Mean responses

5.5 FACTORS THAT CAUSE MOVEMENT OUT OF RADIOGRAPHY

5.5.1 Assessment of factors that cause movement out of radiography

The data was analysed using non-parametric tests. A univariate analysis was applied on each item to test for significant agreement or disagreement with the statement by using the Wilcoxon signed ranks test. The factor analysis showed that a single factor was optimal for the ten items that were interpreted.

5.5.1.1 Significant agreement

There is significant agreement that moving out of radiography would be precipitated by the following:

Item B2.1: There is significant agreement (M=4.65) that high stress levels cause radiographers to move out of radiography, Z= -5.159, p<.0005.

Item B2.2: There is significant agreement (M=3.96) that long working hours cause radiographers to move out of radiography, Z= -3.412, p<.0001.

Item B2.3: There is significant agreement (M=3.79) that irregular working hours cause radiographers to move out of radiography, Z= -1.979, p=.048.

Item B2.4: There is significant agreement (M=4.19) that radiation hazards cause radiographers to move out of radiography, Z= -4.477, p<.0005.

Item B2.5: There is significant agreement (M=5.03) that poor financial rewards cause radiographers to move out of radiography, Z= -8.381, p<.0005.

Item B2.6: There is significant agreement (M=5.25) that limited opportunities for professional development cause radiographers to move out of radiography, Z= -9.479, p<.0005.

Item B2.7: There is significant agreement (M=4.70) that radiography is not highly regarded as other careers cause radiographers to move out of radiography, Z= -7.518, p<.0005.

5.5.1.2 Significant disagreement

Item B2.8: There is significant disagreement (M=2.88) that radiographers do not enjoy their job, which would cause radiographers to move out of radiography, Z= 4.085, p<.0005 as illustrated in Table 5.5 and Figure 5.12.

Table 5.5 Factors that cause movement out of radiography

Factors	Mean	Median	Standard Deviation	Z Value	P Value
High stress levels	4.24	4.00	1.507	-5.159	.000
Long working hours	3.96	4.00	1.470	-3.412	.0001
Irregular working hours	3.79	4.00	1.653	-1.979	.048
Radiation hazards	4.19	4.00	1.655	-4.477	.000
Poor financial rewards	5.03	6.00	1.382	-8.381	.000
Limited opportunities for professional development	5.25	6.00	1.317	-9.479	.000
Radiography is not highly recommended	4.70	5.00	1.473	-7.518	.000
I don't enjoy my job as a radiographer	2.88	2.00	1.653	-4.085	.000
Unable to balance social and work life	3.26	3.00	1.549	-1.871	.061
Job is not flexible	3.72	4.00	1.624	-1.634	.102

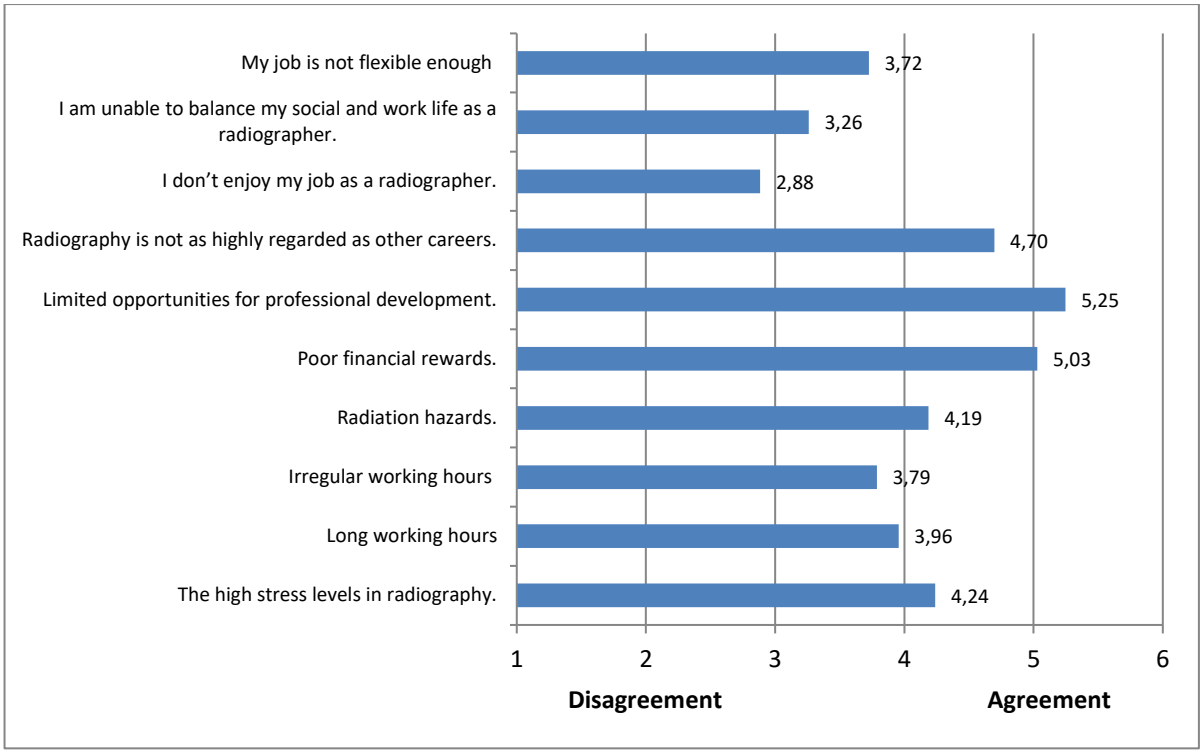

Figure 5.12: Factors that influence staff retention: Mean responses

5.6 FACILITATORS OF STAFF RETENTION

5.6.1 Assessment of the facilitators of staff retention

The data was analysed using non-parametric tests. A univariate analysis was applied on each item to test for significant agreement or disagreement with the statement by using the Wilcoxon signed ranks test.

5.6.1.1 Significant agreement

There is significant agreement that the facilitators of staff retention would be precipitated by the following:

Item C1.1: There is significant agreement (M=5.28) that improvements in working conditions are facilitators of staff retention, Z= -9.998, p<.0005.

Item C1.2: There is significant agreement (M=5.32) that the ability to negotiate salaries is a facilitator of staff retention, Z= -9.576, p<.0005.

Item C1.3: There is significant agreement (M=5.40) that salaries based on qualifications, skills and experience are facilitators of staff retention, Z= -9.635, p<.0005.

Item C1.4: There is significant agreement (M=5.18) that the assurance of well-maintained and working equipment is a facilitator of staff retention, Z= -9.852, p<.0005.

Item C1.5: There is significant agreement (M=5.18) that state of the art equipment is a facilitator of staff retention, Z= -9.529, p<.0005.

Item C1.6: There is significant agreement (M=5.65) that good/fair management and leadership are facilitators of staff retention, Z= -10.565, p<.0005.

Item C1.7: There is significant agreement (M=5.58) that the assurance of job security are facilitators of staff retention, Z= -10.343, p<.0005.

Item C1.8: There is significant agreement (M=5.19) that attractive hospital facilities are facilitators of staff retention, Z= -9.701, p<.0005.

Item C1.9: There is significant agreement (M=5.01) that secure infrastructure is a facilitator of staff retention, Z= -9.388, p<.0005.

Item C1.10: There is significant agreement (M=5.34) that a secured hospital against crime is a facilitator of staff retention, Z= -10.635, p<.0005.

Item C1.11: There is significant agreement (M=5.46) that adequate and safe parking are facilitators of staff retention, Z= -10.361, p<.0005.

Item C1.12: There is significant agreement (M=5.53) that financial rewards are facilitators of staff retention, Z= -10.251, p<.0005.

Item C1.13: There is significant agreement (M=5.56) that good medical aid cover is a facilitator of staff retention, Z= -10.352, p<.0005.

Item C1.14: There is significant agreement (M=5.43) that flexible working hours are facilitators of staff retention Z= -10.305, p<.0005.

Item C1.15: There is significant agreement (M=5.71) that career advancement and/or opportunities are facilitators of staff retention, Z= -10.693, p<.0005.

Item C1.16: There is significant agreement (M=5.65) that the opportunity to attend conferences for CPD points funded by the employer is a facilitator of staff retention, Z= -10.609, p<.0005.

Item C1.17: There is significant agreement (M=5.59) that promoting further education by providing study leave is a facilitator of staff retention, Z= -10.633, p<.0005.

Item C1.18: There is significant agreement (M=5.69) that the opportunity to attend conferences for professional development at no cost is a facilitator of staff retention, Z= -10.716, p<.0005.

Item C1.19: There is significant agreement (M=5.75) that having professional fees paid for is a facilitator of staff retention, Z= -10.821, p<.0005.

Item C1.20: There is significant agreement (M=5.28) that a competitive annual salary increase is a facilitator of staff retention, Z= -10.571, p<.0005.

Item C1.21: There is significant agreement (M=5.59) that proper/fair appraisals are facilitators of staff retention, Z= -5.159, p<.0005.

Item C1.22: There is significant agreement (M=5.70) that increasing the number of staff is a facilitator of staff retention, Z= -10.762, p<.0005 illustrated in Table 5.6 and Figure 5.13.

Table 5.6: Facilitators of staff retention

Facilitators	Mean	Median	Standard Deviation	Z Value	P Value
Improvement in working conditions	5.28	6.00	.942	-9.998	.000
Ability to negotiate salary	5.32	6.00	1.120	-9.576	.000
Salaries based on qualifications, skills and experience	5.40	6.00	1.162	-9.635	.000
Assurance of well-maintained and working equipment	5.4	6.00	1.008	-9.852	.000
State of the art equipment	5.18	5.00	1.055	-9.529	.000
Good/fair management and leadership	5.66	6.00	.750	-10.565	.000
Assurance of job security	5.58	6.00	0.781	-10.343	.000
Attractive hospital facilities	5.19	5.00	1.036	-9.701	.000
Secure infrastructure around my work	5.01	5.00	1.000	-9.388	.000
Securing the hospital against crime	5.34	6.00	.924	-10.053	.000
Adequate and safe parking	5.46	6.00	.821	-10.361	.000
Competitive financial rewards	5.53	6.00	.914	-10.251	.000
Good medical aid cover	5.56	6.00	.828	-10.352	.000
Flexible working hours	5.43	6.00	.813	-10.305	.000
Career advancement and opportunities	5.71	6.00	.664	-10.693	.000
Attend conferences to get CPD points funded by the employer	5.65	6.00	.901	-10.389	.000
Promote further studies	5.59	6.00	.721	-10.609	.000
Attend conferences for professional development at no cost	5.69	6.00	.671	-10.633	.000
Having professional fees paid for	5.71	6.00	.930	-10.716	.000
Competitive annual increase in salary	5.75	6.00	.745	-10.821	.000
Proper/fair appraisal	5.59	6.00	.817	-10.571	.000
Increase staffing	5.70	6.00	.587	-10.762	.000

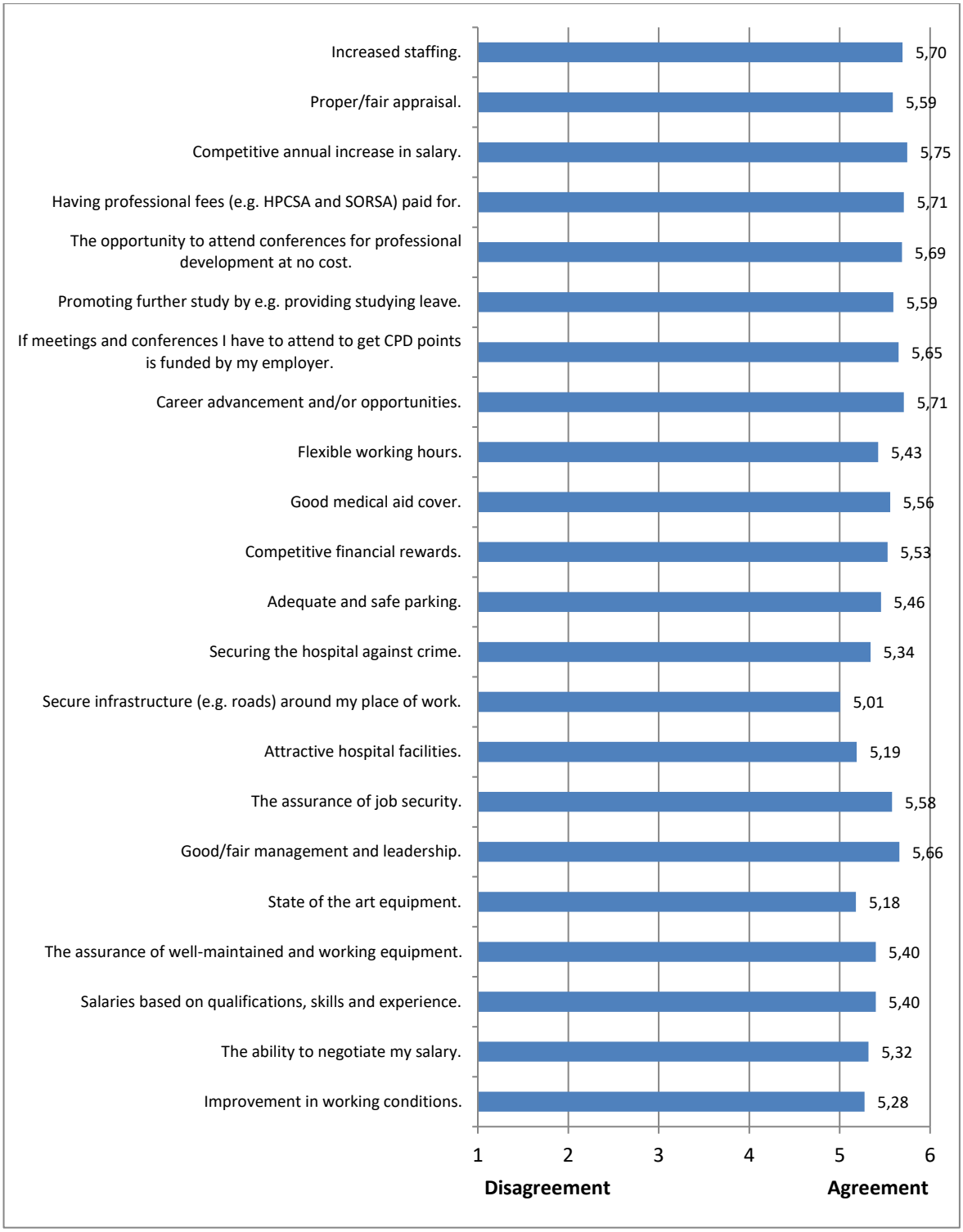

Figure 5.13: Facilitators of staff retention: Mean responses

5.6.2 Validity and reliability scores for facilitators of staff retention

For the validity and reliability scores for facilitators of staff retention using factor analysis to show convergent and discriminant validity, promax rotation was applied. The results of the study showed that there was successful extraction of factors, with distinct and reliable factors being extracted as indicated by the KMO and Bartlett's test that was applied as illustrated in Table 5.6. A KMO of .858 indicates that the data was adequate for successful and reliable extraction. Bartlett's test – p<.0005 – indicates that correlations between items are not too low. Three factors were extracted which account for 69.13% of the variance in the data.

Table 5.7 KMO and Bartlett's test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy	.858
Bartlett's Test of Sphericity – Sig	.000

Factors influencing facilitators of staff retention: **Factor 1** items included standards C1.20, C1.16, C1.19, C1.12, C1.13, C1.21 and C1.22, as these are all measures of facilitators of staff retention that are directly applied to remuneration. **Factor 2** included standards C1.11, C1.8, C1.9, C1.10, C1.5, C1.7 and C1.4, as these are all measures of facilitators that influence staff retention, which are directly applied to facilities. **Factor 3** included standards C1.1, C1.2, C1.15, C1.3 and C1.18, as these are all measures that influence facilitators of staff retention that are directly applied to personal conditions. Factors were tested for reliability using Cronbach's alpha. Alpha>.7 is considered to indicate a reliable measure. The factors are described below.

Factor 1 remuneration (RET_REM) alpha = .911
Factor 2 facilities (RET_FAC) alpha = .910
Factor 3 Personal (RET_PER) alpha = .817

5.6.3 Assessment of the correlation between factors

The data was analysed using non-parametric tests. A univariate analysis was applied on each item to test for significant agreement or disagreement with the statement by using the Wilcoxon signed ranks test. There are positive correlations between the three factors, which are remuneration, facilities and personal conditions. Facilitators of staff retention correlated with remuneration, rho = -10.279, p<.0005; facilities, rho = -9.944, p<.0005; and personal, rho = -10.118, p<.0005 as illustrated in Table 5.8.

Table 5.8: Correlation between factors

		RET_REM	RET_FAC	RET_PER
Spearman's rho	Correlations on Coefficient	-10.279	-9.944	-10.118
	P Value	.000	.000	.000

There are positive correlations between these three factors. Facilitators of staff retention correlated with remuneration (RET_REM), facilities (RET_FAC) and personal (RET_PER). A Wilcoxon ranks test was applied. The most influential factor is remuneration with a mean value of 5.6398; facilities' mean is value is 5.3075; and personal had a mean value of 5.4783, as illustrated in Figure 5.14.

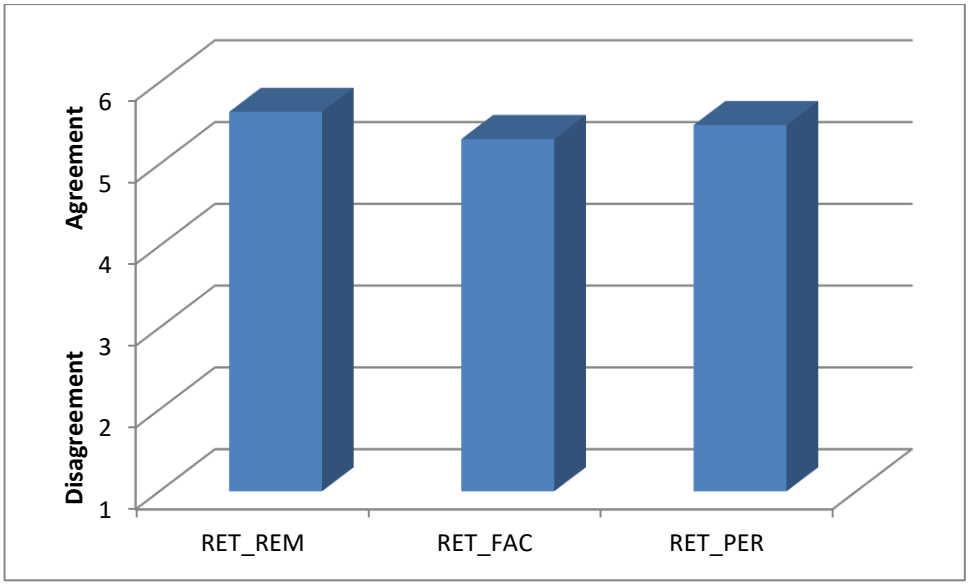

Figure 5.14: Correlation between factors: Mean responses

5.7 STAFF RETENTION

5.7.1 Assessment of staff retention

A binomial test was applied to test if the sig proportion answered yes or no. A significant 73% have never worked in a KZN private hospital as a radiographer, p<.0005. A significant 72% have never worked in private practice as a radiographer, p<.0005. A significant 87% have never left a public hospital to work in the private sector, p<.0005. A significant 99% have never left a public hospital to work overseas as a radiographer, p<.0005. A significant 96% have never left the radiography career to follow another career path, p<0005, as illustrated in Table 5.9.

Table 5.9: Staff retention

	Observed Prop.	P Value
Worked in a KZN private hospital	.73	.000
Worked in private practice as a radiographer	.72	.000
Left a public hospital to work in the private sector	.87	.000
Left a public hospital to work overseas as a radiographer	.99	.000
Would leave career in radiography to follow another career path	.96	.000

5.7.2 Mann Whitney U Test

A bivariate analysis was applied to analyse if the data differed significantly across demographic variables. According to the Mann Whitney T Test, males disagree significantly more (M=2.23) than females (M=3.06) with the fact that if they do not enjoy their job as a radiographer, this would cause them to move, Z=-2.386, p=.017 as illustrated in Table 5.10 and Table 5.11.

Table 5.10: Bivariate analysis by gender

	Mean	Median	Standard Deviation	Z Value	P Value
Males	2.23	2.00	1.251	2.386	.017
Females	3.06	2.00	1.709		

Table 5.11: Mann Whitney U Test by gender

	ENV	PER	REM	RET_ REM	RET_ FAC	RET_PE R
Mann Whitney U	1606.500	1398.5 00	1438.0 00	1417. 500	1397. 000	1281.50 0
Wilcoxon	7492.500	1863.5 00	1903.0 00	1882. 500	7283. 000	1746.50 0
Z	-.070	-1.145	-.946	-1.105	-1.160	-1.790
Sig.	.944	.252	.344	.269	.246	.074

5.7.3 Chi-square test : gender of the participants

The chi-square test of independence was applied to the data collected in section D vis a vis gender. It was identified that a significant proportion of males worked in private practice, $\chi 2$ (1) = 7.031, p=.008 as illustrated in Table 5.12.

Table 5.12: Pearson's Chi-square test for gender

	Value	Df	P Value
Pearson Chi-square test	7.031	1	.008

5.7.4 Spearman's correlation of the age and years of the participants

Spearman's correlation was applied since the age and years as a radiographer are both ordinal values. It was identified that more experience as a radiographer is associated with less agreement that these factors such as poor financial rewards would cause participants to move to another career R=-.215, p=.012 and limited opportunities for professional development, R=-.207, p=.015 as illustrated in Table 5.13 and Table 5.14.

