An Investigation of Factors Impacting on the Retention of Radiographers in KwaZulu-Natal

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ABSTRACT

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Introduction

The staffing crisis in the healthcare profession is an issue of global concern and South Africa is amongst the countries affected. Radiography is one of the professions in allied healthcare, that is affected. The statistics from the Department of Health (DoH) in KwaZulu-Natal (KZN), as at August 2013, indicate a marked decrease in the number of radiographers between 2008 and 2012. Private practice statistics were unavailable as these are confidential.

Purpose of the study

This study aimed to investigate the factors impacting on the retention of radiographers in KZN, in order to obtain information that may assist the DoH to improve their retention policies. The objectives of the study were to investigate: the reasons why KZN radiographers resign from their places of employment; the reasons why KZN radiographers choose to remain in their place of employment; and the factors that impact on job satisfaction. It was also the intention of this study to identify possible input that may contribute to the retention of KZN radiographers.

Methodology

This research was conducted in 11 districts of KZN, South Africa. Radiographers in all categories of radiography who had worked in KZN and then left the profession, those who had emigrated, as well as those who were working in KZN were targeted in an attempt to obtain a wide range of data related to the objectives.

A quantitative, descriptive survey, using a cross-sectional design, was used. A stratified non-random sampling method was used to select the public and private

hospitals from which data was collected. The target sample size was estimated at 300 radiographers from all four categories in both public and private hospitals, however the researcher obtained only 191 participants. The population size of KZN radiographers was 859; a sample size of 266 was required at the 95% confidence level. However, with the high attrition rate, the sample of 191 was more than adequate for the available number of respondents and was considered to be statistically acceptable by the statistician. The response rate was 191, of which 20 responses were received from the 29 emigrants contacted, and 16 responses from the 19 participants who had left the profession. Three questionnaires were used to target the three categories of the respondents.

Results of the study

The results of this research indicate that radiographers emigrated within ten years of graduating, which is a highly productive age. The workload was the main cause of resignation for four (66,7 percent) emigrants as well as five (31,3 percent) radiographers who had left the profession. Private hospitals were reported as having lower workloads, better facilities and greater financial rewards than public hospitals. Increased remuneration influenced the migration of radiographers from public to private practices. It was also noted that six (37,5 percent) participants reported the crime rate as being one of the three main factors contributing to emigration, while two (12,5 percent) highlighted poor financial reward in KZN. The third main factor was stated to be better prospects for professional advancement abroad. A lack of professional recognition and progression in radiography in KZN was identified by two (12,5 percent) participants as factors that impacted on job satisfaction.

Conclusion and Recommendation

This research study is of significance to the DoH and Department of Public Service and Administration (DPSA) as the results may be used to assist them in improving the level of retention of radiographers in KZN.

The creation of opportunities for professional development, advancement and diversification of the scope of practice for radiographers, as well as role extension and expansion, were factors identified as being important in the retention of radiographers. The working conditions were found to be generally unsatisfactory and needing improvement. It is suggested that retention could be improved through the development of strategies such as introduction of flexible schedules, creation of opportunities for further training and education. It is further suggested that a similar type of study be conducted in other provinces so as to compare the retention challenges facing other provinces in South Africa and thereby gain a national overview.

DECLARATION

By submitting this research dissertation, I, Muchui Julius Thambura, declare that the entirety of the work contained herein is my own, original work, that I am the owner of the copyright thereof (unless to the extent explicitly otherwise stated), and that I have not previously, in its entirety or in part, submitted it for obtaining any qualification.

Research was approval by:

a) The Institutional Research Ethics Committee (IREC), Durban University of Technology, reference number: **REC 37/12.**

b) The provincial Department of Health, KZN, reference number: **HRKM123/12.**

_____ _____

Signature Date

DEDICATION

To my parents, brothers and relatives for their endless love, support and encouragement during this study

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TERMINOLOGY

Radiography: Radiography is defined as a profession that involves; imaging of anatomical parts, physiology and treatment of patient by use of ionising and non ionising radiation (Health Professions Act 56 of Act 1974: Regulations defining the scope of the profession of Radiography 1976: 1).