Table 5.13: Spearman's correlation

	Correlation coefficient (R)	P Value
Poor financial rewards	-.215	-.207
Limited opportunities for professional development	0.12	.015

Table 5.14: Participants worked in a KZN private hospital as a radiographer

		Yes	No
Age	Count	15	73
21-33 years	Expected Count	23.6	64.4
	% within Age	17%	83.0%
	Std. Residual	-1.8	1.1
34-49 years	Count	20	24
	Expected Count	11.0	29.7
	% within Age	48.8%	58.5%
	Std. Residual	2.7	-1.0

5.7.5 Chi-square test for radiographers that worked in a KZN private hospital

The chi-square test of independence was applied to the data collected for radiographers who worked in a KZN private hospital. It was identified that a significant proportion who worked in a KZN private hospital as a radiographer were between the age 34-49 years, $\chi 2$ (2) = 14.458, p=.001 as illustrated in Table 5.15.

Table 5.15: Pearson Chi-square test

	Value	df	P Value
Pearson Chi-square test	14.458	2	.001

5.7.6 Chi-square test for radiographers that worked in private practice

The chi-square test of independence was applied to the data collected for radiographers that worked in private practice. It was identified that a significant proportion who worked in private practice as a radiographer were between age 34-49 years, $\chi 2$ (2) = 6.349, p=.042 as illustrated in Table 5.16 and Table 5.17.

Table 5.16: Participants who left a public hospital to work in the private sector

		Yes	No
Age	Count	9	32
34-49 years	Expected Count	5.3	35.7
	% within Age	22.0%	78.0%
	Std. Residual	1.6	-.6
50+ years	Count	3	6
	Expected Count	1.2	7.8
	% within Age	33.3%	66.7%
	Std. Residual	1.7	-.7

Table 5.17: Pearson Chi-square test for radiographers who worked in private practice

	Value	df	P Value
Pearson Chi-square test	**6.349**	**2**	**.042**

5.7.7 Chi-squared test for participants who left a public hospital to work in the private sector

The chi-square test of independence was applied to the data collected for radiographers who left a public hospital to work in the private sector. It was identified that a significant proportion of radiographers who left a public hospital to work in the private sector are between age 34-49 years and 50+, $\chi 2$ (2) = 9.142, p=.010 as illustrated in Table 5.18.

Table 5.18: Pearson Chi-square test

	Value	df	P Value
Pearson Chi-square test	9.142	2	.010

5.7.8 Participants' number of years worked in a KZN private hospital

The chi-square test of independence was applied to the data collected for the radiographers' number of years worked in a KZN private hospital. It was identified that a significant proportion that worked in a KZN private hospital as a radiographer were age > 20 years, $\chi 2$ (3) = 8.011, p=.046 as illustrated in Table 5.19 and Table 5.20.

Table 5.19: Participants' number of years worked in a KZN private hospital

		Yes	No
Years qualified	Count	10	9
> 20 years	Expected Count	5.1	13.9
	% within Age	52.6%	47.4%
	Std. Residual	2.2	-1.3

Table 5:20 Pearson Chi-square test for the number of year's participants worked in a KZN private hospital

	Value	df	P Value
Pearson Chi-square test	8.011	3	.046

5.7.9 Participants' number of years in private practice as a radiographer

The chi-square test of independence was applied to the data collected for the years of experience that radiographers that worked in private practice. The significant proportion of these radiographers ages are identified as > 20 years, $\chi 2$ (3) = 9.075, p=.028 as illustrated in Table 5.21 and Table 5.22.

Table 5.21: Number of years that participants worked in private practice

		Yes	No
Years qualified	Count	10	9
> 20 years	Expected Count	5.2	13.8
	% within Age	52.6%	47.4%
	Std. Residual	2.2	-1.3

Table 5.22: Pearson Chi-square test for participants' number of years worked in private practice

	Value	Df	P Value
Pearson Chi-square test	9.075	3	.028

5.7.10 Number of years of participants that left a public hospital to work in the private sector

The Fisher's exact test was applied to the data collected for the number of years that radiographers left public hospitals to work in private sector. The significant proportion of these radiographers ages are identified as > 20 years, R = 8.011, p=.001 as illustrated in Table 5.23 and 5.24.

Table 5.23: Number of years of participants that left a public hospital to work in the private sector

		Yes	No
Years qualified	Count	8	11
> 20 years	Expected Count	2.5	16.5
	% within Age	42.1%	57.9%
	Std. Residual	3.5	-1.4

Table 5.24: Fisher's exact test for years qualified for participants that left a public hospital

	Value	P Value
Fisher's exact test	15.464	.001

5.7.11 Assessment of race, marital status, position and occupation

The Kruskal Wallis test was applied to test race, marital status, position and occupation. There is a significant difference in agreement with the fact that radiography being not highly regarded would cause one to change careers across Race, $\chi 2$ (3) = 8.399, p=.038. Blacks agree more than Indians and

Whites, as illustrated in Table 5.25 and Table 5.26. There was no significance across marital status.

Table 5.25: Assessment of race

Race	Mean	Median	Standard deviation
Black	4.89	6.00	1.496
Indian	4.54	5.00	1.337
Coloured	4.50	5.50	2.074
White	2.50	2.50	.707

Table 5.26: Pearson Chi-square test for assessment of race

	Value	Df	P Value
Pearson Chi-square test	8.399	3	.038

The Kruskal Wallis test was applied to test the radiographers' positions. There was a significant difference in agreement on the environmental conditions ENV, $\chi 2$ (3) = 12.28, p=.006; remuneration RET_REM, $\chi 2$ (3) = 9.922, p=.019; long working hours, $\chi 2$ (3) = 10.475, p=.015 and irregular working hours, $\chi 2$ (3) = 8.883, p=.031 as illustrated in Table 5.27.

Table 5.27: Pearson Chi-square test for assessment of position

Pearson Chi-square test	Value	Df	P Value
ENV	12.28	3	.006
RET_REM	9.922	3	.019
Long working hours	10.475	3	.015
Irregular working hours	8.883	3	.015

The Kruskal Wallis test was applied to test occupation. There is a significant difference in agreement on the environmental conditions ENV, $\chi 2$ (4) = 16.66, p=.002; remuneration RET_REM, $\chi 2$ (4) = 16.570, p=.002; facilities RET_FAC, $\chi 2$ (4) = 19.360, p=.001; personal conditions RET_PER, $\chi 2$ (4) =

10.008, p=.040; irregular working hours, χ2 (3) = 21.317, p=<.0005 and radiation hazards, χ2 (4) = 11.681, p=.020 as illustrated in Table 5.28.

Table 5.28: Pearson Chi-square test for assessment of occupation

Pearson Chi-square test	Value	Df	P Value
ENV	16.66	4	.002
RET_REM	16.570	4	.002
RET_FAC	19.362	4	.001
RET_PER	10.008	4	.040
Irregular working hours	21.317	4	.000
Radiation hazards	11.681	4	.020

5.8 SUMMARY OF CHAPTER

Chapter 5 presented the results of the data analysis for Phase 1, the quantitative phase of the study. The quantitative data aimed to achieve the first three objectives of the study, which were to analyse the staff retention of radiographers employed by tertiary hospitals in KZN; identify the factors that influenced the resignations of radiographers employed by tertiary hospitals; and correlate the factors that influenced the resignations of radiographers employed by tertiary hospitals. The chapter focused on results of the data obtained through questionnaires and subsequently analysed by statistical analysis methods. The next chapter presents the qualitative phase of the study in relation to the study's objectives and to the conceptual framework chosen for the study.

CHAPTER 6: PRESENTATION OF RESULTS: PHASE 2 (QUALITATIVE DATA)

6.1 INTRODUCTION

The previous chapter presented the results for Phase one (quantitative phase) of the study. This chapter presents the results of Phase 2 (qualitative phase) of the study. In Phase 2, interviews were conducted with radiographers and management from the different disciplines within radiography. The findings were structured into hygiene factors (extrinsic) and motivational (intrinsic) factors using Herzberg's Theory. The presentation of this phase of the results of the study includes the description of the participants, key findings which are grouped into themes and which are further discussed in sub-themes.

6.2 SAMPLE REALISATION

A total of five tertiary hospitals in KZN, three of which were from the eThekwini district, one from the uMgungundlovu district and one from the King Cetshwayo district, were included in the study. The hospitals were coded as hospitals A, B, C, D and E. They are managed by hospital managers, boards of directors and are regulated by the Department of Health.

Ten participants were interviewed from the four different radiography disciplines in the five tertiary hospitals: three from Hospital A, three from Hospital B, two from Hospital C, one from Hospital D and one from Hospital E. The number of interviews conducted during the qualitative phase of the study at each hospital was guided by data saturation. The interviews were conducted over a period of three weeks.

6.3 DESCRIPTION DATA OF PARTICIPANTS

The participants in the study were radiographers and management from the different radiography disciplines, three of which were males and seven females. Regarding the ages of the participants, two were between the ages of 21 and 33 years; six were between 34 and 49 years old; and two were 50 years and above in age. Regarding the race of the participants, two were Black, seven were Asian and one was Coloured. The experience levels measured the years of service in the radiography profession and ranged as follows: two participants had 2-10 years of experience, six participants had 10-15 years of experience and two had above 15 years. The designations of the participants were two grade 1 radiographers, five grade 2 radiographers, two grade 3 radiographers and one assistant director. The participants were selected across all specialisations so that a more meaningful understanding could be obtained on the experience of retaining staff, as well as to obtain recommendations on the development of a new tool. The demographic data of the interviewed participants is depicted in Table 6.1.

Table 6.1: Demographic data of the interviewed participants

Participant	Gender	Age	Race	Marital status	Years of service	Position occupied	Discipline	Hospital
01	Female	21-33	Black	S	2-10	Gr 1	RT	B
02	Female	21-33	Asian	M	>15	Gr 2	RT	A
03	Female	34-49	Asian	M	>15	Gr 3	MR	A
04	Female	34-49	Asian	D	10-15	Gr 2	RT	A
05	Female	34-49	Asian	M	>15	Gr 2	NMR	B
06	Female	34-49	Asian	S	2-10	Gr 1	US	B
07	Male	34-49	Coloured	M	>15	Gr 2	RT	C
08	Female	34-49	Asian	S	10-15	Gr 2	DR	C
09	Male	> 50	Asian	M	>15	AD	DR	D
10	Male	> 50	Black	M	>15	Gr 3	DR	E

***Key:**
S= Single
M= Married
D= Divorced
Gr 1= Grade 1
Gr 2= Grade
Gr 3= Grade 3
AD= Assistant director
DR= Diagnostic radiographer
M= Mammographer
RT= Radiation Therapist
NMR= Nuclear Medicine radiographer
US= Sonographer
> = greater.

6.4 CONCEPTUALISATION OF STAFF RETENTION BY RADIOGRAPHERS

The objective of Phase two of the study was to explore the factors that are conducive to staff retention. It was achieved through asking participants questions (Appendix 9a). Table 6.2 below illustrates the categories, themes and sub-themes that emerged during the process of data analysis.

Table 6.2: Table of categories, themes and sub-themes

Category	Themes	Sub-theme
1. Hygiene factors (Extrinsic)	1.1 Influence of working conditions on staff retention	1.1.1 Increased workload and staff shortage.
		1.1.2 Lack of support from management.
		1.1.3 Lack of hygienic factors.
		1.1.4 Stressful or long working hours.
		1.1.5 Poor infrastructure.
		1.1.6 Malfunctioning equipment.
2. Hygiene factors (Extrinsic)	2.1 Government policies	2.1.1 Occupational Specific Dispensation (OSD).
		2.1.2 Employment Equity Act (EEA).
3. Hygiene factors (Extrinsic)	3.1 Inadequate remuneration	3.1.1 Poor or unfair remuneration.
		3.1.2 Lack of benefits
		3.1.3 Lack of overtime remuneration.
		3.1.4 Lack of recognition.
4. Motivational factors (Intrinsic)	4.1 Career pathing	4.1.1 Career growth.
		4.1.2 Opportunities for promotion.

In the presentation of the results, the themes and sub-themes are supported with verbatim statements from the participants in order to validate their relevance to the results. All participants were interviewed in English as this is the preferred spoken language. Excerpts of interviews that have been included in this chapter to support the themes are from the original transcripts

of interviews. The only alterations have been the inclusion of punctuations such as full stops, commas and question marks in order to make the participants' quotes more comprehensible and logical, while retaining the integrity of the data.

6.4.1 Theme 1: Influence of working conditions on staff retention

The conditions of the working environment are linked to the satisfaction of radiographers. Factors were identified in the working environment which is related to the retention and resignation of radiographers. These factors were merged into sub-themes identified as increased workload and staff shortages; lack of support from management; lack of hygienic factors; stressful or long working hours; poor infrastructure; and malfunctioning equipment.

6.4.1.1 Sub-theme 1: Increased workload and staff shortages

The participants in this study indicated that the number of radiographers employed by government hospitals has decreased. The decrease in radiographers has resulted in increased workloads for radiographers and increased waiting times for patients. According to the participants, these results could lead to further resignations. The following were the participants' responses on concerns related to workload and staff shortages:

"It is difficult when staff have to take annual leave or sick leave. There is a greater shortage of staff during those days. The remaining radiographers have to work harder. These conditions will influence me to resign and find other employment elsewhere. It would be nice if radiographers are given incentives for those that do much more than what is expected of them." (Participant 02, Hospital A, Grade 2, Radiation Therapist).

"We work under demanding working conditions from having to deal with the backlog of patients. Our working hours are not enough to assist all the patients. Patients are waiting for treatment because of the lack of manpower as we know there is a shortage of radiographers. The high workload will

cause radiographers to burnout. I would resign if these conditions do not change." (Participant 05, Hospital B, Grade 2, Nuclear Medicine Radiographer).

"We are very busy as this is a very big hospital. We have to manage with the workload with the staff we have. It is also difficult as we do not have a lot of senior radiographers to train and mentor the junior radiographers. I have to work on the floor and still manage the radiographers. Despite the challenges, I will not resign as I enjoy my profession and mentoring other radiographers." (Participant 10, Hospital E, Grade 3, Diagnostic Radiographer).

"There is a backlog of patients and not enough radiographers to manage these patients in a quick turnover. Radiographers work hard to see as many patients as they can. However, if there were enough radiographers, we could work shifts to increase the number of patients being treated daily. Due to the increasing workload and shortage of staff, this will influence me to resign and find better working conditions." (Participant 03, Hospital A, Grade 3, Mammographer).

"What would make me to resign is the abundance of work that I perform with the little money I earn as a radiographer." (Participant 10, Hospital E, Grade 3, Diagnostic Radiographer).

"What would make me resign are the high workload, shortage of staff and stressful working conditions. I would also resign due to the victimisation from management and other staff." (Participant 06, Hospital B, Grade 1, Sonographer).

"We see a lot of patients and have a shortage of staff in our department. Sometimes I do feel burnout. However, I cannot resign from my job. I live near the hospital I work at. It will be difficult for me to look for employment elsewhere unless I relocate." (Participant 07, Hospital C, Grade 2, Radiation Therapist).

“The other reason that leads to my stress is the shortage of staff. There is never enough staff in the government sector. Staff are not always happy with their duties or have other problems. Instead of trying to resolve the problems, staff resign and find other jobs.” (Participant 04, Hospital A, Grade 2, Radiation Therapist).

“Staff resigns when they cannot handle all their tasks. It is difficult to try and cope with the high number of patients we see daily. We do not have enough staff to cope comfortably.” (Participant 09, Hospital D, Assistant Director, Diagnostic Radiographer).

“I get stressed with the workload and the type of patients I have to deal with daily. Many patients are also very abusive towards the radiographers if they are not seen timeously and are angry with the waiting times. I do not want to continue working in this environment. I’d rather find employment at another hospital and feel happy with the service we provide.” (Participant 08, Hospital C, Grade 2, Diagnostic Radiographer).

6.4.1.2 Sub-theme 2: Lack of support from management

Participants revealed mixed reactions regarding support from senior management. Some of the participants felt that they are supported by their management, while others expressed a lack of support, which has a great influence on radiographers’ resignations. Participants articulated their own viewpoints in the sentiments regarding senior management below:

“I enjoy my role managing radiographers. The senior management are also very accommodating in terms of leave and taking family responsibility leave. I also think as a radiographer manager I am paid a good salary. The positive working environment will retain me in this hospital.” (Participant 03, Hospital A, Grade 3, Mammographer).

"With regards to work environment that would make me resign will be if management treats staff unfairly and there is too much conflict amongst staff. This makes working with my colleagues unbearable and I do not look forward to going to work." (Participant 02, Hospital A, Grade 2, Radiation Therapist).

"I would appreciate a positive work environment to allow me to stay in my department as a radiographer. I would resign due to management not appreciating me, acknowledging me for the work I do and not been given recognition for going the extra mile." (Participant 06, Hospital B, Grade 1, Sonographer).

"I have a good working relationship with my colleagues. I enjoy being in my working environment but I would resign due to staff are not always treated fairly. There is sometimes unsupportive leadership and staff well-being is not cared for." (Participant 04, Hospital A, Grade 2, Radiation Therapist).

"I would resign as sometimes I have to work in a negative environment. I have to endure unfair treatment and conflicting working relationships. The environment is toxic but I have a work while looking for a non-toxic environment. This would cause me to resign due to lack of support from management to improve the negativity in my working place." (Participant 08, Hospital C, Grade 2, Diagnostic Radiographer).

"Unhappiness would make me resign as there is no support from senior management even if you complain about your working conditions." (Participant 10, Hospital E, Grade 3, Diagnostic Radiographer).

"Being in a managerial position, lack managerial training. Radiography managers are not provided with the tools to manage staff and how to follow disciplinary protocols. These downfalls make me want to resign and find another management post that can train me." (Participant 09, Hospital D, Assistant Director, Diagnostic Radiographer).

"If there were enough radiographers, we could work shifts to increase the number of patients being treated daily. Management should be more accommodating to try and find solutions to these problems. The lack of management support makes me want to resign as my ideas are not considered." (Participant 02, Hospital A, Grade 2, Radiation Therapist).

The support from senior management to improve these working conditions could enable me to stay in my job." (Participant 07, Hospital C, Grade 2, Radiation Therapist).

6.4.1.3 Sub-theme 3: Lack of hygienic factors

Participants indicated their need to resign over their concerns about the lack of hygienic factors in their working environment. These unhygienic conditions can result in health risks for the participants and patients. Similar concerns were expressed by the participants, as noted in the excerpts below:

"We cannot always provide the basic patient care all the time due to certain services e.g. receiving clean linen. We get told there is no clean linen, there is a delay due to not being washed timeously or the hospital doesn't have enough during that period. I cannot work in an unhygienic environment." (Participant 02, Hospital A, Grade 2, Radiation Therapist).

"I would resign from this hospital as I feel we work in unhygienic working conditions. Cleaning equipment e.g. mops are very old and dirty. We are supplied with disinfectants and detergents, but when we ask the cleaning staff say they do not have." (Participant 04, Hospital A, Grade 2, Radiation Therapist).

"Our departments are not cleaned thoroughly. The unhygienic working conditions are appalling. We are prone to so many infections. The infection and control statistics indicate the high amount of staff that is contracting tuberculosis on a regular basis. After I finish work I cannot sanitise myself. I

have to pick up my kids but I have to avoid hugging or kissing them to not expose them to all these infections. I would consider resigning if the hygienic conditions worsen or are not resolved." (Participant 03, Hospital A, Grade 3, Mammographer).

"I would definitely resign as there is a lot of health and safety issues and infection control that needs attention. The unhygienic conditions and the interaction with patients put the staff lives at risk as they can easily pick up infections." (Participant 05, Hospital B, Grade 2, Nuclear Medicine Radiographer).

The unhygienic conditions are a great concern for me. I would leave if I contract an illness due to hygiene or if any other incident occurs that could affect my health. (Participant 08, Hospital C, Grade 2, Diagnostic Radiographer).

6.4.1.4 Sub-theme 4: Stressful or long working hours

Some participants indicated that unhappiness with their working hours can lead to their resignation. Some participants prefer shorter hours or flexible hours. Excerpts from participants include:

"I personally need a job where I don't have to work hard and tiring hours. Although we work a normal day from 7:30am to 4pm, we are working very hard. With the back log of patients we are working extra hard and pushing to treat more patients. I am very exhausted by the end of the day. I would also like to work lesser hours and to be flexible to attend to personal matters in the day. I would resign and find a hospital that allows more flexible hours." (Participant 01, Hospital A, Grade 1, Radiation Therapist).

"Younger radiographers do not want to work these (long) hours. They want to work lesser hours and be paid the same salary. I am not sure if the same volume of work can be covered in lesser hours. However, this could retain

radiographers in the government sector." (Participant 07, Hospital C, Grade 2, Radiation Therapist).

I would resign as we work long tiring hours. If there are too many patients, the dedicated radiographers would sometimes skip tea or lunch breaks to get through the work. They would rather eat while working. Some of the radiographers work shifts and night duty. It is difficult when you have a family." (Participant 10, Hospital E, Grade 3, Diagnostic Radiographer).

6.4.1.5 Sub-theme 5: Poor infrastructure

Participants indicated the need for a safe internal and external infrastructure. Poor infrastructure can result in safety risks for the participants and could lead to staff resignations. Similar concerns were expressed by the participants, as noted in the excerpts below:

"There needs to be safer areas for radiographers to park their cars and to be able to access the hospital. Otherwise, radiographers will look for safer places to work in." (Participant 04, Hospital A, Grade 2, Radiation Therapist).

"The road infrastructure is a major concern. I am concerned about the safety of our vehicles although we park at the hospital staff parking. I have to consider my daily route to work daily especially during strikes. I would have to consider an alternate employment if the situation does not change." (Participant 09, Hospital D, Assistant Director, Diagnostic Radiographer).

"I would rather resign and work in a hospital where everything is functioning and working. At this hospital lifts do not work all the time. The lifts are old and not well maintained." (Participant 08, Hospital C, Grade 3, Diagnostic Radiographer).

6.4.1.6 Sub-theme 6: Malfunctioning equipment

The participants indicated likelihood to resign if they have to continue working with malfunctioning or old equipment. The participants pointed out that malfunctioning and out-dated equipment has a negative impact on service delivery. Participants verbalised that they were familiar with the lack of funding and elements that prevent equipment being updated timeously. Such concerns were expressed by the participants as follows:

"Our equipment is too old and needs to be replaced. Radiographers should be provided with modern equipment that is efficient to work with. Radiographers would rather resign and find employment where they are exposed to the latest equipment." (Participant 03, Hospital A, Grade 3, Mammographer).

"I would stay in my job if the technology and equipment provided is updated and always in working conditions." (Participant 01, Hospital B, Grade 1, Radiation Therapist).

"I would resign if I have to continue working with old equipment. There is a lack of funding for equipment. There is also no plan put in place on how the old equipment is going to be replaced in the years to come. Working with slow and outdated equipment causes unnecessary delays. The time allocated per patient is being taken up by slow equipment and not enough time left to focus on patient care." (Participant 09, Hospital D, Assistant Director, Diagnostic Radiographer).

"There is a constant mode of stress working in the government sector with malfunctioning equipment and backlog of patients. Radiographers resign and look for better working equipment in their new employment." (Participant 04, Hospital A, Grade 2, Radiation Therapist).

"Staff are unhappy to work with old equipment. Staff want to learn and work with new equipment especially the younger radiographers. They like to be creative and work fast. Younger staff like to keep up with updated technology and

software. They don't like to do the basics but rather enjoy automation tools to improve productivity. Young staff resigns looking for better working equipment." (Participant 07, Hospital D, Grade 2, Radiation Therapist).

"Radiographers need to be able to work with clean and well-maintained equipment. The government hospitals need to be able to keep up with the rest of the world with new machinery and techniques in order to retain staff." (Participant 06, Hospital B, Grade 1, Sonographer).

"We have to work with out-dated analogue equipment rather than new digital equipment. "Equipment is very expensive, but it needs to be adequately maintained. We cannot afford to work with slow and out-dated machines. This slows us down. If we have more digital equipment, we can attend to more patients in a shorter time. Staff do not want to stay in hospitals that are backwards. They rather resign and work in hospitals that they can grow in." (Participant 09, Hospital D, Assistant Director, Diagnostic Radiographer).

"We need good equipment and enough personnel to do the work. Otherwise we will lose more staff." (Participant 10, Hospital E, Grade 3, Diagnostic Radiographer).

"We work with a lack of resources and sometimes malfunctioning equipment. It would cause me to resign from my job." (Participant 08, Hospital D, Grade 2, Diagnostic Radiographer).

6.4.2 Theme 2: Government policies

In the interview discussion with participants on staff retention, it was indicated that the issue of unfair salaries commenced from the participants' unhappiness with the OSD salary notches. It was also identified that the participants considered that the selection of candidates for other positions were done unfairly. The sub-themes that emerged were the OSD Policy and Employment Equity Act.

6.4.2.1 Sub-theme 1: Occupational Specific Dispensation (OSD)

Participants expressed mixed viewpoints in relation to the OSD Policy that was implemented by the government. Some participants articulated their concerns with the unfair implementation, while some participants thought that the OSD had a positive influence in terms of salary. This was evident from the following sentiments expressed by the participants, as noted below:

"I am unhappy with the OSD and salary scales. It should have taken e.g. B. Tech, Masters and Doctorate into consideration. We study hard and get qualifications and need to be compensated for it. Our qualifications have an impact on how we perform our duties and the knowledge we have to impart to our colleagues. A radiographer with a diploma and a radiographer with masters should not be getting paid the same scale. I would rather resign and work where my qualifications are recognised." (Participant 08, Hospital D, Grade 2, Diagnostic Radiographer).

"After the OSD was implemented, uniform allowance fell away at some hospitals. This is unfair to the radiographers in the government sector as we all should be under one umbrella. There should be a set standard and not hospital dependent. Then staff want to resign and move to hospitals with better benefits." (Participant 02, Hospital A, Grade 2, Radiation Therapist).

6.4.2.2 Sub-theme 2: Employment Equity Act (EEA)

The Employment Equity Act was promulgated to promote equal opportunities and fair treatment for all in the workplace. However, participants feel that its implementation has resulted in the unfair selection of candidates to fill a post. Participants expressed their sentiments below:

"Positions are given to employees that fit the criteria but unable to perform the tasks. Some are given grade 3 positions but are not able to perform in this position." (Participant 04, Hospital A, Grade 2, Radiation Therapist).

“Staff that is selected for the position is not always capable of doing all the duties efficiently. The unfairness makes me want to resign and find a position where I would be acknowledged.” (Participant 02, Hospital A, Grade 2, Radiation Therapist).

6.4.3 Theme 3: Inadequate remuneration

Participants indicated dissatisfaction with the remuneration structure, which has led to unhappiness. The sub-themes that emerged were poor or unfair remuneration, lack of benefits, lack of overtime remuneration and lack of recognition.

6.4.3.1 Sub-theme 1: Poor or unfair remuneration

Salaries are a significant factor in staff retention. Participants expressed their concerns that salaries were not a reflection of the qualifications held. The following are extracts from the interviews, which were shared by participants:

“I am definitely underpaid and overworked. I do not agree with the salary scales. Not being paid adequately will make me want to resign from my job.” (Participant 06, Hospital B, Grade 1, Sonographer).

“The salary scales also are not done correctly. There is not much differentiation in salary between an assistant director and the head of department.’’ (Participant 09, Hospital D, Assistant Director, Diagnostic Radiographer).

“Radiographers travel far distances to work and should be compensated for petrol. I think petrol allowance would attract staff to work in the government hospitals. This benefit would retain me.” (Participant 10, Hospital E, Grade 3, Diagnostic Radiographer).

“I think it will be my salary scale and work environment. I would prefer a higher salary since radiography is a scarce skill. If I am offered a higher salary elsewhere with better benefits, I would resign and take the offer.” (Participant 01, Hospital B, Grade 1, Radiation Therapist).

“The Government sector has disappointed us, and it is unfair to diagnostic radiographers. I do not understand how diagnostic radiography is seen as a baseline and not as specialised category but all other three radiography disciplines are seen as specialised. Therefore, some radiographers prefer to go to private where diagnostic is recognised.” (Participant 03, Hospital A, Grade 3, Mammographer).

“One of the factors that maintains my sanity and helps me persevere is the stable constant monthly salary. This factor would retain me in government. Working in the government ensures us a monthly salary, enabling us to live a comfortable life. However, it is disappointing that we do not get paid for overtime but get time off.” (Participant 04, Hospital A, Grade 2, Radiation Therapist).

“I can stay in my job if my salary would enable me to get a house, a car, be able to send my kids to the best schools and be able to support all the needs of my family.” (Participant 10, Hospital E, Grade 3, Diagnostic Radiographer).

“I am one of the senior staff in my department. My downfall was resigning and moving to private practice. Now I have come back on a junior salary scale. I am doing much more duties than younger staff with the chief titles. I think it will only be fair to me if I was given the rightful title and salary for the duties I perform daily.” (Participant 02, Hospital A, Grade 2, Radiation Therapist).

6.4.3.2 Sub-theme 2: Lack of benefits

The participants indicated a concern over the lack of benefits in terms of CPD activities. The HPCSA requires radiographers to obtain CPD points every year in order to remain registered with the council. These points can be obtained from various platforms such as online, seminars, conferences or arranged departmentally. However, the participants feel that if the government contributes to CPD activities in terms of monetary factors, this will enable participants to be retained. The following are extracts from the interviews conducted and similar sentiments were shared by other participants:

"I enjoy my job, but it would be better if I received more benefits in terms of funding for to obtain CPD points and be remunerated for our qualifications. I would also keep my job in the government hospital if I am given these benefits." (Participant 06, Hospital B, Grade 1, Sonographer).

"It would be nice if we sponsored to attend conferences and training. This would retain radiographers as we know the government is interested in helping us to develop our knowledge and skills." (Participant 04, Hospital A, Grade 2, Radiation Therapist).

"Radiographers from the government sector are unskilled in certain aspects as they show a lack of participation in conferences or seminar. There is no money for the government to up skill radiographers; therefore they have to take it upon themselves. Radiographers need to be encouraged to attend CPD talks and read articles. Therefore, the government loses staff to employers that can offer these benefits. I would resign as take another job that can offer me those benefits." (Participant 09, Hospital D, Assistant Director, Diagnostic Radiographer).

"It would be nice if the government can pay our SORSA fees or pay for us to attend CPD talks. It is costly to attend conferences especially if it is in another place. You have to consider your travel cost and accommodation. That's why

the government hospitals lose radiographers as they want better opportunities and benefits from other employers." (Participant 02, Hospital A, Grade 2, Radiation Therapist).

6.4.3.3 Sub-theme 3: Lack of overtime remuneration

Some participants indicated that for them to be retained, they would prefer it if overtime was remunerated by supplementing their income, while others prefer having free time for personal use. Management have motivated for overtime to be paid, but it has not been provided. The excerpts are as follows:

"We need to be remunerated that includes a reflection of the workload and hours we work. Radiographers would work happily without any complains if they are compensated by being paid overtime." (Participant 07, Hospital C, Grade 2, Radiation Therapist).

"I would personally prefer for all staff to be paid for their overtime." (Participant 09, Hospital D, Assistant Director, Diagnostic Radiographer).

"Radiographers want to be paid for the overtime. This will be a great supplementary to their salaries. At the moment, it is a problem to allow them to take their hours. Where or when must I give them the opportunity to take time off when I do not have enough personnel? Staff do not understand the logistics but rather want to resign if they are unhappy with the decisions made.'' (Participant 03, Hospital A, Grade 3, Mammographer).

6.4.3.4 Sub-theme 4: Lack of recognition

Employee recognition is the acknowledgement of the employer's staff for outstanding performance. The participants indicated that they will not resign if given recognition for their work, especially when they go the extra mile. Participants expressed the following sentiments:

"Management is not appreciative of the staff and do not give staff enough recognition. I would resign if I am not valued in my workplace." (Participant 05, Hospital B, Grade 2, Nuclear Medicine Radiographer).

"I would feel appreciated and happy if I am recognised for the work I do. Sometimes management need to acknowledge staff that goes the extra mile. This would make me happy and I would want to keep my job." (Participant 06, Hospital B, Grade 1, Sonographer).
"I do not feel appreciated for my work. I am just seen as an employee who must get the work done. How does management expect us to be motivated when we are not even recognised? My unhappiness with being unappreciated would cause me to resign." (Participant 02, Hospital A, Grade 2, Radiation Therapist).

"Senior management need to recognise and give staff more credit for the work they do. You bring it to their attention, but nothing gets done. This dissatisfaction with management will make me want to resign." (Participant 10, Hospital E, Grade 3, Diagnostic Radiographer).

"We understand that the government sector is not capable of providing additional benefits as a token of appreciation to their staff. However, management can offer staff an extra afternoon off when it is feasible with personnel. Staff will feel more appreciated and will want to work in the government sector. If I am appreciated, then I will not want to resign. (Participant 08, Hospital C, Grade 2, Diagnostic Radiographer).

6.4.4 Theme 4: Career pathing

Participants articulated mixed viewpoints on the radiography career being rewarding but lacking the component of growth. Some participants were of the opinion that the career is monotonous and stagnant, which causes radiographers to resign. The sub-themes that emerged were career growth and opportunities for promotion.

6.4.4.1 Sub-theme 1: Career growth

Career or academic growth reflects remunerated recognition received by employees from their employer for improving their skills academically. The OSD policy does not consider academic achievements and qualifications. Hence, radiographers are not motivated to improve on their skills as it will have no additional remuneration benefit to their salaries. However, if additional remuneration was considered, it would motivate radiographers to be retained in their jobs, as indicated by the excerpts below:

"I feel very stagnant in my position. I feel there is not much room for growth in my career. I feel my job is very monotonous. I enjoy meeting patients and the daily interaction but my duties become very repetitive. I will definitely be influenced to resign due to the monotony of the job, inadequate salary scales and a toxic environment." (Participant 08, Hospital C, Grade 2, Diagnostic Radiographer).

"Having a degree will not benefit me. I plan on staying in the government sector and there is no need to have a degree. I have the skills to do my job with my diploma. The same skills a radiographer with masters will have. I am not forced to further my studies and this makes me comfortable to be stay employed in the government sector." (Participant 07, Hospital C, Grade 2, Radiation Therapist).

6.4.4.2 Sub-theme 2: Opportunities for promotion

The participants have indicated that the introduction of the OSD policy has made it highly impossible for radiographers to be promoted. Promotion takes place through enhanced grade progression and for radiographers in speciality areas, there are no supervisory posts except for the assistant directors. Participants remain unhappy and consider the need to resign for better opportunities. Extracted below are some of the responses from participants:

"I am happy with my diploma as I do not see need to further my studies. There is no recognition for qualifications. Having a degree does not benefit me even in terms of promotion. Therefore, there is no need to for me resign from my job." (Participant 02, Hospital A, Grade 2, Radiation Therapist).

"I do not have a lot of years of service, but I am already in grade 3. I will receive my annual increases and there are no other promotions for me. I have my B-tech and have been studying psychology. I want to pursue psychology as there will be more room for growth for me. I can work with appointments at my own flexible hours. I would definitely resign for better opportunities as I do not want to feel stagnant." (Participant 04, Hospital A, Grade 2, Radiation Therapist).

"There is no growth. There is one manager or assistant director. It is very difficult for them to leave. You have to wait for posts to be available or for someone to resign. You are considered fortunate if you get a higher position. I would rather resign for higher positions at other hospitals." (Participant 06, Hospital B, Grade 1, Sonographer).

6.5 SUMMARY OF THE CHAPTER

Four themes emerged from the interviews with participants and were presented and supported by direct excerpts from the interviews. These themes were: the influence of working conditions on staff retention; government policies; inadequate remuneration; and a lack of career pathing. They were organised into the hygienic and motivational factors of staff retention using Herzberg's Motivation and Hygiene Theory. In the next chapter, the integration of Phase one and two results of the study will be presented.

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

7.1 INTRODUCTION

An explanatory sequential mixed methods research design was used as the guiding methodology for this study. The explanatory sequential mixed method consisted of data collection that occurred in two separate phases, where Phase 1 is quantitative and Phase 2 is qualitative (Subedi 2016: 572). Phase 1 used questionnaires for data collection. Thereafter, the findings of Phase 1 were used to develop the interview guide, 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) analyse the staff retention of radiographers employed by tertiary hospitals in KZN, (b) identify the factors that influence the resignation of radiographers employed by tertiary hospitals, (c) correlate the factors that influence the resignation of radiographers employed by tertiary hospitals and (d) explore the factors that are conducive to staff retention. To achieve objectives (a), (b) and (c), a questionnaire that comprised of closed and open-ended questions and included demographic data and a six-point Likert scale were used to collect data in Phase 1.

The results from the data analysis focused on what radiographers found most significant to make them resign from their jobs; what radiographers found most significant to make them stay in their jobs, which included environmental conditions, personal conditions; stress; and remuneration; what makes radiographers move out of the radiography profession, which included environmental conditions and personal conditions; what remuneration,

facilities and personal factors can make them stay in their profession; and how radiographers can be retained in their profession.

The results from Phase 1 were used to develop the interview guide to achieve objectives (d) in Phase 2. Four themes emerged from data analysis. These focused on the influence of working conditions on staff retention, government policies, inadequate remuneration and career pathing. They were categorised into hygiene (extrinsic) and motivational (intrinsic) factors of staff retention using Herzberg's Motivation-Hygiene Theory. This section integrates the quantitative and qualitative phases of the study. The findings of Phase 1 are presented, followed by the results of Phase 2.

7.3 INFLUENCE OF WORKING CONDITIONS ON STAFF RETENTION

Phase 1 evaluated the working condition factors that influenced staff resignations. In Phase 2, the theme of the influence of working conditions on staff retention emerged with six sub-themes, which are increased workload and staff shortages, lack of support from management, lack of hygiene conditions, stressful or long working hours, poor infrastructure and malfunctioning or out-dated equipment. The following were the results and findings under each sub-theme.

7.3.1 Workload and staff shortage

The demand for radiographers is on the increase globally. However, the participants agreed that the number of radiographers employed by government hospitals had decreased. The workload and waiting times for patients have increased due to the shortage of radiographers. These results could lead to further resignations.

In Phase 1, the data was analysed using non-parametric tests. The results of the Wilcoxon signed ranks test identified those poor working conditions, high stress levels and the inability to take leave when required influenced staff resignations to another position or out of radiography. There was significant

agreement that improvement in working conditions and increasing the number of staff influence staff retention. The factors impacting staff resignation and staff retention are positively correlated with environmental conditions, personal conditions, stress and remuneration.

According to the Cronbach's alpha test for resignation, radiographers' poor working conditions are correlated with environmental conditions, whilst participants' high stress levels are correlated with poor remuneration. The Cronbach's alpha test for retention indicated that improvement in working conditions are correlated to radiographers' personal conditions and increasing the number of staff are correlated to remuneration.

To reiterate, the results of Phase 2 demonstrated that the number of radiographers employed by government hospitals had decreased, which in turn resulted in increased workloads for radiographers and increased waiting times for patients. Due to the shortage of radiographers, it is difficult for radiographers to take annual leave or sick leave. The remaining radiographers on duty must cope with the increased workload and stressful working conditions. Radiographers must work under demanding working conditions and deal with the backlog of patients. Patients' waiting times were increased due to staff shortages. Radiographers burn out due to the high workload and consider resigning due to these working conditions.

"There is a backlog of patients and not enough radiographers to manage these patients in a quick turnover. Radiographers work hard to see as many patients as they can. However, if there were enough radiographers, we could work shifts to increase the number of patients being treated daily. Due to the increasing workload and shortage of staff, this will influence me to resign and find better working conditions." (Participant 03, Hospital A, Grade 3, Mammographer).

This correlates with the findings of Phase 1. However, participants indicated that if there was an improvement in the working conditions and the number of staff was increased, it would retain them in their employment.

7.3.2 Lack of support from management

Participants indicated that there is a lack of support from management. There were different sentiments as some participants are supported by their management and some participants find a lack of support from management. The absence of support from management has an influence on radiographers' resignations.

In Phase 1, the results of the Wilcoxon signed ranks test identified that poor management and leadership influences radiographers' resignations to another position. There was significant agreement that good/fair management and leadership influences staff retention. The Cronbach's alpha test for resignation and retention indicated that poor management and leadership are correlated with environmental conditions. It was identified that supervisors and management create a favourable working environment, while the work culture created by management styles influenced radiographers' intention to leave employment.

In the results of Phase 2, participants demonstrated mixed responses regarding support from senior management. They indicated that there is a lack of support and sometimes unfair treatment from management.

"I would appreciate a positive work environment to allow me to stay in my department as a radiographer. I would resign due to management not appreciating me, acknowledging me for the work I do and not been given recognition for going the extra mile." (Participant 06, Hospital B, Grade 1, Sonographer).

Radiographers want to be recognised and appreciated for their work. They want management to be more accommodating in trying to find solutions to the staff shortages. However, some participants indicated that their management is very understanding and accommodating in terms of taking leave. An Assistant Director indicated that his duty as a manager has been impacted due to a lack of managerial training from senior management. However, participants indicated that they would keep their positions if there was good and fair management. Therefore, the findings correlate with the findings of Phase 1.

7.3.3 Lack of hygienic factors

In Phase 1, participants agreed there is a lack of hygienic factors. Participants indicated their need to resign over their concerns about the lack of hygienic factors in their working environment. These unhygienic conditions can result in health risks for the participants and patients. In Phase 1, the results of the Wilcoxon signed ranks test identified that an unhygienic working environment influences staff resignations to another position. The Cronbach's alpha test indicated that an unhygienic working environment is correlated with environmental conditions.

In Phase 2, the participants demonstrated that they are unable to provide basic patient care all the time due to certain services, such as receiving clean linen. Cleaning equipment, e.g. mops, are very old and dirty. The radiography departments are supplied with disinfectants and detergents, but the cleaning employees say they do not have these when they are questioned. The departments are not cleaned thoroughly and are prone to infections. The infection and control statistics indicate a high number of staff that is contracting TB on a regular basis. Participants are aware of these statistics and wary when in contact with their families due to putting lives at risk. The unhygienic working environment, health and safety issues and lack of infection control would cause radiographers to resign from their positions. The findings correlate with the findings of Phase 1.

7.3.4 Stressful or long working hours

Radiographers work stressful and long working hours which initiate unhappiness. Some participants prefer shorter hours or flexible hours. In Phase 1, the results of the Wilcoxon signed ranks test indicated that due to inflexible, irregular and long working hours, radiographers resign to another position or move out of radiography. There was significant agreement that flexible working hours influences staff retention. According to the Cronbach's alpha test for resignation, working flexible hours is correlated with radiographers' environmental conditions and having to work irregular shifts is correlated with their personal conditions. The Cronbach's alpha test for retention indicated that working flexible hours is correlated with environmental conditions and having to working irregular shifts is correlated with facilities.

In Phase 2, the participants demonstrated that they do not want to work hard and tiring hours. Participants work a normal day from 7:30am to 4pm, but work hard to cope with the backlog of patients. Radiographers feel exhausted by the end of the day and prefer to work lesser hours or flexible hours. Younger radiographers prefer to work lesser hours. Participants find it difficult with their families if they must work shifts or night duty. If there are too many patients, the dedicated radiographers would sometimes skip tea or lunch breaks to get through the work. Participants consider resigning due to the long tiring hours. The findings correlate with the findings of Phase 1.

7.3.5 Poor infrastructure

Participants indicated that they have to work with poor infrastructure. However, radiographers would prefer a safe internal and external infrastructure as poor infrastructure can result in safety risks. In Phase 1, the results of the Wilcoxon signed ranks test identified that poor infrastructure influences staff resignations for another position. There was significant agreement that secure infrastructure and adequate safe parking influence staff retention. The Cronbach's alpha test for resignation indicated that poor infrastructure is correlated with environmental conditions. The Cronbach's

alpha test for retention indicated that secure infrastructure and adequate safe parking are correlated with facilities.

In Phase 2, the participants indicated that there was a need for safer areas for radiographers to park their cars and to be able to access the hospital.

"There needs to be safer areas for radiographers to park their cars and to be able to access the hospital. Otherwise, radiographers will look for safer places to work in." (Participant 04, Hospital A, Grade 2, Radiation Therapist).

Radiographers are concerned about the road infrastructure and their daily route to work, especially during strikes. Participants indicated that the hospital lifts are old and not well maintained. It is a concern that the lifts are not always functioning. Participants would prefer to resign if there is no improvement with the internal and external infrastructure. The findings of Phase 2 correlate with the findings in Phase 1.

7.3.6 Malfunctioning equipment

Participants indicated that they have to work with malfunctioning and old equipment, which has a negative impact on service delivery. In Phase 1, the results of the Wilcoxon signed ranks test indicated that malfunctioning and out dated equipment influences staff resignation for another position. Moreover, there was significant agreement that well-maintained, working and state of the art equipment influence staff retention. Participants indicated that the equipment is too old and needs to be replaced. Radiographers should be provided with modern equipment that is efficient to work with as they must currently work with out-dated analogue equipment rather than new digital equipment.

Participants demonstrated that they would stay in their jobs if the technology and equipment provided is updated and always in working condition. However, they will resign if they must continue working with old equipment.

Radiographers experience stress with working with the malfunctioning equipment and having to cope with the backlog of patients. Radiographers want to be able to work with clean and well-maintained equipment and keep up with the rest of the world with new machinery and techniques. Younger radiographers prefer to be creative and work fast and they want to keep up with updated technology and software.

According to the Cronbach's alpha test for resignation, working with malfunctioning or out-dated equipment is correlated with environmental conditions. The Cronbach's alpha test for retention indicated that having to work with well-maintained, working and state of the art equipment is correlated with facilities.

In the results of Phase 2, the participants demonstrated that they would resign if there is a continuation of working with malfunctioning or old equipment.

"We have to work with out-dated analogue equipment rather than new digital equipment. "Equipment is very expensive, but it needs to be adequately maintained. We cannot afford to work with slow and out-dated machines. This slows us down. If we have more digital equipment, we can attend to more patients in a shorter time. Staff do not want to stay in hospitals that are backwards. They rather resign and work in hospitals that they can grow in." (Participant 09, Hospital D, Assistant Director, Diagnostic Radiographer).

Participants indicated that they were familiar with the lack of funding and elements that prevent equipment being updated timeously. However, they would prefer if technology was updated and the old equipment replaced or always in working condition. Malfunctioning equipment is the cause of backlogs of patients, causing radiographers to have to work in a stressful environment. Radiographers prefer to work with modern and digital equipment. The findings of Phase 2 correlate with findings in Phase 1.

7.4 GOVERNMENT POLICIES

Phase 1 assessed the dissatisfaction with government policies that influenced staff resignations. In Phase 2, the theme of government policies emerged, with two sub-themes being the OSD policy and Employment Equity Act. The following are the results and findings under each sub-theme.

7.4.1 Occupational-Specific Dispensation (OSD)

Participants agreed there was an unfair implementation of the OSD Policy, while some participants indicated an improvement to their salaries due to the OSD Policy. In Phase 1, the results of the Wilcoxon signed ranks test indicated that the unfair implementation of the OSD Policy influences staff resignation for another position. There was significant agreement that the ability to negotiate salaries and salaries based on qualifications, skills and experience influenced staff retention. The Cronbach's alpha test for resignation indicated that the unfair implementation of the OSD Policy is correlated with personal conditions. The Cronbach's alpha test for retention indicated that having the ability to negotiate salaries and salaries based on qualifications, skills and experience are correlated with personal conditions.

In Phase 2, participants demonstrated mixed viewpoints in relation to the OSD Policy that was implemented by the government. Participants are unhappy with the OSD policy and salary scales. Participants agreed that the OSD Policy should have taken B. Techs, Masters and Doctorates into consideration. After the OSD policy was implemented, the uniform allowance was removed at some hospitals. This is unfair to the radiographers in the government sector as all radiographers should be under one umbrella. There ought to be a set standard and not a hospital-dependent one.

"I am unhappy with the OSD and salary scales. It should have taken e.g. B. Tech, Masters and Doctorate into consideration. We study hard and get qualifications and need to be compensated for it. Our qualifications have an impact on how we perform our duties and the knowledge we have to impart to

our colleagues. A radiographer with a diploma and a radiographer with masters should not be getting paid the same scale. I would rather resign and work where my qualifications are recognised." (Participant 08, Hospital D, Grade 2, Diagnostic Radiographer).

Some participants agreed that the introduction of the OSD Policy improved their salaries, while others agreed that they received reduced salaries after its introduction. Senior participants understood that they were less recognised as they are earning a similar salary to radiographers who were newly qualified. Participants in diagnostic radiography agreed that the OSD Policy considered diagnostics as a baseline while other specialties such as sonography, nuclear medicine, mammography and radiation therapy perceived that the OSD Policy did not recognise them in the salary structure. These results correlated with the sentiments shared by the participants in Phase 1 on the unfair implementation of the OSD Policy.

This situation could be attributed to the failure of the OSD Policy to attract and retain radiographers in the government hospitals. Hence, the salary stagnation correlated with the OSD Policy. All radiographers, especially in speciality areas, were negatively affected by the unfair implementation of the OSD Policy; their salaries were at an acceptable level; and they would remain in one position for a period of 10 years without any possibility of promotion. This was created by the failure of the OSD Policy to create sub-scales for the radiographers working in speciality areas, which has resulted in a lack of salary and career growth. The lack of supervisory positions for speciality radiographers is the result of a lack of career growth. Assistant Directors shared similar views, as there was a minimal difference between their salary, Grade 3 radiographers and heads of departments, even though they all had different management duties.

7.4.2 Employment Equity Act (EEA)

The Employment Equity Act No.55 of 1998 was promulgated to promote equal opportunities and fair treatment for all in the workplace. In Phase one, the sentiment shared by participants was that the EEA implementation has resulted in the unfair selection of candidates to fill positions. Grades 1 and 2 participants agreed that the guidelines of the EEA were not fairly implemented, while Grade 3 and assistant directors agreed that the guidelines of the EEA were fairly implemented. There was no significant correlation with the extent of satisfaction with the EEA and intention to leave. The results of the Wilcoxon signed ranks test indicated that poor promotional prospects influence staff resignations for other positions. The Cronbach's alpha test for resignations indicated that poor promotional prospects are correlated with stress and remuneration.

However, the findings of Phase 1 could not be correlated with the results of Phase 2. In the results of Phase 2, promotion positions are available and the candidates selected fit the criteria but are unable to perform the tasks. The views shared by the participants were that the selection process for new positions was not fair due to unfair selection or favouritism. Radiographers are given Grade 3 positions, but are not able to perform all senior duties of these positions. Radiographers are unhappy with the unfairness of the selection process as radiographers that are selected for the positions are not always capable of doing all the duties efficiently. Participants would consider resigning due to such unfairness.

7.5 INADEQUATE REMUNERATION

Phase 1 assessed the participants' dissatisfaction with the remuneration structure, which leads to unhappiness. In Phase 2 of the study, the theme of inadequate remuneration emerged with four sub-themes, namely poor or unfair remuneration, lack of benefits, lack of overtime remuneration and lack of recognition. Below are the results and findings under each sub-theme.

7.5.1 Poor or unfair remuneration

In Phase 1, the participants expressed their concerns over salaries, which were not a reflection of the qualifications held. Salaries are a significant factor in staff retention. In Phase 1, the results of the Wilcoxon signed ranks test indicated that uncompetitive salaries influence staff resignations for other positions. There was a significant agreement that an increase in competitive annual salaries influences staff retention. There were positive correlations between the three factors: remuneration, facilities and personal conditions. The most influential factor was remuneration. However, there is a negative correlation between fair remuneration and intention to leave. Most participants showed dissatisfaction with their salaries. Diagnostic radiographers were more satisfied with their remuneration than the other speciality radiographers. However, all salaries from all disciplines are meant to be standardised in the government sector. Participants who are satisfied with their remuneration do not intend to leave their positions.

According to the Cronbach's alpha test for resignation, uncompetitive salaries are correlated with stress and remuneration. The Cronbach's alpha test for retention indicated that having competitive annual salary increases are correlated with remuneration. However, Spearman's correlation was applied to the age and years of the participants. It was identified that more experience as a radiographer is associated with less agreement that the factors would cause radiographers to move to another career for poor rewards.

In Phase 2, some participants indicated that they were underpaid, while some participants were happy with a stable income. Participants indicated that the salary scales were not done correctly and they disagreed with the salary scales. The differentiation between salaries and different positions is very similar. Some participants considered themselves to be underpaid and over-worked. Participants considered that poor salaries were one of the leading factors that cause radiographers to vacate their positions. However, despite

the poor salaries, some participants were adamant that they would not leave the government hospitals.

Participants demonstrated that radiographers travel far distances to work and want to be compensated in terms of petrol allowances. They contemplate that a petrol allowance would attract staff to work in the government hospitals and benefits would retain radiographers.

"The Government sector has disappointed us, and it is unfair to diagnostic radiographers. I do not understand how diagnostic radiography is seen as a baseline and not as specialised category but all other three radiography disciplines are seen as specialised. Therefore, some radiographers prefer to go to private where diagnostic is recognised." (Participant 03, Hospital A, Grade 3, Mammographer).

Participants indicated that the government sector has disappointed diagnostic radiographers as diagnostic radiography is seen as a baseline and not as a specialised category, but all the other three radiography disciplines are specialised. The findings of Phase 2 correlate with Phase 1.

7.5.2 Lack of benefits

Participants indicated their concern with a lack of benefits in terms of Continuing Professional Development (CPD) activities, poor financial rewards, good medical aid cover and opportunities for professional development. Radiographers could be retained in government hospitals if there was a contribution to CPD activities, financial rewards and opportunities for professional development in terms of monetary recompense.

In Phase 1, the results of the Wilcoxon signed ranks test indicated that if radiographers are not allowed to attend conferences/courses, it influences staff resignations to another position. There was significant agreement that poor financial rewards and limited opportunities for professional development

influences staff resignation out of radiography. There was a significant agreement that good medical aid cover; an opportunity to attend conferences for CPD points funded by the employer; promoting further education by providing study leave; opportunity to attend conferences for professional development at no cost; and having professional fees paid are facilitators of staff retention.

According to the Cronbach's alpha test for resignation, radiographers being allowed to attend conferences/courses and the opportunity to attend conferences for CPD points are correlated with personal conditions. The Cronbach's alpha test for retention indicated that financial rewards are correlated with remuneration. Good medical aid cover is correlated with personal conditions. Career advancement and/or opportunities; promoting further education; opportunity to attend conferences for professional development at no cost; and professional fees paid for are correlated with facilities.

In Phase 2, the participants indicated a lack of benefits and that it would be better if they received more benefits in terms of funding to obtain CPD points and to be remunerated for their qualifications. Radiographers show a lack of participation in conferences or seminars and need to be encouraged to attend CPD talks and read articles. This is due to radiographers preferring to be sponsored to attend conferences and training and professional fees or SORSA fees to be paid by the government. Travel costs and accommodation need to be considered when radiographers attend conferences, especially if it is at another place. These are the reasons that government hospitals lose radiographers as they want better opportunities and benefits from employers. The findings correlate with the findings of phase 1.

7.5.3 Lack of overtime remuneration

Participants agreed that there is a lack of remuneration for overtime work. Radiographers prefer that overtime is remunerated to supplement their income, while others prefer having free time for personal use. In Phase 1, the Wilcoxon signed ranks test indicated that compensation for working overtime influences staff resignation for another position. The Cronbach's alpha test for resignation indicated that compensation for working overtime is correlated with stress and remuneration.

In Phase 2, there were mixed views from the participants regarding working overtime. Some participants demonstrated that they prefer to be compensated by being paid overtime for their hours worked. It would be a great supplement to their salaries. Others indicated that they do not want to work overtime as they preferred to utilise their time on personal matters and family. Management prefers staff to be paid for overtime as there are not enough personnel to give staff time off. However, management demonstrated challenges in obtaining approval for the remuneration of overtime. The shortage of radiographers prevented participants from taking their overtime hours, resulting in participants accumulating hours that cannot be taken. Radiographers want to be remunerated, which includes a reflection of the workload and hours they work and would work happily without any complaints if they are compensated by being paid overtime. The findings correlate with Phase 1.

7.5.4 Lack of recognition

Radiographers want to be given recognition for their work and acknowledgment for their outstanding performance. In Phase 1, the results of the Wilcoxon signed ranks test indicated that proper/fair appraisals influence staff retention. Staff need to be recognised and appreciated for their work. The Cronbach's alpha test for resignation indicated that proper/fair appraisals are correlated with remuneration.

In Phase 2, the participants shared sentiments of management being unappreciative of the staff, with an absence of staff recognition. This is noted in the excerpt below:

"I would feel appreciated and happy if I am recognised for the work I do. Sometimes management need to acknowledge staff that goes the extra mile. This would make me happy and I would want to keep my job." (Participant 06, Hospital B, Grade 1, Sonographer).

Radiographers indicated the necessity of feeling valued. Radiographers feel motivated if they are given credit for their work or given an extra afternoon off to feel appreciated. Participants indicated that they would resign if there is a lack of appreciation in their workplace. The findings correlate with the findings of Phase 1.

7.6 LACK OF CAREER PATHING

Phase 1 assessed career pathing. The participants indicated a radiography career as being satisfying, but lacked room for growth. In Phase two, the theme 'lack of career pathing' emerged with two sub-themes: career growth and opportunities for promotion. These were the results and findings under each sub-theme.

7.6.1 Career growth

Radiographers require remunerated recognition for improvement in their academic skills and career growth. The findings in Phase 1 demonstrated that the OSD Policy excludes the recognition of academic achievements and qualifications. There is no recognition of post-graduation qualifications such as B-Tech, Master's Degree and Doctorates. The salary notches remain the same, irrespective of a radiographer's qualification level. Radiographers are not motivated to improve on their skills as it would have no additional remuneration benefit to their salaries.

In Phase 1, the results of the Wilcoxon signed ranks test indicated that career advancement and opportunities influence staff retention. According to the Cronbach's alpha test for resignation, career advancement and opportunities are correlated with facilities. However, the Spearman's correlation was applied to the age and years of the participants. It was identified that more experience as a radiographer is associated with less agreement that the factors would cause them to move to another career due to limited opportunities for professional development.

The results of Phase 2 correlated with the findings of Phase 1. Radiographers agreed that having a degree would be of no benefit as the OSD Policy does not consider qualifications. Participants consider all radiographers to have the same skills, no matter what qualification they have. Participants indicated that they have the skills to do their job with their diplomas and they have the same skills as a radiographer with a Master's degree. Radiographers are not forced to further their studies, which makes them comfortable to stay employed in the government sector. However, some radiographers feel stagnant in their positions, with no room for growth. Participants in the speciality disciplines felt that the structure of their profession is very limited. The only supervisory positions are that of an assistant director and supervisory chiefs who supervise different sections within the department. Participants in the diagnostic discipline felt that they have been disfavoured amongst the other specialities. Diagnostics has been the baseline for the structure of the profession.

7.6.2 Opportunities for promotion

There are limited opportunities for radiographers to be promoted since the implementation of the OSD policy. In Phase 1, the results of the Wilcoxon signed ranks test indicated better opportunities elsewhere and poor promotion prospects influence staff resignation. The Cronbach's alpha test for resignations indicated that better opportunities elsewhere are correlated with

personal conditions and poor promotional prospects are correlated with stress and remuneration.

The results of Phase 2 correlated with the findings of Phase 1 regarding the fairness of the selection process for positions and the need to further radiographers' qualifications. Participants agreed that there is no need for radiographers to further their studies as it has no benefit in terms of promotion or recognition. Participants demonstrated contentment with their diploma qualifications, with no need to further their studies. A participant indicated she had been promoted to a Grade 3 radiographer and that there will be no other promotions. She considers resigning to find better opportunities. Participants also indicated that there is no growth and very limited supervisory positions. There is one manager or assistant director and it is very difficult for them to leave. Staff must wait for posts to be available or for someone to resign. Participants also shared sentiments that their promotional opportunities are limited due to the unfair selection of candidates.

"There is no growth. There is one manager or assistant director. It is very difficult for them to leave. You have to wait for posts to be available or for someone to resign. You are considered fortunate if you get a higher position. I would rather resign for higher positions at other hospitals." (Participant 06, Hospital B, Grade 1, Sonographer).

7.7 SUMMARY OF THE CHAPTER

An explanatory sequential mixed methods research design was used for this study, thereby collecting data in two phases. In Phase 1, significant agreement and disagreement were identified in terms of why radiographers can be retained or resign from their employment in government hospitals. In Phase 2, four themes emerged from the data analysis, with further sub-themes. The results were further integrated with the quantitative and qualitative phases of the study. In the next chapter, a discussion of the findings will be presented.

CHAPTER 8: DISCUSSION OF FINDINGS

8.1 INTRODUCTION

This chapter will discuss the results obtained in Phase 1 and Phase 2 of the study. The results will be discussed in relation to the literature presented in Chapter 2. Literature not included in Chapter 2 was also used to further discuss the results attained. In keeping with the previous chapter, the discussion will be presented in the form of themes. Four themes were identified in the results, namely the influence of working conditions on staff retention, government policies, inadequate remuneration and a lack of career pathing.

8.2 INFLUENCE OF WORKING CONDITIONS ON STAFF RETENTION

A range of views was identified under the theme of the influence of working conditions on staff retention. Participants were familiar with their working conditions and demonstrated the factors that contribute to staff retention in their responses. These six observed factors were identified as the sub-themes.

8.2.1 Workload and staff shortages

Participants were questioned about their workloads and staff shortages in both phases of the study. In Phase 1, participants were questioned about the poor working conditions and high stress levels, which addressed the staff shortage. The same question was indirectly posed in Phase 2. Phase 2 allowed the researcher to have an open conversation about participants' perceptions of the current state of their working conditions and staff shortages.

The managers and radiographers indicated that the number of radiographers employed by the government hospitals had decreased. In addition, the participants demonstrated that the decrease in radiographers had resulted in increased workloads for radiographers and increased waiting times for patients. Due to the shortage of radiographers, there is difficulty in taking leave while the remaining staff have to cope with the demanding working conditions and backlog of patients. This was verified by the results of the Wilcoxon signed ranks test that identified poor working conditions, high stress levels and inability to take leave when required. According to the managers and radiographers, this has resulted in burnout amongst the radiographers. Likewise, the results are comparable to the study by Flinkman, Isopahkala-Bouret and Salanterä (2013: 20) that found that nurses leave their positions due to burnout from the workload and shortage of nurses

The results of the Cronbach's alpha test showed a significant correlation between intentions to leave with poor working conditions and high stress levels, which addressed the shortage. Participants indicated that if there was improvement in the working conditions by decreasing the workload and increasing the number of staff, radiographers would have no intention to leave. A study in Ghana demonstrated that the workload of nurses is correlated with job stress and associated with negative emotions and feelings (Kokoroko and Sanda 2019: 342). However, the study indicated that social support that provides extra resources have enabled and empowered nursing staff to be able to cope with their job stress.

The shortage of healthcare workers caused by inadequate production, inadequate recruitment, poor retention and staff mismanagement is a worldwide problem (Veld and Van De Voorde 2014: 856). Despite the fact that health professions in South Africa during the apartheid years were developing and establishing training centres, severe workforce shortages are recently being experienced (Van Rensburg 2014:3). This is due to healthcare workers being unequally distributed between the well-resourced private sector and the

poorly resourced public sector, as well as between urban and rural areas (Van Rensburg 2014: 3).

The radiography profession has been subjected to a gradual growth in vacancies globally, which is now observed in South Africa (Britton *et al*. 2017: 30). The increase is due to a shortage of radiographers, who feel overworked as they strive to cope with the workloads that could have been distributed amongst a larger workforce (Britton *et al*. 2017: 30). According to Chipere and Nkosi (2019: 1), the attenuation of the radiography profession is the cause of the staff shortage, which influences the retention of radiographers. Hence, the WHO initiated the Global strategy on Human Resources for Health in 2015, with a focus on ensuring that the current and future needs of the population are covered to address shortages and mal-distribution (WHO 2015: 23).

The WHO argues that to retain health workers, countries should consider performance-based reward systems that reward employees for their performance to improve patient outcomes or meeting healthcare needs (WHO 2016: 221). According to the WHO, performance pay systems should ensure that improvements are evidence-based, while workplace systems should take account of individual workloads in planning the distribution of employees between facilities (WHO 2016: 222). Systems should offer flexible working hours, employees should be encouraged to develop their own solutions to local problems and contribute to a positive working environment where employees feel supported and motivated.

The participants expressed that the patients were negatively affected by the shortage of radiographers. The minimum number of radiographers to cover the workload caused patient backlogs and increased the waiting times of patients. A majority of the concerns were expressed by the radiation therapists. Staff shortages have increased the workloads and prevented radiation therapists from working overtime and shifts.

8.2.2 Lack of support from management

The results in Phase 1 showed mixed responses as some participants are supported by their management and some participants find a lack of support from management. The results of the Wilcoxon signed ranks test showed a significant positive correlation with the intention to leave and a lack of support from management. Participants who were dissatisfied with their management supervision and leadership were influenced to move to another position elsewhere. According to Brunetto *et al.* (2013: 835), the supervisor-nurse relationship, teamwork and wellbeing are leading factors in the retention of nurses.

The findings of Phase 2 indicated that radiographers felt that their managers failed to appreciate and recognise their work and the effort put into accomplishing their duties. According to a study by Nassar, Abdou and Mohmoud (2011: 249), management styles play an important role in promoting workplace empowerment, commitment and job satisfaction amongst nurses in hospitals. Hence, management could implement effective strategies to promote the retention of radiographers and support their development and advancement. Radiographers should be motivated through job enrichment and reward systems based on workloads. In addition, management should improve the image of the radiography profession and attract or retain staff by strengthening their interpersonal leadership and management skills. They should also enable a positive work environment through the promotion of teamwork, as well as encourage continuous education, trust and respect (Nassar *et al.* 2011: 249).

In Phase 2, some of the senior radiographers indicated that their managers were supportive, while some Assistant Directors indicated that senior management lacks supports in terms of training other managers and equipping them for their position. There is significant agreement that good or fair management and leadership influences staff retention. Similarly, a study by Sodeify, Vanaki and Mohammadi (2013: 192) indicated that nurses in Iran

experienced a lack of support from their managers and that they are not provided with feedback from their managers regarding their potential weaknesses and how they can improve in their work. According to Manojlovich (2005: 370), managers should encourage creativity, innovation, continuous learning opportunities and transformational leadership in the workplace to enhance employees' performance.

8.2.3 Lack of hygienic factors

The lack of hygiene factors was demonstrated in the majority of the participants in Phase 1 and Phase 2. These results were confirmed by the Wilcoxon signed ranks test and the Cronbach's alpha test in Phase 1. According to SA Heath (2019:01), hygiene is important in the prevention of the transmission of infectious diseases within healthcare facilities. Good hygiene includes the cleaning of surfaces using appropriate products; de-contamination of medical equipment and devices used in patient-care procedures; as well as the safe and appropriate handling of sharps, blood and body fluid spills, waste and linen.

In Phase 2, participants indicated that basic patient care is compromised when they do not receive clean linen timeously, when there is no clean equipment and mops are old and dirty. In addition, disinfectants and detergents are not readily available, which leads to the departments not being cleaned thoroughly. Furthermore, staff and patients are at risk of infections due to the unhygienic conditions. According to Dunjwa (2016: 1) and the South African Medical Association (2015: 36), most South African public hospitals had problems such as poor waste management, a lack of cleanliness and poor maintenance of equipment. In a study by Nevhutalu (2016: 138), patients and staff expressed their concerns as some departments had an unacceptable physical environment (for example, dirty toilets) for the delivery of quality healthcare.

8.2.4 Stressful or long working hours

It was observed in both phases that participants considered their working hours to be stressful and long. According to Dall'Ora *et al*. (2015: 1), the association between staff and satisfaction of working hours is significant for job satisfaction, potential burnout, contentment with work schedule flexibility and staff retention. The findings demonstrated that radiographers are unhappy to work stressful and long working hours. The results of the Wilcoxon signed ranks test showed a significant positive correlation with flexible, irregular and long working hours. According to the Cronbach's alpha test, working flexible hours is correlated with radiographers' environmental conditions and working irregular shifts is correlated with their personal conditions, which lead to resignations. The Cronbach's alpha test for retention indicated that working flexible hours is correlated with environmental conditions and having to working irregular shifts is correlated with facilities.

Participants were in agreement that high stress levels, long working hours and irregular working hours influence radiographers to move out of the radiography profession. Likewise, a study by Caruso (2014: 18) found that nurses in the United States of America (USA) who worked shifts or long hours were at risk for sleep disturbances. Insufficient sleep puts nurses at risk for decreased job performance, injuries, obesity, chronic illness and fatigue related errors that could harm patients or other employees. These factors influenced the nurses to leave their employment.

In Phase 2, the results demonstrated that radiographers prefer to work standard working hours. However, they experienced difficulty in managing with the backlog of patients, increased workloads and experienced exhaustion. The results indicated that younger radiographers prefer to work reduced or flexible working hours. Older radiographers find it difficult to balance their families and work shift hours or night duty. According to Chipere and Nkosi (2019: 2), newly graduated and younger radiographers experience reality shock when they are in work situations that they are not prepared for.

Therefore, it affects their work performance, job satisfaction and creates a desire to resign. Hence, similarly a study done by Gyllensten, Anderson and Muller (2017: 16) explored the experiences of nurses that had their work hours reduced due to job dissatisfaction and the imbalance of work and personal life affecting nurses turnover. The nurses found that with their reduced hours, they experienced an improved work-life balance and improved quality of care. The reduced hours positively influenced their work and home life.

8.2.5 Poor infrastructure

In both phases, participants indicated a desire for good infrastructure due to safety risks. According to Leslie and Kruk (2017: 1), there is a relationship between strong infrastructure and providing good service delivery. Essential infrastructure such as hospitals, accessible roads and services are important in providing quality care. In Phase 1, the results of the Wilcoxon signed ranks test showed a significant positive correlation with poor infrastructure and resignations. According to the Cronbach's alpha test for resignation, poor infrastructure is correlated with environmental conditions. Cronbach's alpha test for retention demonstrated that secure infrastructure and adequate safe parking are correlated with facilities. Participants were in agreement that secure infrastructure, adequate and safe parking is facilitators of staff retention.

In Phase 2, the results demonstrated that radiographers need safe parking areas and easy access to the hospitals. There is concern over the road infrastructure, especially during strikes (Maphumulo and Bhengu 2019: 9). Participants indicated that some hospitals have old lifts and lack routine maintenance, which is the leading factor for lifts being problematic. According to Maphumulo and Bhengu (2019: 9), South African public hospitals' healthcare faces shortcomings with old and poorly maintained infrastructure. The public hospitals are currently overburdened and incapable of providing consistent quality care and the South African government needs to improve

infrastructure in the public health system in order to be able to manage with the National Health Insurance (NHI) (Heywood 2014: 8).

8.2.6 Malfunctioning equipment

The topic of shortages of equipment in public hospitals has led to fatal delays in urgent surgery and treatments (Maphumulo and Bhengu 2019: 19). The backlog of work prolongs patients' waiting times for treatment. This includes cancer patients who are affected by the lack of oncology doctors, equipment and long waiting lists for surgery or diagnosis due to the lack of equipment (Maphumulo and Bhengu 2019: 19). In a study by Blaauw *et al*. (2012: 127), healthcare professionals in South Africa demonstrated lower levels of job satisfaction. This was due to a greater intent to leave due to job dissatisfaction, the shortage of medical supplies and malfunctioning medical equipment.

According to the WHO (2010a: 1), medical equipment is significant in the health system and is a tool used to prevent, diagnose, monitor and treat diseases. It can be in the form of a machine, instrument, appliance, software or material; be used alone or with other devices. Medical equipment has a lifecycle that requires calibration, maintenance, user training and finally retirement (WHO 2011: 1). In Phase 1, the participants showed increased concern with the state of the equipment. They are working with malfunctioning and old equipment, which has a negative impact on service delivery and the quality of care to the patients. They expressed that the equipment is too old and needs to be replaced. They are working with out-dated analogue equipment, rather than new digital equipment. Radiographers experience stress when working with the malfunctioning equipment and having to cope with the backlog of patients. They want to be able to work with clean and well-maintained equipment and keep up with the rest of the world with new machinery and techniques. Participants indicated that the younger radiographers prefer to be creative and work fast and they want to keep up with updated technology and software.

Participants were in agreement that out-dated equipment influenced radiographers to move to another position and that state-of-the-art equipment were facilitators of staff retention. The Cronbach's alpha test for resignation indicated that working with malfunctioning or out-dated equipment is correlated with environmental conditions. The Cronbach's alpha test for retention indicated that having to work with well-maintained, working and state-of-the-art equipment is correlated with facilities.

In Phase 2, participants expressed their familiarity with the government's lack of funding, which hinders equipment being repaired or replaced timeously. The malfunctioning equipment is related to the backlog of patients causing radiographers to work in a stressful environment. In a study by Moyimane, Matlala and Kekana (2017: 100), nurses in rural district hospitals in South Africa have challenges with accessing functioning medical equipment. The critical shortage of medical equipment is due to the unavailability of equipment, low quality and poor maintenance of the few that are available. The shortage impacts negatively on nursing care, the nursing profession and the hospital.

8.3 GOVERNMENT POLICIES

An array of views was acknowledged under the theme of government policies. Participants were familiar with the government policies, which affected some participants to be either satisfied or dissatisfied with the policies. Participants' satisfaction or dissatisfaction influenced either staff resignations or staff retention. The two policies detected were identified as the sub-themes.

8.3.1 Occupational-Specific Dispensation (OSD)

In both phases, the participants expressed their dissatisfaction with the implementation of the OSD. In Phase 1, participants acknowledged that newly qualified radiographers received high salaries. They demonstrated that there was unfairness in the implementation of the OSD policy, while the younger radiographers were satisfied with the improvement in salaries. According to

the Department of Health South Africa (2011: 4), on 1 July 2010 the OSD policy for therapeutic, diagnostic and related allied healthcare professionals came into effect. The OSD policy objectives were to introduce career growth from experience, performance and competencies. The OSD policy implemented an increase in salaries earned by the healthcare workers and the number of healthcare workers employed by the public hospitals (Netshiwinzhe and Mulaudzi 2015: 103).

Participants reflected that they felt stagnant, with no salary growth due to the failure to implement accelerated grade progression. A similar scenario of salary stagnation with no significant increases in salaries arose with the OSD policy for nurses (Sonjane *et al*. 2016: 4). Health-care workers migrate to economically developed countries due to the negative effect of the salary stagnation (George and Rhodes 2012: 3). Similarly, the results of the Wilcoxon signed ranks test for the unfair implementation of OSD Policy influenced staff resignations for another position. The participants were in agreement that the ability to negotiate salaries and salaries based on qualifications, skills and experience are facilitators of staff retention. The results of the Cronbach's alpha test showed a negative correlation between satisfaction with the OSD policy and intention to leave. Radiographers would resign due to the unfair implementation of the OSD Policy. However, if radiographers have the ability to negotiate salaries, which includes salaries based on qualifications, skills and experience, they would have no intention to leave.

The results of Phase 1 correlated with Phase 2. The level of dissatisfaction was similar across all the disciplines within radiography and all hospitals. In particular, diagnostic radiographers and therapy radiographers showed the highest level of dissatisfaction with the policy. Diagnostic radiographers agreed that the OSD Policy considered diagnostics as a baseline, while other specialties such as ultrasound, nuclear medicine and mammography and radiation therapy considered that the OSD Policy did not recognise them in the salary structure. Senior radiographers believed that they were less

recognised as they are earning a similar salary to radiographers who were newly qualified. Radiographers in the speciality disciplines were negatively affected and believed that their salaries were at an acceptance level and they would remain in one position for a period of 10 years without any possibility of promotion. This was created by the failure of the OSD Policy to create sub-scales for the radiographers working in speciality, which has resulted in a lack of salary and career growth. The lack of supervisory positions for speciality radiographers has resulted in the lack of career growth.

In Phase 2, participants expressed unhappiness with the OSD policy salary scales for not taking into account additional qualifications (e.g. B. Tech, Masters and Doctorate). Participants showed dissatisfaction after the uniform allowance was removed from some of the hospitals, while it remained in some hospitals. This came into effect after the implementation of the OSD policy. Radiographers believed that all radiographers working in public hospitals should receive the same allowances and not be hospital dependent. The negative implications correlated with the level of satisfaction with the OSD policy, demonstrated an intention to leave. The results of the Cronbach's alpha test showed negative correlations with the level of satisfaction with the OSD policy. Participants who were satisfied with the OSD Policy did not have intentions to leave. Similarly, negative implications have been reported on the OSD policy in the Eastern Cape (Adejoka and Bayat 2014: 19).

8.3.2 Employment Equity Act (EEA)

The Employment Equity Act No.55 of 1998 was introduced by the government in 1998 to attain equity in the workplace (Government Gazette 2014: 5). Equity is to be accomplished by promoting equal opportunity and fair treatment through the elimination of unfair discrimination; implement affirmative action measures for previously disadvantaged designated groups; and have equitable representation in all occupational categories in the workforce (Government Gazette 2014: 5). The objectives of the EEA were to develop measures to recruit, retain, train, develop and promote designated

groups. Significant changes have been identified at skilled or intermediate occupational levels, with a high level of promotion of Black Africans (Jones *et al.* 2012: 7).

South Africans have experienced changes in employment relations. However, progress in rectifying unfair discrimination in the workplace has been slow due to the barriers in the implementation of the EEA and effective retention strategies for Blacks in management in South Africa (Booysen 2007: 47). Organisations were unsuccessful in retaining designated groups due to barriers. These barriers are due to a lack of cultural sensitivity when new recruits integrate into the organisational culture; a lack of cultural awareness programmes and organisational cultures that value diversity; black people not being fully integrated into the organisation with a significant delegation of duties whilst not being systematically developed and trained (Booysen 2007: 50).

Phase 1 results could not be correlated with Phase 2 with regard to the EEA and candidate selection to fill vacant positions. Grade 1 and 2 participants agreed that the guidelines of the EEA were not fairly implemented, while Grade 3 and assistant directors agreed that the guidelines of the EEA were fairly implemented, but expressed concerns about retaining designated groups and finding suitable candidates to fill posts according to demographic needs. Phase 2 results demonstrated that promotion positions are available and the candidates selected fit the criteria but are unable to perform the tasks. Participants believed that the selection processes for new positions were not fair due to unfair selection or favouritism. Radiographers are given Grade 3 positions but are not able to perform all the senior duties of these positions. Radiographers were unhappy with the unfairness of the selection process as radiographers that are selected for the position are not always capable of doing all the duties efficiently.

8.4 INADEQUATE REMUNERATION

The majority of participants demonstrated similar views in both phases on the dissatisfaction with their remuneration structure. Four themed patterns were observed and identified as sub-themes., as follows:

8.4.1 Poor or unfair remuneration

The topic of poor or unfair remuneration shows a significant difference in the remuneration satisfaction between radiographers and doctors (Haskins *et al*. 2017: 180). Radiographers in KZN demonstrate lower levels of satisfaction with their salaries. In Phase 1, the participants demonstrated substantial dissatisfaction with remuneration due to the OSD policy. Similarly, radiographers in Gauteng show lower levels of satisfaction with their salaries regardless of the implementation of the OSD policy (Khoza 2018: 30). The results of Phase 1 correlated with Phase 2. The participants showed dissatisfaction and indicated that their salaries were not a reflection of their qualifications. Diagnostic radiographers showed more satisfaction with their remuneration than the other speciality radiographers. The Wilcoxon signed ranks test demonstrated significant agreement that uncompetitive salaries and the inability to negotiate salaries cause radiographers to move to other positions elsewhere. The Cronbach's alpha test demonstrated that uncompetitive salaries influence radiographers to resign and competitive annual salary increases retain radiographers. The Spearman's correlation was applied to the age and years of the participants. It was identified that more experience as a radiographer is related with less agreement that the factors would cause radiographers to move to another career due to poor financial rewards.

In the Phase 2 results, some radiographers were satisfied with a stable income while some disagreed with the salary scales. Radiographers believed that they are overworked and underpaid. Poor salaries are a leading factors that causes radiographers to resign. Diagnostic radiographers showed most dissatisfaction due to diagnostic radiography being seen as a baseline and

not as a specialised category. Similarly, George and Reardon (2013: 8) found that 59% of the nurses and doctors foresaw emigration to other countries due to low salaries.

8.4.2 Lack of benefits

The sub-theme ‘lack of benefits’ is a significant factor, particularly in situations where salaries are extremely low, but these are not the only reason for an employee’s intention to leave a post (Dieleman and Harnmeijer 2006: 11). Staff dissatisfaction emanates from working conditions, stressful working environments, staff shortages and benefit packages. The lack of benefits is the leading factor of staff dissatisfaction (McHugh *et al.* 2011: 202). Similarly, In Phase 1, participants demonstrated dissatisfaction with the lack of benefits in terms of CPD activities, poor financial rewards, good medical aid cover and opportunities for professional development. Britton *et al*. (2017: 31) state that radiographers in Gauteng believe that as professionals, they are not provided with adequate benefits and salary. Radiographers desire to progress in their profession, but the profession does not allow much growth in terms of benefits. Britton *et al*. (2017: 31) emphasise that radiographers feel demotivated after furthering their studies and not being remunerated

The Wilcoxon signed ranks test demonstrated agreement that poor or inadequate benefits and not being allowed to attend conferences or courses cause radiographers to move to another position. Moreover, limited opportunities for professional development cause radiographers to move out of radiography. Financial rewards, good medical aid cover, flexible working hours, career advancement or opportunities, the opportunity to attend conferences for CPD points funded by the employer, promoting further education by providing study leave, the opportunity to attend conferences for professional development at no cost and professional fees being paid for are facilitators of staff retention.

According to the Cronbach's alpha test for resignation, radiographers being allowed to attend conferences or courses and being given the opportunity to attend conferences for CPD points are correlated to personal conditions. The Cronbach's alpha test for retention indicated that financial rewards are correlated with remuneration; whilst good medical aid cover is correlated with personal conditions; career advancement or opportunities, promoting further education, the opportunity to attend conferences for professional development at no cost and professional fees being paid for are correlated with facilities.

In Phase 2, participants show a lack of participation in conferences or seminars and CPD talks. One of the factors is due to radiographers in public hospitals not being remunerated to assist them with their acquiring of CPD points or attending conferences for career growth. Radiographers have to consider all expenses, including travel cost and accommodation. According to Fochsen *et al.* (2005: 340), many nurses have left their profession due to inadequate monetary compensation, unsatisfactory salary and a lack of professional opportunities.

8.4.3 Lack of overtime remuneration

In both phases, participants demonstrated their dissatisfaction with the lack of overtime remuneration. Obtaining authorisation from the relevant management for radiographers' overtime remuneration was reported as a challenge for managers in Phase 2. The other challenge that was posed to managers was granting radiographers the time off for their overtime worked due to staff shortages. The collective agreement regulating overtime stipulates that overtime in the relevant agreement refers to work in excess of the hours of work per week or month that an employee has been contracted to perform (KZN Department of Health 2011: 1). If operational needs exist, medical personnel engaged with patients and clinical work may work overtime. Prior to commencing overtime duties, authorisation must be obtained from the relevant management (KZN Department of Health 2011: 5).

In Phase 1, the Wilcoxon signed ranks test demonstrated significant agreement that a lack of compensation for working overtime causes radiographers to move to another position. The Cronbach's alpha test for resignation demonstrated that compensation for working overtime is correlated with stress and remuneration. Participants indicated dissatisfaction with working overtime. However, they would be satisfied if overtime was remunerated. In Phase 2, participants demonstrated mixed responses as some want to be remunerated for overtime duties and some prefer to be compensated in taking time off. Taking time off during work hours gives radiographers flexibility to attend to personal matters. However, it is not always possible due to the staff shortages. Younger radiographers prefer not to work any overtime. If overtime is required, they prefer being remunerated. Younger radiographers expressed that they would rather use their weekends for social purposes. Likewise, researchers in a previous study have documented that radiographers display greater job satisfaction and less stress due to not working on weekends (Jones *et al.* 2013: 52).

8.4.4 Lack of recognition

The sub-theme of recognition is known to have a positive influence and has an impact on the retention of employees. There is a correlation between recognition and motivation (Mngomezulu *et al*. 2015: 378). It is indicated that if more focus is put on rewards and recognition, it could result in a positive impact on motivation and could result in higher levels of job performance (Mngomezulu *et al.* 2015: 378). According to Sodeify (2013: 194), similarly nursing managers should acknowledge nurses performance, achievements and good work, which in turn promotes encouragement to creativity, innovation, continuous learning opportunities and transformational leadership in enhancing nurse's performance in providing quality care. Similarly, it was identified in both Phases that radiographers want be acknowledged and given recognition for their work.

In Phase 1, the Wilcoxon signed ranks test demonstrated that proper or fair appraisals are facilitators of staff retention. The Cronbach's alpha test indicated that proper or fair appraisals are correlated with remuneration. Radiographers seek appreciation and acknowledgment for their outstanding performances, especially during appraisals. In Phase 2, participants demonstrated that there is an absence of staff recognition and management does not show appreciation. Radiographers want to feel valued, motivated and be rewarded for their work. According to Halcomb *et al.* (2018: 136), respect, recognition, workplace relationships and job satisfaction have a positive influence on nurses. The importance of positive relationships, respect of roles and recognition of value between nurses enhances the value of inter-professional collaboration.

8.5 LACK OF CAREER PATHING

The sub-themes that emerged under the lack of career pathing were career growth and opportunities for promotion. These sub-themes were correlated with radiographers' intention to leave.

8.5.1 Career growth

The topic 'career growth' demonstrates that employees who are positively influenced by the possibility of career advancement opportunities incline themselves to feel more emotionally attached to the organisation (Van Dyk and Coetzee 2012: 3). Organisations that offer employees training and development for personal growth and career opportunities with resources for career development would benefit from ensuring that employees recognise how to manage their own careers proactively (Van Dyk and Coetzee 2012: 3). In organisations that support their employees with training, development and career advancement opportunities, their employees develop an emotional attachment, loyalty and commitment towards the organisation (Dhar, 2015: 419). However, medical professionals employed in the public sector in South Africa have the desire to move to the private sector due to the lack of career progression (Ashmore 2013: 11).

In Phase 1, participants confirmed that they require remunerated recognition for improvement in their academic skills and career growth. The OSD policy excludes the recognition of academic achievements and post-graduate qualifications such as B-Tech, Master's Degrees and Doctorates. The salary notches remained the same, regardless of a radiographer's qualification level. Radiographers lack enthusiasm to improve on their skills as there are no additional remuneration benefits to their salaries.

Radiographers earn the same salary irrespective of what qualifications they earned. They feel stagnant, including no career growth in the government hospitals as they are not motivated to further their studies. Participants in speciality disciplines also considered the radiography profession structure as being limited. Assistant director and supervisory positions are very limited. Diagnostic radiographers feel impoverished as diagnostics has been the baseline for the structure of the profession. Similarly, a study done in the Gauteng province demonstrated a lack of career pathing being seen amongst radiation therapists (Britton *et al*. 2011: 7).

8.5.2 Opportunities for promotion

The sub-theme of opportunities for promotion indicates that healthcare workers require an array of skills, from personal to organisational levels, to achieve career advancement (Ezzedeen and Ritchey 2009: 388). Similarly a study done illustrated nurses think about career progression and promotion after they have gained experience and professional skills (Rahimaghaee *et al*. 2010: 470). Nurses look for promotion to flourish and develop in their profession. Promotion motivates them while assisting them to develop a sense of value, feel greater commitment and responsibility towards their jobs (Sheikhi *et al*. 2016: 77). Similarly, radiographers in KZN pursue career progression. However, there are limited opportunities after the implementation of the OSD Policy.

In Phase 1, the Wilcoxon signed ranks test demonstrated that better opportunities elsewhere and poor promotional prospects cause radiographers to resign. According to the Cronbach's alpha test, better opportunities elsewhere are correlated with personal conditions and poor promotion prospects are correlated with stress and remuneration. According to Britton *et al*. (2017: 28), the absence of opportunities and career growth within the radiography profession had a negative impact in the confidence and self-esteem of radiographers, including recruitment and retention. In Phase 2, participants expressed contentment with their qualifications as there is no need to further their studies since it would have any benefit for promotions or recognition. Radiographers demonstrated that there is no growth as there are limited supervisory positions. They must wait for posts to be available or for someone to resign, as there is only one manager or assistant director. Radiographers also believed that promotional opportunities are limited due to the unfair selection of candidates by management. Therefore, the lack of career pathing within radiography was the motive for the introduction of radiology assistants in the USA in the early 2000s in order to create an appealing profession (Williams *et al*. 2004: 845).

8.6 SUMMARY OF THE CHAPTER

In this chapter, the results of Phase 1's significance were discussed. The questionnaire was categorised into factors for factor analysis and statistical tests. The factors were tested for radiographers' intention to leave or resign. The findings were used to develop the interview guide in Phase 2. The results of Phase 2 emerged with themes and sub-themes. These were correlated with literature for differences or similarities that could have been identified.

CHAPTER 9: A MODEL FOR THE STAFF RETENTION OF RADIOGRAPHERS

9.1 INTRODUCTION

The final objective of this study was to develop a model that could be used to improve the staff retention of radiographers employed at the selected tertiary hospitals in the KZN province. The development of this model was guided by Herzberg's Hygiene and Motivation Theory. It was used to explore the hygiene and motivational factors of staff retention and to discern which factors increased radiographers' intent to leave. This chapter focuses on the development of the model.

9.2 PURPOSE OF THE MODEL

In enlightening on the purpose of the model, it is significant to expound how it is applied. This highlights the situations and conditions under which it is practical, as well as who implements it (Chinn and Kramer 2011: 186). The purpose of this model is to improve the staff retention of radiographers employed at the selected tertiary hospitals in the KZN province.

9.3 PROCESS OF MODEL DEVELOPMENT

The researcher adapted methods in relation to nursing theory development and developed her model for the staff retention of radiographers. The two methods used were deductive reasoning and inductive reasoning. *Deductive reasoning* generates facts or details from a major nursing theory and generalisation, while *inductive reasoning* uses specific facts or details of patients' conditions to make conclusions and generalisation (Bradford 2017: 1). These methods in nursing theories assist nurses to describe, explain and predict everyday experiences (Bradford 2017: 1). The method of theory adaption from one origin source to another, redefining concepts and theories is known as *derivation* (Walker and Avant 2011: 63). It was selected due to

the limited research in radiography. Chinn and Kramer (2011: 176) indicate that the process of model development consists of a four-step process with the following components: identifying and defining concepts; identifying assumptions; clarifying the context within which the model is placed; and designing relationship statements. These four steps and their relations to literature are clarified in following text:

9.3.1 Identifying and defining concepts

Concepts are the fundamental building blocks of all models which play an important role in all aspects of cognition, mental representations, ideas and constructs in the mind about a thing or action (Margolis and Laurence 2007: 561). The aim of this study was to explore the hygienic and motivational factors of staff retention amongst radiographers. Therefore, these two factors are the building foundation of the model, combined with their effect on staff retention and intent to leave. According to Walker and Avant (2011: 59), assumptions affect the conceptual structure of model development and the period of time would determine the connection that the factors would have on one another.

Four elements of period of time govern the relationship between factors in model development, which are antecedent concepts, consequent concepts, intervening concepts and concept analysis (Chinn and Kramer 2011: 176). Yazdani *et al.* (2016: 46) state that *antecedent concepts* are events or incidents that happen prior to the occurrence of the concept and events that occur as a result of the occurrence of the concept. In the context, antecedents and consequences are identified (Avant and Walker 2011: 59). In this study, radiographers demonstrated dissatisfaction with the failure of the OSD policy to attract and retain radiographers in government hospitals. Hence, the salary stagnation correlated with the OSD policy. Radiographers were also unhappy with their inability to negotiate salaries and their salaries not being based on qualifications, skills and experience. This was due to the unfair implementation of the OSD policy, especially for radiographers in speciality

areas who were negatively affected as their salaries were at an acceptance level and they would remain in one position for a period of 10 years without any possibility of promotion.

Consequent concepts are known to follow other concepts, as described in this study (Yazdani *et al.* 2016: 47). The consequent concepts were acknowledged as the concepts related to higher levels of disagreement on the Likert scale in the questionnaire, with significantly greater intent to leave. These concepts were working conditions, government policies, inadequate remuneration and a lack of career pathing. In addition, the consequent concepts that were associated with higher levels of agreement on the Likert scale in the questionnaire were facilitators of staff retention, such as improved salary structure, working or new equipment, secure infrastructure, career advancement, financial rewards and structured CPD activities.

According to Yazdani *et al*. (2016: 47), *intervening concepts* are described as coincident and have a particular influence on the connection amongst concepts. Intervening concepts are also known to influence the connection between antecedent concepts and consequent concepts. Intervening concepts are the factors that influence the retention of radiographers or their intent to leave. The consequent concepts identified have both a positive and negative connection between radiographers' retention and intent to leave. These consequent concepts have been demonstrated to influence intent to leave amongst radiographers employed in the selected public tertiary hospitals in the KZN province.

Concept analysis is a strategy used to examine concepts for their semantic structure (Walker and Avant 2011: 59). The concept analysis was used to determine the defining attributes. The attributes were the characteristics of the concepts that appeared over and over again in the literature and that were frequently associated with the concept, allowing the broadest insight into it (Walker and Avant 2011: 59). The attributes were the characteristics of the conceptions that influence the retention of radiographers and their intent to

leave. Thereafter, a factor analysis was performed in which three hygienic factors and one motivational factor emerged.

9.3.2 Identifying assumptions included in the model

Assumptions are underlying absolutes that are assumed to be factual empirical and philosophical, which must be challenged according to the knowledge they present (Chinn and Kramer 2011: 178). The empirical concepts demonstrate the existence or presence of the concept in its contextual framework (Walker and Avant 2011: 59). Empirical models may be challenged philosophically and can be assessed empirically. However, according to Yazdani *et al*. (2016: 49), philosophical assumptions form the grounding for a model and must therefore be challenged under philosophical knowledge. They are useful in practice as they provide a way in which the concept was observed and measured by the researcher (Walker and Avant 2011: 59). Therefore, the philosophical assumption for the design of this model was that radiographers' intent to leave was a pronounced contributing factor in retaining radiographers in public tertiary hospitals.

The themes and factors that emerged from Phase 1 and Phase 2 of the data collection supported the development of the model as illustrated in Figure 9.1. The themes were separated into motivational factors and hygiene factors. The theme 'career pathing' was encompassed within the motivation factors that included staff satisfaction and staff retention. The factors that led to staff retention were a decrease in workload and the employment of additional staff, improving benefits, reducing work hours and flexible time, purchase of new or repair equipment, fair implementation of EEA and having opportunities for promotion. The themes of working conditions, government policies and inadequate remuneration were encompassed within hygiene factors that included staff dissatisfaction and intention to leave. The factors that led to intention to leave were a lack of support from management, poor infrastructure, lack of career pathing, unhygienic conditions, lack of recognition and dissatisfaction with the OSD policy.

9.3.3 Clarifying the context within which the model is placed

Theoretical connections are positioned within a context of the model and are to be used in practice so that the applicability of the model is reliant on the broadness or narrowness of the context (Chin and Kramer 2011: 179). In this study, the suggested model is intended for radiographers employed by public tertiary hospitals in the KZN province. However, the context of the model could be proposed to the other public hospitals in South Africa as these hospitals are governed by the same standard operating policies. Therefore, similarities could be present between these hospitals. Private sector hospitals are governed by different protocols and standard operating policies; hence the proposed model might not be as effective and may not be generalizable.

9.3.4 Designing relationship statements

According to Walker and Avant (2011: 60), the construction of statements is a fundamental part of designing a model. Chinn and Kramer (2011: 180) refer to statements as being relational and non-relational. A *relational* statement proposes that there is some form of connection between two or more concepts while having the ability to confirm the association or causality of statements. *Associational* statements are known to group similar concepts and casual statements to determine the cause and effect relationship (Walker and Avant 2011: 60). A *non-relational* statement affirms the existence of concepts and is primarily used by model designers to clarify the meaning of a model (Chinn and Kramer 2011: 180). In the design of this model, the following were the statements that were created and found to have a causal connection with staff retention and intention to leave:

Staff retention increases amongst radiographers when:

- Workload decreases with an increase in the supply of staff;
- Working hours are reduced and staff could work flexible time;
- Malfunctioning equipment is repaired or new equipment keeping up with the latest technology is purchased;

- The government provides benefits such as petrol allowances, better medical aid and uniform allowances and compensates for overtime worked;
- The EEA is fairly implemented; and
- Radiographers are given more opportunities for promotion.

Staff retention decreases amongst radiographers when:

- There is a lack of support from management;
- Staff have to work in unhygienic conditions;
- There is poor internal and external infrastructure;
- There is a lack of recognition for their work;
- No career growth and clear structure for career pathing exists; and
- The OSD policy does not take into consideration qualifications and dissatisfaction with salary scales.

9.4 STRUCTURAL DESCRIPTION OF THE MODEL

The previous section explained the relationships between the concepts to improve staff retention for radiographers employed at the selected tertiary hospitals in the KZN province. The overall depiction of the relationship between the concepts forms the structure of the model (Chinn and Kramer 2011: 190). The structural form of a model helps in explaining the central relationships between concepts, their order of existence and how they associate with each other. Once all the different definitions of the concepts were examined, a list of essential and related attributes was identified. This step was necessary to identify, analyse and synthesise the attributes for the definition of the main concepts. After the construction of the model had been finalised, a list of the central and related concepts was developed so that the concept of improving staff retention could be defined within the context of the study. The identified, essential, related attributes of the concept of improving staff retention are echoed upon. The characteristics were then used to build the relationship statements. The model for improving staff retention comprises two basic services, as stated

previously: increasing staff retention and decreasing intent to leave. The model is illustrated as a representation in Figure 9.1. The model demonstrates a system of theoretical descriptions designed into two concepts, which are staff retention and intention to leave amongst the radiographers. These are associated with the factors that increase staff retention.

9.4.1 Factors that increase staff retention

The factors that were identified to enhance the retention of radiographers are workload that decreases with an increase in the supply of staff; working hours are reduced and staff could work flexible time; malfunctioning equipment is repaired or new equipment keeping up with the latest technology is purchased; the government provides benefits such as petrol allowances, better medical aid and uniform allowances and compensates for overtime worked; the EEA is fairly implemented; and radiographers are given more opportunities for promotion. These factors were verified in the factor analysis in Phase 1. The participants would have no intention to leave and would show commitment to the public hospitals if more staff was employed and the workload decreased. They would prefer to work shorter hours or even be given flexible times. Improved technology or working equipment would allow radiographers to feel accomplished when their patients can be treated timeously with no unnecessary delays due to malfunctioning equipment. In Phase 2, participants demonstrate satisfaction with the government allowances but would prefer additional benefits such as petrol allowances, better medical aid and uniform allowances and be compensated for overtime. Participants would be satisfied if the EEA is implemented fairly and radiographers are given more or fair opportunities. Candidates selected for promotions should be treated fairly and should be able to perform senior duties for the position.

9.4.2 Factors that decrease intention to leave

The identified factors that decrease the retention of radiographers in public tertiary hospitals are the lack of support they receive from their managers and unfair treatment from management. Radiographers would like to be recognised, appreciated for their work and for management be more accommodating to try to find solutions for the staff shortages. Participants do not want to work in departments that are unhygienic, not cleaned thoroughly and are prone to infections. They are aware of the high infection statistics, health and safety issues and lack of infection control. Participants would prefer to work in a safe internal and external infrastructure due to safety risks. Radiographers do not find support in their academic skills, career growth and contribution to CPD activities, financial rewards and opportunities for professional development in terms of monetary compensation. The findings in Phase 1 demonstrated that the OSD policy excludes the recognition of academic achievements and qualifications. The salary notches remain the same, irrespective of a radiographer's qualification level and radiographers were not happy with their salary scales. The radiographers demonstrated the need for the OSD policy to be revised. However, Spearman's correlation confirmed that the more experienced the radiographer is, the less agreement that the factors would influence them to leave their position due to poor financial rewards.

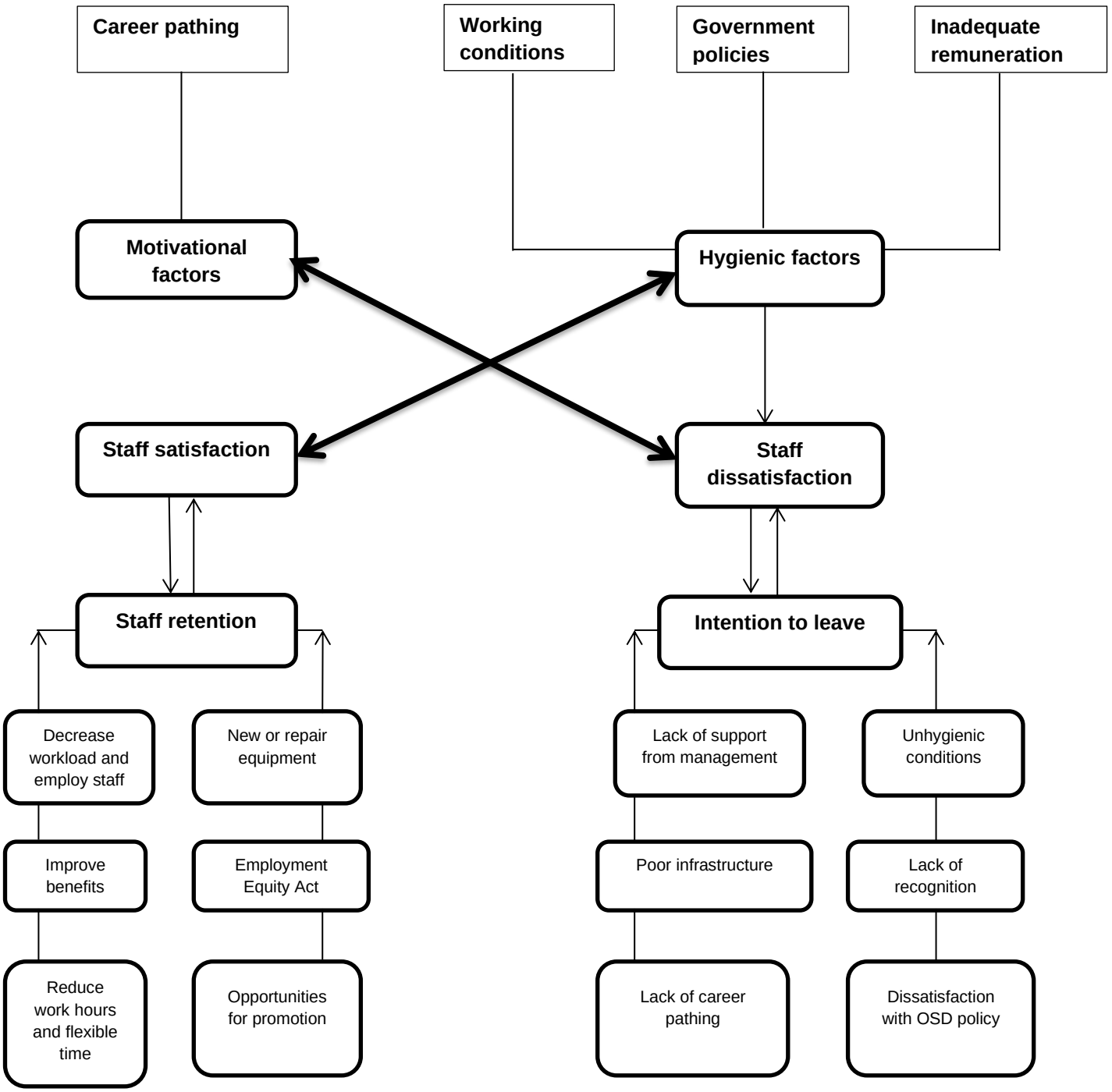

Figure 9.1: A model for staff retention amongst radiographers

9.5 SUMMARY OF THE CHAPTER

This chapter presented the process of developing the model for staff retention where four steps were followed to design the model. The data used to design the model was collected over two phases. In Phase 1, a questionnaire was used as an instrument to collect information to develop the model. In Phase 2, interviews were conducted to collect data and emergent themes that were fundamental for staff retention were used as the integral points in designing the model. Chapter 10 will present the limitations, conclusion and recommendations of the study.

CHAPTER 10: LIMITATIONS, CONCLUSION AND RECOMMENDATIONS

10.1 INTRODUCTION

The aim of the study was to explore the motivational and hygiene factors of staff retention amongst radiographers employed at selected public tertiary hospitals in the KZN province in order to develop a model to improve staff retention. This was achieved by data collection in two phases and the development of the model for staff retention amongst radiographers. This chapter concludes the study, concedes the limitations and lastly provides recommendations based on the findings of the study.

10.2 LIMITATIONS OF THE STUDY

Limitations in a study are barriers that decrease the credibility of the study results, which could include the research design, sampling or research methods (Burns and Grove 2011: 48). Limitations in a study need to be clear for precautionary measures to be applied to decrease any possible negative impact that could be included in the study (De Vos *et al.* 2011: 288).

The limitations experienced in this study were:

- The study was conducted in public tertiary hospitals. Therefore the results of the study cannot be generalised to the private sector;
- The data collection was conducted in the KZN province, hence the results of the study are relevant to radiographers in this province and cannot be generalised to all other radiographers; and
- In Phase 1, the questionnaire was only distributed to radiographers who were on duty at the time of data collection. This demonstrated a limitation in the sample size of the questionnaires that were completed.

10.3 CONCLUSIONS FROM THE STUDY

Conclusions from the study were based on the study objectives. The results from the study demonstrated that there were three hygiene factors and one motivational factor that significantly affected staff retention amongst radiographers employed by the selected public tertiary hospitals in the KZN province. The factor *career pathing* was conducive to staff retention. The other factors such as *decrease in workload, improved benefits, reduced and flexible work hours, replace or repair equipment, EEA and opportunities for promotion* indicated a positive influence on staff retention.

However, factors such as *influence on working conditions, government policies and inadequate remuneration* were conducive to staff resignations. The participants indicated the staff shortage and having to cope with the high workload have an impact on poor service delivery to patients, which increases staff stress levels. Radiographers found it difficult to take leave and dealing with backlogs of patients eventually caused staff to burn out because of a lack of support from management. Management and supervisors are identified as the leading human factor affecting the intent to leave due to their management styles creating an unfavourable working environment. Some participants felt that they are treated unfairly and are not recognised or appreciated for their work. These factors were identified as they influence the resignation of radiographers employed by tertiary hospitals.

Participants demonstrated that unhygienic working conditions created health and safety concerns in their work environment. They had concerns about the internal and external infrastructure and preferred to work in a safe environment with minimised risks. In addition, they showed dissatisfaction over concerns with the poor infrastructure such as road infrastructure, car park areas, access to the hospitals and old or not well-maintained lifts. Furthermore, they indicated their intent to leave if there is a persistence of working with malfunctioning or old equipment. They were familiar with the lack of funding and factors that prevent equipment being updated timeously.

However, radiographers would prefer if technology is updated and old equipment is replaced and always in working condition. Malfunctioning equipment caused the backlog of patients and radiographers have to work in a stressful environment. These factors were also identified as influencing resignations of radiographers.

The participants cited their intention to leave due to the implementation of the OSD policy. They remain in one position for a period of 10 years before progressing to the next grade. Participants are unhappy with their salary scales and agreed that the OSD Policy should have taken e.g. B. Tech, Masters and Doctorates into consideration. After the OSD policy was implemented, the uniform allowance was removed at some hospitals. This was unfair to the radiographers in the government sector as there should be a set standard and not one that is hospital dependent. Radiographers were also dissatisfied with the EEA, especially with the unfair selection of candidates to fill positions. Participants also indicated that radiographers are given Grade 3 positions but are not able to perform all the senior duties of these positions. These factors influence the radiographers to resign.

Participants demonstrated an intent to leave due to poor or unfair remuneration such as uncompetitive salaries; lack of benefits in terms of CPD activities; poor financial rewards; poor medical aid cover; limited opportunities for professional development; a lack of overtime remuneration and recognition for radiographers' work and acknowledgment for their outstanding performance. They cited the radiography career as being satisfying but that it however lacked opportunities for growth as there is no recognition of post-graduation qualifications and salary notches remain the same, irrespective of a radiographer's qualifications. Participants also showed an intent to leave due to a lack of promotion since the implementation of the OSD policy. Therefore, it has been concluded that there could be a retention of radiographers when the supply of staff is increased and their workload decreased; their working hours are reduced and more flexible; malfunctioning equipment is replaced or repaired; the government provides benefits such as

petrol allowances, better medical aid, uniform allowances and compensate them for overtime worked; the EEA is fairly implemented; and radiographers are given more opportunities for promotion. However, it has been concluded that radiographers resign due to the lack of support from management; staff have to work in unhygienic conditions; poor internal and external infrastructure; lack of recognition for their work; no career growth and clear structure for career pathing; and due to the OSD policy not taking into consideration their qualifications. The findings of the study provide an opportunity for the KZN Department of Health to address the perceptible issues that decrease the retention of radiographers.

10.4 RECOMMENDATIONS

The recommendations, based on the findings of the study, relate to the aspects of radiographers, policy review, management and future research.

10.4.1 Retention of radiographers

- Management should develop and implement a transparent protocol for training radiographers in specialised areas and future management positions. This will benefit radiographers and avoid resignations in the public sector.
- Radiographers value continual learning and career advancement when given the opportunity, especially online access. Management should implement professional development opportunities. Defined career paths and easy access to education are attractive to younger radiographers and would retain them in their positions.

10.4.2 Policy review

- Radiographers demonstrated lower levels of contentment with their salaries, irrespective of the OSD policy implementation, due to various factors. These factors should be explored and discussed with radiographers to create an improved work culture and to avoid

resignations in the public sector. The Department of Health should ensure a standardisation in the implementation of the OSD policy.

- The OSD policy should be revised to include the various qualifications obtained by the radiographers in their salary structure.
- The KZN Department of Health should consider reviewing the process of funding involved in repairing malfunctioning equipment or purchasing new equipment to minimise the downtime.

10.4.3 Management

- Hospital management and radiography management should consider authorisation for remunerated overtime and improved benefits and alleviate staff shortages.
- Radiography posts are occasionally frozen, which has led to severe staff shortages. Therefore, managers in the radiography departments should fill vacant positions in each financial year.
- Supervisor-radiographer relationships have been identified as a substantial factor in staff retention. Hence, management should show support to staff and acknowledge the effort they put into their work. Radiographers appreciate recognition and want to be valued and be rewarded. Management should implement a recognition and reward programme. Every month or quarterly, a star performer could be acknowledged for excelling and going above their duties by being rewarded with an afternoon off or an extra day of leave.

10.5 Future research

- Explore the levels of burnout amongst radiographers due to high workloads to understand methods to alleviate stress and retain radiographers.
- Radiography leadership and managerial qualities should be explored to identify a management style suitable for the managerial position and current workforce.

- Explore the coping mechanism used by radiographers to deal with work related stress and their intent to leave.
- Grade 1 radiographers, also known as the younger radiographers, showed the greatest intent to leave. Hence, this problem needs to be further investigated.
- Further studies should be conducted to determine the influence of the OSD policy on radiographers.

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APPENDICES

Appendix 1: University Ethics clearance

DUT
DURBAN
UNIVERSITY OF
TECHNOLOGY

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

6 August 2019

Mrs M Pillay
P. O. Box 47434
Greyville
Durban
4023

Dear Mrs Pillay

A model for staff retention for radiographers employed at selected tertiary hospitals in the KwaZulu-Natal province, South Africa.
Ethical Clearance number IREC 080/19

The Institutional Research Ethics Committee acknowledges receipt of your final data collection tool (Phase 1) for review.

We are pleased to inform you that the data collection tool has been approved. Kindly ensure that participants used for the pilot study are not part of the main study.

In addition, the IREC acknowledges receipt of your gatekeeper permission letter.

Please note that FULL APPROVAL is granted to PHASE 1 of your research proposal. You may proceed with data collection for Phase 1 only.

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.

Kindly note that approval will be issued for Phase 2 of the study upon submission of the following:

- **Data collection tool**

Yours Sincerely

Professor J K Adam
Chairperson: IREC

DUT
DURBAN
UNIVERSITY OF
TECHNOLOGY

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

28 November 2019

Mrs M Pillay
P. O. Box 47434
Greyville
Durban
4023

Dear Mrs Pillay

A model for staff retention for radiographers employed at selected tertiary hospitals in the KwaZulu-Natal province, South Africa.
Ethical Clearance number IREC 080/19

The Institutional Research Ethics Committee acknowledges receipt of data collection tool for phase 2 of your study.

Please note that FULL APPROVAL is granted to PHASE 2 of your research proposal. You may proceed with data collection for Phase 2.

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

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

Yours Sincerely

Professor J K Adam
Chairperson: IREC

Appendix 2a: Letter of request for permission to the eThekwini District Manager

P.O. Box 47434
Greyville
4023
[Date]

EThekwini District Office
Highway House
83 Jan Smuts Highway
Mayville Durban

Request for Permission to Conduct Research

Dear Dr Green

My name is Melisa Pillay, a PhD Health Sciences student at the Durban University of Technology. The research I wish to conduct for my doctoral thesis and the title is: *A model for staff retention for radiographers employed at selected tertiary hospitals in KwaZulu-Natal province, South Africa*.

I am hereby seeking your approval to collect data from the radiographers and radiography management who are employed at Addington Hospital, King Edward VIII and Inkosi Albert Luthuli Central Hospitals. The data collection in the quantitative phase will be a survey and interviews during the qualitative phase of the study. The study poses no risks of any kind to the participants and the organization. I have provided you with a copy of my proposal which includes copies of the data collection tools and consent forms to be used in the research process, as well as a copy of the approval letter which I received from the Institutional Research Ethics Committee (IREC).

If you require any further information, please do not hesitate to contact me or my supervisor Prof Sibiya on 031-373 2704 Email nokuthulas@dut.ac.za

Thank you for your time and consideration in this matter.

Yours sincerely,

_____
Ms Melisa Pillay (PhD Health Sciences Candidate)
Durban University of Technology
Cell Number: 073 531 0118
Email: melisapillay05@gmail.com

Appendix 2b: Approval letter from the eThekwini District Manager

health
Department:
Health
PROVINCE OF KWAZULU-NATAL

DIRECTORATE: CORPORATE SERVICES

83 King Cetshwayo Highway
Marville, Durban, 4001
Tel: 031 240 0455 Email:
www.kznhealth.gov.za

ETHEKWINI HEALTH DISTRICT OFFICE

26th June 2019

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

This letter serves to confirm that your application to conduct the research study titled, "**A model for staff retention for radiographers employed at selected tertiary hospitals in KwaZulu-Natal province, South Africa.**" in the eThekwini district at the following health care facilities has been recommended:

1. Addington Hospital.
2. King Edward VIII
3. Inkosi Albert Luthuli Central Hospitals.

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

Please also note the following:

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

Yours sincerely

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

Appendix 3a: Letter of request for permission to the uMgungundlovu District Manager

P.O. Box 47434
Greyville
4023
[Date]

UMgungundlovu District Office
171 Hoosen Haffajee (former Berg) Street
Pietermaritzburg
3200

Request for Permission to Conduct Research

Dear Sis/Madam

My name is Melisa Pillay, a PhD Health Sciences student at the Durban University of Technology. The research I wish to conduct for my doctoral thesis and the title is: *A model for staff retention for radiographers employed at selected tertiary hospitals in KwaZulu-Natal province, South Africa*.

I am hereby seeking your approval to collect data from the radiographers and radiography management who are employed at Greys Hospital. The data collection in the quantitative phase will be a survey and interviews during the qualitative phase of the study. The study poses no risks of any kind to the participants and the organization. I have provided you with a copy of my proposal which includes copies of the data collection tools and consent forms to be used in the research process, as well as a copy of the approval letter which I received from the Institutional Research Ethics Committee (IREC).

If you require any further information, please do not hesitate to contact me or my supervisor Prof Sibiya on 031-373 2704 Email nokuthulas@dut.ac.za

Thank you for your time and consideration in this matter.

Yours sincerely,

_____
Ms Melisa Pillay (PhD Health Sciences Candidate)
Durban University of Technology
Cell Number: 073 531 0118
Email: melisapillay05@gmail.com

Appendix 3b: Approval letter from the uMgungundlovu District Manager

health
Department:
Health
PROVINCE OF KWAZULU-NATAL

UMGUNGUNDLOVU DISTRICT OFFICE

Physical Address: 171 Hoosen Haffajee, Pietermaritzburg, 3219
Postal Address: Private Bag X9124, Pietermaritzburg, 3200
897 1002 Fax: 033 897 1078 Email: Thule.kunene@kznhealth.gov.za

DISTRICT MANAGERS OFFICE

Enquiries: Ms T Nzimande
26 JULY 2018

TO: MS MELISA PILLAY (PHD HEALTH SCIENCES CANDIDATE)
DURBAN UNIVERSITY OF TECHNOLOGY

RE: A MODEL FOR STAFF RETENTION FOR RADIOGRAPHERS EMPLOYED AT SELECTED TERTIARY HOSPITALS IN KWAZULU-NATAL PROVINCE, SOUTH AFRICA.

Your correspondence regarding the letter of approval to conduct the research refers:

I have pleasure in informing you that the approval has been granted to you by the District Office, to conduct a research on: ***A model for staff retention for radiographers employed at selected tertiary hospitals in KwaZulu-Natal province, South Africa.*** will be conducted at UMgungundlovu District

PLEASE NOTE THE FOLLOWING

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

Thank you,

MRS S.W MBAMBO
ACTING DISTRICT MANAGER
UMGUNGUNDLOVU HEALTH DISTRICT

Fighting Disease, Fighting Poverty, Giving Hope

Appendix 4a: Letter of request for permission to the KZN Department of Health

P.O. Box 47434
Greyville
4023
[Date]

KwaZulu-Natal Department of Health
Natalia 330 Langalibalele (Long market) Street
Pietermaritzburg
3201

Request for Permission to Conduct Research

Dear Dr Lutge

My name is Melisa Pillay, a PhD Health Sciences student at the Durban University of Technology. The research I wish to conduct for my doctoral thesis and the title is: *A model for staff retention for radiographers employed at selected tertiary hospitals in KwaZulu-Natal province, South Africa*.

I am hereby seeking your approval to collect data from the radiographers and radiography management who are employed at Addington Hospital, King Edward VIII and Inkosi Albert Luthuli Central Hospitals. The data collection in the quantitative phase will be a survey and interviews during the qualitative phase of the study. The study poses no risks of any kind to the participants and the organization. I have provided you with a copy of my proposal which includes copies of the data collection tools and consent forms to be used in the research process, as well as a copy of the approval letter which I received from the Institutional Research Ethics Committee (IREC).

If you require any further information, please do not hesitate to contact me or my supervisor Prof Sibiya on 031-373 2704 Email nokuthulas@dut.ac.za

Thank you for your time and consideration in this matter.

Yours sincerely,

_____
Ms Melisa Pillay (PhD Health Sciences Candidate)
Durban University of Technology
Cell Number: 073 531 0118
Email: melisapillay05@gmail.com

Appendix 4b: Approval letter from the KZN Department of Health

health
Department:
Health
PROVINCE OF KWAZULU-NATAL

DIRECTORATE:
Health Research & Knowledge Management

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

NHRD Ref: KZ_201907_034

Dear Mrs M. Pillay
DUT

Approval of research

1. The research proposal titled **'A model for staff retention for radiographers employed at selected tertiary hospitals in the KZN province, South Africa'** was reviewed by the KwaZulu-Natal Department of Health.

   The proposal is hereby **approved** for research to be undertaken at Addington, Grey's, King Edward VIII and Inkosi Albert Luthuli Central Hospital. The study is also approved for Ngwelezane Hospital provided that facility management provides access to the facility.

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

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

Yours Sincerely

Dr E Lutge
Chairperson, Health Research Committee
Date: 01/08/19

Fighting Disease, Fighting Poverty, Giving Hope

Appendix 5a: Letter of request for permission to the King Cetshwayo District Manager

P.O. Box 47434
Greyville
4023
[Date]

King Cetshwayo District Office
No 2 Cnr of Chrome and Lood Avenue
Old Telkom Building
Empangeni Rail
3910

Request for Permission to Conduct Research

Dear Mrs. N. E. Hlophe

My name is Melisa Pillay, a PhD Health Sciences student at the Durban University of Technology. The research I wish to conduct for my doctoral thesis and the title is: *A model for staff retention for radiographers employed at selected tertiary hospitals in KwaZulu-Natal province, South Africa*.

I am hereby seeking your approval to collect data from the radiographers and radiography management who are employed at Ngwelezana Hospital. The data collection in the quantitative phase will be a survey and interviews during the qualitative phase of the study. The study poses no risks of any kind to the participants and the organization. I have provided you with a copy of my proposal which includes copies of the data collection tools and consent forms to be used in the research process, as well as a copy of the approval letter which I received from the Institutional Research Ethics Committee (IREC).

If you require any further information, please do not hesitate to contact me or my supervisor Prof Sibiya on 031-373 2704 Email nokuthulas@dut.ac.za

Thank you for your time and consideration in this matter.

Yours sincerely,

_____

Ms Melisa Pillay (PhD Health Sciences Candidate)
Durban University of Technology
Cell Number: 073 531 0118
Email: melisapillay05@gmail.com

Appendix 5b: Approval letter from the King Cetshwayo District Manager

Response from the District Manager's Office of King Cetshwayo

From: **Thompson Salome** <Salome.Thompson@kznhealth.gov.za>
Date: Mon, 24 Jun 2019 at 09:51
Subject: RE: Request for permission letter to conduct a study
To: Melisa Pillay <melisapillay05@gmail.com>
Cc: Ngwelezana Hospital Ceo Secretary <CeoSecretary.Ngwelezana@kznhealth.gov.za>

Good morning,

Please take note that your email is hereby noted and received.

Please note that since your request is for one institution you do not need the approval from the District Office, you can go straight to the relevant facility which in your case is Ngwelezana Tertiary Hospital.

Please find the details of the CEO for Ngwelezana Tertiary Hospital

Dr. BS Madlala

Contact Number: 035 901 7000 ask for his Secretary

Email: bright.madlala@kznhealth.gov.za

Secretary email: I have copied her in this email

Kind regards & good luck.

Mrs. SR Forbay

Secretary to the District Director

King Cetshwayo District

Tel: 035 787 6319

Fax: 035 787 0649

Email: salome.thompson@kznhealth.gov.za

Appendix 6a: Letter of request for permission to the Hospital Manager of Addington Hospital

P.O. Box 47434
Greyville
4023
[Date]

Addington Hospital
16 Erskine Terrace
Point, Durban
4001

Request for Permission to Conduct Research

Dear Dr M. Ndlangisa

My name is Melisa Pillay, a PhD Health Sciences student at the Durban University of Technology. The research I wish to conduct for my doctoral thesis and the title is: *A model for staff retention for radiographers employed at selected tertiary hospitals in KwaZulu-Natal province, South Africa*.

I am hereby seeking your approval to collect data from the radiographers and radiography management who are employed at your facility. The data collection in the quantitative phase will be a survey and interviews during the qualitative phase of the study. The study poses no risks of any kind to the participants and the organization. I have provided you with a copy of my proposal which includes copies of the data collection tools and consent forms to be used in the research process, as well as a copy of the approval letter which I received from the Institutional Research Ethics Committee (IREC).

If you require any further information, please do not hesitate to contact me or my supervisor Prof Sibiya on 031-373 2704 Email nokuthulas@dut.ac.za

Thank you for your time and consideration in this matter.

Yours sincerely,

_____

Ms Melisa Pillay (PhD Health Sciences Candidate)
Durban University of Technology
Cell Number: 073 531 0118
Email: melisapillay05@gmail.com

Appendix 6b: Approval letter from the Hospital Manager of Addington Hospital

health
Department:
Health
PROVINCE OF KWAZULU-NATAL

ADDINGTON HOSPITAL
OFFICE OF THE CHIEF EXECUTIVE OFFICER

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

Reference: *9/2/3/R*

Date: 28th June 2019

Principal Investigator:
- **Mrs M Pillay**

PERMISSION TO CONDUCT RESEARCH AT ADDINGTON HOSPITAL: "A MODEL FOR STAFF RETENTION FOR RADIOGRAPHERS EMPLOYED AT SELECTED TERTIARY HOSPITALS IN THE KWAZULU-NATAL PROVINCE, SOUTH AFRICA"

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

Please note the following:

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

DR M NDLANGISA
HOSPITAL MANAGER
ADDINGTON HOSPITAL

Appendix 6c: Letter of request for permission to the Hospital Manager of King Edward VIII Hospital

P.O. Box 47434
Greyville
4023
[Date]

King Edward VIII Hospital
Sydney Road
Umbilo, Durban
4013

Request for Permission to Conduct Research

Dear Dr T. Mayise

My name is Melisa Pillay, a PhD Health Sciences student at the Durban University of Technology. The research I wish to conduct for my doctoral thesis and the title is: *A model for staff retention for radiographers employed at selected tertiary hospitals in KwaZulu-Natal province, South Africa*.

I am hereby seeking your approval to collect data from the radiographers and radiography management who are employed at your facility. The data collection in the quantitative phase will be a survey and interviews during the qualitative phase of the study. The study poses no risks of any kind to the participants and the organization. I have provided you with a copy of my proposal which includes copies of the data collection tools and consent forms to be used in the research process, as well as a copy of the approval letter which I received from the Institutional Research Ethics Committee (IREC).

If you require any further information, please do not hesitate to contact me or my supervisor Prof Sibiya on 031-373 2704 Email nokuthulas@dut.ac.za

Thank you for your time and consideration in this matter.

Yours sincerely,

_____

Ms Melisa Pillay (PhD Health Sciences Candidate)
Durban University of Technology
Cell Number: 073 531 0118
Email: melisapillay05@gmail.com

Appendix 6d: Approval letter from the Hospital Manager of King Edward VIII Hospital

health
Department:
Health
PROVINCE OF KWAZULU-NATAL

OFFICE OF THE HOSPITAL CEO
KING EDWARD VIII HOSPITAL

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

Ref.: KE 2/7/1/ (29/2019
Enq.: Mrs. R. Sibiya
Research Programming

27 August 2019

Mrs M. Pillay
P.O. Box 47434
Greyville
Durban
4023

Dear Mrs Pillay

Protocol: A model for staff retention for radiographers employed at selected tertiary hospitals in the Kwa-Zulu Natal province, South Africa.

Permission to conduct research at King Edward VIII Hospital is provisionally granted, pending approval by the Provincial Health Research Committee, KZN Department of Health.

Kindly note the following:-

- The research will only commence once confirmation from the Provincial Health Research Committee in the KZN Department of Health has been received.
- Signing of an indemnity form at Room 8, CEO Complex before commencement with your study.
- King Edward VIII Hospital received full acknowledgment in the study on all Publications and reports and also kindly present a copy of the publication or report on completion.

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

Yours faithfully

SUPPORTED/NOT SUPPORTED

27/8/2019.

DR. S. RAMJI
ACTING MEDICAL MANAGER

DATE

Fighting Disease, Fighting Poverty, Giving Hope

Appendix 6e: Letter of request for permission to the Hospital Manager of Inkosi Albert Luthuli Central Hospital

P.O. Box 47434
Greyville
4023
[Date]

Inkosi Albert Luthuli Central Hospital
800 Vusi Mzimela Road
Mary Thiphe Street
Durban
4091

Request for Permission to Conduct Research

Dear Dr T. T. Khanyile

My name is Melisa Pillay, a PhD Health Sciences student at the Durban University of Technology. The research I wish to conduct for my doctoral thesis and the title is: *A model for staff retention for radiographers employed at selected tertiary hospitals in KwaZulu-Natal province, South Africa*.

I am hereby seeking your approval to collect data from the radiographers and radiography management who are employed at your facility. The data collection in the quantitative phase will be a survey and interviews during the qualitative phase of the study. The study poses no risks of any kind to the participants and the organization. I have provided you with a copy of my proposal which includes copies of the data collection tools and consent forms to be used in the research process, as well as a copy of the approval letter which I received from the Institutional Research Ethics Committee (IREC).

If you require any further information, please do not hesitate to contact me or my supervisor Prof Sibiya on 031-373 2704 Email nokuthulas@dut.ac.za

Thank you for your time and consideration in this matter.

Yours sincerely,

_____
Ms Melisa Pillay (PhD Health Sciences Candidate)
Durban University of Technology
Cell Number: 073 531 0118
Email: melisapillay05@gmail.com

Appendix 6f: Approval letter from the Hospital Manager of Inkosi Albert Luthuli Central Hospital

health
Department:
Health
PROVINCE OF KWAZULU-NATAL

DIRECTORATE:

Physical Address: 800 Bellair Road, Mayville, 4058
Postal Address: Private Bag X08, Mayville, 4058
Tel: 0312401059 Fax: 0312401050 Email: ursulanun@ ialch.co.za
www.kznhealth.gov.za

Office of The Medical Manager
IALCH

3 September2019

Ms M Pillay
P.O. Box 47434
Greyville
Durban
4023

Dear Mrs Pillay

Re: Approved Research: Ref No: IREC 080/19: A model for staff retention for radiographers employed at selected tertiary hospitals in the KwaZulu-Natal province, South Africa.

As per the policy of the Provincial Health Research Committee (PHRC), you are hereby granted permission to conduct the above mentioned research once all relevant documentation has been submitted to PHRC inclusive of Full Ethical Approval.

Kindly note the following.

1. The research should adhere to all policies, procedures, protocols and guidelines of the KwaZulu-Natal Department of Health.
2. Research will only commence once the PHRC has granted approval to the researcher.
3. The researcher must ensure that the Medical Manager is informed before the commencement of the research by means of the approval letter by the chairperson of the PHRC.
4. The Medical Manager expects to be provided feedback on the findings of the research.
5. Kindly submit your research to:

   The Secretariat
   Health Research & Knowledge Management
   330 Langaliballe Street, Pietermaritzburg, 3200
   Private Bag X9501, Pietermaritzburg, 3201
   Tel: 033395-3123, Fax 033394-3782
   Email: hrkm@kznhealth.gov.za

Yours faithfully

pp ..... /Acting
Dr L P Mtshali Dr N Tatelah
Medical Manager

Fighting Disease, Fighting Poverty, Giving Hope

Appendix 6g: Letter of request for permission to the Hospital Manager of Greys Hospital

P.O. Box 47434
Greyville
4023
[Date]

Greys Hospital
Town Bush Rd
Athlone, Pietermaritzburg
3200

Request for Permission to Conduct Research

Dear Dr K. Bilenge

My name is Melisa Pillay, a PhD Health Sciences student at the Durban University of Technology. The research I wish to conduct for my doctoral thesis and the title is: *A model for staff retention for radiographers employed at selected tertiary hospitals in KwaZulu-Natal province, South Africa*.

I am hereby seeking your approval to collect data from the radiographers and radiography management who are employed at your facility. The data collection in the quantitative phase will be a survey and interviews during the qualitative phase of the study. The study poses no risks of any kind to the participants and the organization. I have provided you with a copy of my proposal which includes copies of the data collection tools and consent forms to be used in the research process, as well as a copy of the approval letter which I received from the Institutional Research Ethics Committee (IREC).

If you require any further information, please do not hesitate to contact me or my supervisor Prof Sibiya on 031-373 2704 Email nokuthulas@dut.ac.za

Thank you for your time and consideration in this matter.

Yours sincerely,

_____
Ms Melisa Pillay (PhD Health Sciences Candidate)
Durban University of Technology
Cell Number: 073 531 0118
Email: melisapillay05@gmail.com

Appendix 6h: Approval letter from the Hospital Manager of Greys Hospital

health
Department:
Health
PROVINCE OF KWAZULU-NATAL
Private Bag X 9001, Pietermaritzburg, 3200
201 Town Bush Road, Northern Park, Pietermaritzburg, 3201
Tel: 0338973000 Fax: 0338973998

GREYS HOSPITAL
CEO'S OFFICE
RECEIVED
2019 -07- 17
GREY'S HOSPITAL
OFFICE OF THE CEO

To:	**Melisa Pillay** **P. O. Box 47434, Greyville, Durban, 4023**
From:	**Dr. K.B. Bilenge** **CEO - Greys Hospital**
Date:	**16 July 2019**
Re:	**Request for permission to conduct research at Grey's Hospital:** ***A model for staff retention for radiographers employed at selected tertiary hospitals in the KwaZulu-Natal province, South Africa***

Dear Melisa Pillay

Your request to conduct research at Grey's Hospital refers.
Permission to proceed with the above is hereby granted under the following conditions:

- Final ethics approval is a prerequisite for proceeding with your research at our hospital. Once obtained, please submit a copy of the full and final ethics approval.
- You are also required to obtain approval for your study from the **Provincial Department of Health KZN Health Research Unit** prior to commencement. You will find more information at: *http://www.kznhealth.gov.za/hrkm.htm*
- You are to ensure that hospital resources are NOT used to manage your data collection, e.g. hospital staff collecting and/or collating data; photocopying; telephone; facsimile; etc.;
- Confidentiality of hospital information, including staff and patient medical and/or contact information, must be kept at all times. Patient records, if applicable, must be anonymized, i.e. no use of patient identification details. **Patient/staff records are not to be removed from the hospital premises nor are you allowed to photocopy/ photograph them.**
- Informed consent is to be obtained from all participants in your study, where applicable;
- Policies, guidelines and protocols of the Department of Health and Grey's Hospital must be adhered to at all times.
- Professional attitude and behaviour whilst dealing with research participants must be exhibited;
- The Department of Health, hospital and its staff will not be held responsible for any negative incidents and/or consequences, including injuries and illnesses that may be contracted on site, litigation matters, etc. that may arise as a result of your study or your presence on site;
- You are required to submit to this office a summary of study findings upon completion of your research.
- You are requested to meet with the Head of Radiography, Mrs. D. Wood, and the HOD of Oncology, Dr. L. Stopforth, at Grey's hospital once you are ready to commence your research.

Recommended by:

Dr L. Naidoo
Senior Manager: Medical Services

Approved by:

Dr. K. B. Bilenge
Hospital CEO

Appendix 6i: Letter of request for permission to the Hospital Manager of Ngwelezana Hospital

P.O. Box 47434
Greyville
4023
[Date]

Ngwelezana Hospital
Thandisiwe Road
Kuleka, Empangeni
3880

Request for Permission to Conduct Research

Dear Dr B. S. Madlala

My name is Melisa Pillay, a PhD Health Sciences student at the Durban University of Technology. The research I wish to conduct for my doctoral thesis and the title is: *A model for staff retention for radiographers employed at selected tertiary hospitals in KwaZulu-Natal province, South Africa*.

I am hereby seeking your approval to collect data from the radiographers and radiography management who are employed at your facility. The data collection in the quantitative phase will be a survey and interviews during the qualitative phase of the study. The study poses no risks of any kind to the participants and the organization. I have provided you with a copy of my proposal which includes copies of the data collection tools and consent forms to be used in the research process, as well as a copy of the approval letter which I received from the Institutional Research Ethics Committee (IREC).

If you require any further information, please do not hesitate to contact me or my supervisor Prof Sibiya on 031-373 2704 Email nokuthulas@dut.ac.za

Thank you for your time and consideration in this matter.

Yours sincerely,

_____

Ms Melisa Pillay (PhD Health Sciences Candidate)
Durban University of Technology
Cell Number: 073 531 0118
Email: melisapillay05@gmail.com

Appendix 6j: Approval letter from the Hospital Manager of Ngwelezana Hospital

health
Department:
Health
PROVINCE OF KWAZULU-NATAL

Ngwelezana Hospital, Thanduyise Road, Ngwelezana Township
Private Bag X 20021, Empangeni 3880
Tel: 035 901 7105 Fax: 035 794 1883 Email: ceosecretary.ngwelezana@kznhealth.gov.za
www.kznhealth.gov.za

DIRECTORATE:
Office of the Chief Executive Officer
Ngwelezana Tertiary Hospital

Enquiries: Miss PZ Khanyi
Telephone: 035 901 7105

11 August 2019

Dear Melisa Pillay

PERMISSION TO CONDUCT RESEARCH ON MODEL FOR STAFF RETENTION FOR RADIOGRAPHERS EMPLOYED AT SELECTED TERTIARY HOSPITALS IN KWAZULU-NATAL PROVINCE, SOUTH AFRICA.

I have pleasure in informing you that permission has been granted to you by Ngwelezana Hospital to conduct research on: ***"A model for staff retention for radiographers employed at selected tertiary hospitals in KwaZulu-Natal province, South Africa.***

Please note the following:

1. Please ensure that you adhere to all the policies, procedures, protocols and guidelines of the Department of Health with regards to this research.
2. Please ensure that the office of the Medical Manager is informed before you commence your research.
3. The District Office/Facility will not provide any resources for this research.
4. You will be expected to provide feedback on your findings to the District office/Facility.

Thanking you.

Dr BS Madlala
Chief Executive Officer
Ngwelezana Tertiary Hospital

Fighting Disease, Fighting Poverty, Giving Hope

Appendix 7a: Letter of information for the survey participants

Dear Participant

Thank you for agreeing to participate in this study.

Title of the Research Study: A model for staff retention for radiographers employed at selected tertiary hospitals in KwaZulu-Natal province, South Africa.

Principal Investigator/s/researcher: Ms Melisa Pillay, PhD: Health Sciences Candidate.

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

Brief Introduction and Purpose of the Study: Public hospitals have a shortage of radiographers. Job retention of such skilled employees in the public sector is a challenge. There are various factors that have led to the brain drain of radiographers from the public to the private sector or radiographers as well as emigration to other countries, where the grass is seemingly a lot greener. The aim of the study is to explore the factors that influence staff retention for radiographers employed by tertiary hospitals in KwaZulu-Natal province, in order to develop a model to improve staff retention.

Outline of the Procedures: You are kindly requested to participate in the survey by responding to all the questions. The questionnaire will take you approximately 15-20 minutes to complete. Thereafter a suitable time will be arranged for the collection of completed questionnaires. I will personally distribute and collect the questionnaire. A box will be made available for you to deposit the completed questionnaire.

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

Benefits: A proposed model for staff retention for radiographers may results in improved service delivery and staff morale.

Reason/s why the Participant May Be Withdrawn from the Study: You may withdraw from the study at any stage without any repercussions.

Remuneration: Your participation is voluntary and no remuneration will be provided.

Costs of the Study: You will not be expected to cover any costs towards the study.

Confidentiality: The confidential data will be coded and assigned to a unique identifier that will be used to identify the data. The data recorded will remain anonymous with no names or personal information.

Research-related Injury: There is no anticipated research-related injury by participating in the study.

Persons to Contact in the Event of Any Problems or Queries: Please contact the researcher, Melisa Pillay 073 531 0118, my supervisor Prof MN 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 interview participants

Dear Participant

Thank you for agreeing to participate in this study.

Title of the Research Study: A model for staff retention for radiographers employed at selected tertiary hospitals in KwaZulu-Natal province, South Africa.

Principal Investigator/s/researcher: Ms Melisa Pillay, PhD: Health Sciences Candidate.

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

Brief Introduction and Purpose of the Study: Public hospitals have a shortage of radiographers. Job retention of such skilled employees in the public sector is a challenge. There are various factors that have led to the brain drain of radiographers from the public to the private sector or radiographers as well as emigration to other countries, where the grass is seemingly a lot greener. The aim of the study is to explore the factors that influence staff retention for radiographers employed by tertiary hospitals in KwaZulu-Natal province, in order to develop a model to improve staff retention.

Outline of the Procedures: You are kindly requested to participate on one-to-one interview session. Face to face interview will be conducted at the venues date and time that will suit you. The interview discussion will be facilitated by the researcher. For record purposes, I kindly request to record the discussion by using a voice recorder. The interview will last for about 45 to 90 minutes.

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

Benefits: A proposed model for staff retention for radiographers may results in improved service delivery and staff morale.

Reason/s why the Participant May Be Withdrawn from the Study: You may withdraw from the study at any stage without any repercussions.

Remuneration: Your participation is voluntary and no remuneration will be provided.

Costs of the Study: You will not be expected to cover any costs towards the study.

Confidentiality: The confidential data will be coded and assigned to a unique identifier that will be used to identify the data. The data recorded will remain anonymous with no names or personal information.

Research-related Injury: There is no anticipated research-related injury by participating in the study.

Persons to Contact in the Event of Any Problems or Queries: Please contact the researcher, Melisa Pillay 073 531 0118, my supervisor Prof MN 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 8: Consent

Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, Ms Melisa Pillay 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, Melisa Pillay 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: 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.

1. Gender

Male	
Female	

2. Age

21-33	
34-49	
50 years and older	

3. Race

Black	
Indian	
Coloured	
White	
Other	

4. Marital Status

Single	
Married	
Divorced/Separated	
Widowed	

5. Number of years as a qualified radiographer

Less than 1 year	
1 – 10 years	
>10 – 20 years	
More than 20 years	

6. Current position occupied (Select **ONE** option only)

Grade 1 radiographer	
Grade 2 radiographer	
Grade 3 radiographer	
Assistant Director	

7. Occupation (in case of dual practice, select the **ONE** you currently practise).

Diagnostic radiographer	
Mammography radiographer	
Nuclear medicine radiographer	
Sonographer	
Radiation therapist	

8. Employed in which hospital (select the **ONE** in which you are currently employed).

Ngwelezane Hospital	
King Edward Hospital	
Greys Hospital	
Addington Hospital	
Inkosi Albert Luthuli Central Hospital	

Section B: Factors that influences staff resignation

1. Indicate your agreement that the following factors would **cause you to move from your current job to another job in radiography either in SA or overseas**, if you were in a position to do so:

Factors	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
1.1 Poor working conditions (e.g. Long working hours and too many responsibilities).						
1.2 Unhygienic working environment.						
1.3 High stress levels.						
1.4 Lack of personal safety.						
1.5 Uncompetitive salaries.						
1.6 Inability to negotiate salaries.						

Factors	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
1.7 Poor/inadequate benefits (e.g. pension, medical aid, leave, etc.).						
1.8 Malfunctioning equipment.						
1.9 Equipment that is outdated.						
1.10 Poor management and leadership.						
1.11 Bad perception associated with working in the public healthcare system.						
1.12 Inability to take leave due when desired because of e.g. staff shortages						
1.13 Lack of adequate training facilities.						
1.14 Better opportunities elsewhere (e.g. overseas or in the private sector).						
1.15 The on-going exposure to crime.						
1.16 Poor promotion prospects.						
1.17 Poor infrastructure (e.g. hospital facilities, roads etc.).						
1.18 Run down/out dated facility (e.g. buildings not maintained or modernised).						
1.19 Inability to work flexible hours.						
1.20 Inability to take study leave.						
1.21 Not being allowed to attend conferences/courses.						
1.22 Unfair implementation of OSD (occupation specific compensation).						
1.23 Inadequate compensation for working overtime.						
1.25 Having to work shifts or irregular hours.						
1.26 Dissatisfaction relating to job insecurity.						

2. Indicate your agreement that the following factors would **cause you to move from your current career in radiography to another career**

Factors	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
2.1 The high stress levels in radiography.						
2.2 Long working hours						
2.3 Irregular working hours (e.g. shift work, night calls, weekend calls).						
2.4 Radiation hazards.						

2.5 Poor financial rewards.						
2.6 Limited opportunities for professional development.						
2.7 Radiography is not regarded as highly as other careers.						
2.8 I don't enjoy my job as a radiography.						
2.9 I am unable to balance my social and work life as a radiographer.						
2.10 My job is not flexible enough (e.g. I cannot get time off work when needed to run personal errands).						

Section C: Facilitators to staff retention

1. Indicate your agreement that the following factors would **encourage you to remain in your current job**:

Factors	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
1.1 Improvement in working conditions.						
1.2 The ability to negotiate my salary.						
1.3 Salaries based on qualifications, skills and experience.						
1.4 The assurance of well-maintained and working equipment.						
1.5 State of the art equipment.						
1.6 Good/fair management and leadership.						
1.7 The assurance of job security.						
1.8 Attractive hospital facilities.						
1.9 Secure infrastructure (e.g. roads) around my place of work.						
1.10 Securing the hospital against crime.						
1.11 Adequate and safe parking.						
1.12 Competitive financial rewards.						
1.13 Good medical aid cover.						
1.14 Flexible working hours.						
1.15 Career advancement and/or opportunities.						

Factors	Strongly disagree	Disagree	Slightly disagree	Slightly agree	Agree	Strongly agree
1.16 If meetings and conferences I have to attend to get CPD points is funded by my employer.						
1.17 Promoting further study by e.g. providing studying leave.						
1.18 The opportunity to attend conferences for professional development at no cost.						
1.19 Having professional fees (e.g. HPCSA and SORSA) paid for.						
1.20 Competitive annual increase in salary.						
1.21 Proper/fair appraisal.						
1.22Increased staffing.						

Section D: Staff retention

Indicate if you have ever done the following:

	Yes	No
1.1 Worked in a KZN private hospital as a radiographer.		
1.2 Worked in private practice as a radiographer.		
1.3 Left a public hospital to work in the private sector.		
1.4 Left a public hospital to work overseas as a radiographer.		
1.5 Left a career in radiography to follow another career path.		

Thank you for your time and participation.

Appendix 9b: Permission to use questionnaire

Melisa Pillay <melisapillay05@gmail.com> 25 Mar 2019, 15:33

To jmthambura

Dear Mr Thambura

I am a current PhD Health Sciences student at DUT.
My study is based on staff retention of radiographers in KZN tertiary hospitals.

I write to you asking for permission to use your questionnaire that you used in your Masters of Radiography.

Please note that your questionnaire will be adapted to suit my study if it is found necessary.

Your assistance will be highly appreciated.

Kind Regards,
Melisa Pillay

Muchui Thambura 26 Mar 2019, 09:30

Dear Melissa,

Permission granted with the condition of acknowledgement of the source of the questionnaire.

Regards

J

Appendix 10a: Demographic data of the interview participants

Participant No:

Date: ……

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 10b: Interview guide

Ice breaker: Welcome everyone and thank you for taking time to participate in this interview. I am interested to understand retention of staff and would like to understand what can make you resign in your job as a radiographer.1.

1. What do you find most significant to make you resign from your job?

2. What do you find most significant to make your stay in your job?

a) What environment/conditions influence your stay in your job?

b) What personal/conditions influence your stay in your job?

c) How stress and remuneration influence your stay in your job?

d) What makes radiographers to move out of the radiography profession?

e) What environment/conditions will make you move out of the radiography profession?

f) What personal/conditions will make you move out of the radiography profession?

3. Facilitators to staff retention

a) What remuneration can make you stay in the profession?

b) What facilities can make you stay in the profession?

c) What personal factors can make you stay in the profession?

4. In your opinion, how can radiographers be retained in their profession?

NB: The questions will be guided and supported by probing where necessary so that the researcher can get clarity on information given.

Appendix 11: Sample of the interview transcript

Participants ID: 01

Date of interview: 06/12/2019

Time of interview: 16:15

(Beginning of interview)

Welcome Participant 01 and thank you for taking time to participate in this interview. I am interested to understand retention of staff and would like to understand what can make you resign in your job as a radiographer.

Interviewer: Kindly complete section A.

Interviewer: Thank you we are done with the first section.

Interviewer: What do you find most significant to make you resign from your job?

Participant 01: *I think it will be my salary scale and work environment*.

Interviewer: What do you mean by salary scale and work environment?

Participant 01: *I would prefer a higher salary since radiography is a scarce skill. If I am offered a higher salary elsewhere with better benefits, I would resign and take the offer. With regards to work environment that would make me resign will be if management treats staff unfairly and too much conflict amongst staff. This makes working with my colleagues unbearable and I do not look forward to going to work*.

Interviewer: What environment conditions influence you to stay in your job?

Participant 01: *So, for me personally would be working in a place where there is an opportunity for growth professionally and also a friendly work environment*.

Interviewer: What do you mean by a friendly work environment?

Participant 01: *It is a relaxed work environment when management are approachable and listens to you. I need to feel comfortable and work well with my colleagues with fewer issues*.

Interviewer: What personal conditions influence you to stay in your job?

Participant 01: *I would like to have a voice that everyone can hear and consider my input on how to better improve workflow and having a senior management with an open-door policy*.

Interviewer: How does stress and remuneration influence you to stay in your job?

Participant 01: *Well I think if stress levels are beyond my control, I would definitely resign. But the market value of my salary must be maintained*.

Interviewer: What environment conditions will make you move out of the radiography profession?

Participant 01: *I think it would be my salary scale and we work hard and at times being inconvenient shifts*.

Interviewer: Please elaborate, what do you mean by salary scale?

Participant 01: *I do not think radiographers are paid adequately. We should also be compensated in our salary for our qualifications e.g. some radiographers have diploma, B-tech, masters and other management qualifications*.

Interviewer: What personal conditions will make you move out of the radiography profession?

Participant 01: *I personally need a job where I don't have to work hard and tiring hours*.

Interviewer: What do you mean by hard hours and tiring hours?

Participant 01: *Although we work a normal day from 7:30am to 4pm, we are working very hard. With the back log of patients, we are working extra hard and pushing to treat more patients. I am very exhausted by the end of the day. I would also like to work lesser hours and to be flexible to attend to personal matters in the day*.

Interviewer: What remuneration can make you stay in the profession?

Participant 01: *Would be a job market salary scale*.

Interviewer: What do you mean by job market salary scale?

Participant 01: *Good salary and good annual increases to keep up with the economy. Radiographers working in rural areas get paid rural allowances. Radiographers that work in the city also need to be considered. They also have to travel far distances to get to work. I think all radiographers should be paid fairly*.

Interviewer: What facilities can make you stay in the profession?

Participant 01: *The improved technology and equipment provided it is updated and always in working conditions. To be allowed to learn all specialised treatments*.

Interviewer: What personal factors can make you stay in the profession?

Participant 01: *I would definitely say the interaction with different patients and if there can be growth path in my profession*.

Interviewer: In your opinion, how can you be retained in your profession?

Participant 01: *For me to be retained, I would like to be provided with a clear chart regarding growth path to grow professionally, currently its limiting. You reach the ceiling quickly and you become stagnant and it creates unrest and most people start exploring the possibilities of changing careers to regain their passion*.

Interviewer: What do you mean you feel stagnant in your job?

Participant 01: *I feel like I am not growing and in the same place for too long. I am currently furthering my studies and might leave radiography one day if a better opportunity arises*.

Interviewer: Thank you for your time. We are finished with this interview.

(End of the Interview)

Appendix 12: Certificate of editing from the professional editor

EDITING LETTER

696 Clare Road

Clare Estate

Durban

4091

7 June 2020

To Whom it may concern

Editing of PhD thesis: M Pillay

A model for the staff retention of Radiographers employed at selected tertiary hospitals in KZN, South Africa

This letter serves as confirmation that the aforementioned thesis has been language edited.

Any queries may be directed to the author of this letter.

Regards

MP MATHEWS

Lecturer and Language Editor: DUT

mercillenem@dut.ac.za

Appendix 13: Turnitin report

turnitin Turnitin Originality Report
A MODEL FOR THE STAFF RETENTION OF RADIOGRAPHERS EMPLOYED AT SELECTED TERTIARY HOSPITALS IN THE KWAZULU-NATAL PROVINCE OF SOUTH AFRICA by Melisa Pillay
From A MODEL FOR THE STAFF RETENTION OF RADIOGRAPHERS EMPLOYED AT SELECTED TERTIARY HOSPITALS IN THE KWAZULU-NATAL PROVINCE OF SOUTH AFRICA (Melisa first 4 chapters)

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