Retention: Retention is the process of maintaining employed personnel in an organisation (Online Dictionary , definition of retention 2014). It is also defined as the process used to make the employee remain in the company for the maximum period of time (Ghansa 2011: 7).

LIST OF ABBREVIATIONS

DoH	Department of Health
DPSA	Department of Public Service and Administration
DUT	Durban University of Technology
HPCSA	Health Professional Council of South Africa
KZN	KwaZulu-Natal
OSD	Occupation-Specific Dispensation
SA	South Africa
SADC	Southern African Development Community
SORSA	Society of Radiography South Africa
UK	United Kingdom
USA	United State of America
WHO	World Health Organisation

CHAPTER 1: INTRODUCTION

1.1 Background

Radiography is an allied health profession that involves therapeutic, diagnostic and interventional procedures. It has four disciplines, namely diagnostic radiography, radiotherapy, ultrasonography and nuclear medicine technology (Health Professions Act 56 of 1974: Regulations defining the scope of the Profession of Radiography 1976: 1) Diagnostic radiographers produce images using ionising and non ionising radiation. This includes modalities such as computed tomography and magnetic resonance imaging equipment. A radiotherapist treats cancer using high energy ionising radiation. Ultrasonographers diagnose diseases and conditions with the use of high frequency soundwaves, while Nuclear medicine radiographers use radioisotopes to produce images for diagnostic purposes and to treat some forms of cancers (Durban University of Technology Online Radiography Information 2016).

Radiography training is provided by eight universities in South Africa. Of these eight universities, four are located in Gauteng. Some provinces do not provide radiography training, however KwaZulu-Natal (KZN) has one university offering training. Graduates can be employed in government hospitals, private practices or may open their own practices. However, after graduating all radiographers are employed in public hospitals for their Community Service year.

Radiography is a challenging and rapidly advancing profession with a high global demand for staff. According to a draft publication of the Australian Department of Human Service (2005: 16), medical imaging (radiography) had appeared 18 times on the scarce skills list during the previous 25 years. According to the Australian Department of Education, in a skills shortage publication (2011: 34) the shortage of

radiographers was critical at the date of publication. However, currently there is still a shortage that can be attributed to the population growth as well as low student enrolment for the profession. Recent statistics for this could not be found.

In the year 2012, the United Kingdom (UK) Department of Health provided funding of £3,4 million to implement a high-profile strategy to attract, recruit and retain personnel in radiography. The process was successfully marked by an improvement in attracting and retaining those that had been out of the radiography profession for a long time (Australian Department of Human Services 2005: 57).

Vosper *et al.* (2004: 79) noted that there was an increase in the number of vacant posts in therapeutic and diagnostic radiography in Hertfordshire, UK, at that time. They stated that, during the previous two years, the increase was between 5,5 percent and 8,85 percent respectively, and was caused by poor retention strategies. More recent statistics were not available. However, in April 2013, radiography appeared on the skills shortage occupation list published by the UK, Department of Labour (2013: 7).

In South Africa, many radiographers leave the public service for employment in the private sector, as well as emigrate to work in other countries (Society of Radiography of South Africa 2008: 2). The KZN Annual Performance Plan (South Africa 2010: 42) reported that, in 2010, there were 1 621 vacant radiography posts in South Africa, with 436 of these being in KZN, resulting in a vacancy rate of 49 percent in the province. Figures for private practice are not available as this information is confidential and not easly accessible. However it would appear that the majority of the vacant posts are in the public service.

In an e-mail communication on 29 August 2013, the Assistant Manager: Human Resource Management: KZN DoH, indicated that, in 2011/2012, there were 73 radiography posts, representing a vacancy rate of 14 percent, while some

vacancies had been frozen between 2010 and 2013. In an e-mail communication from the Health Professions Council of South Africa (HPCSA) on 17 July 2013, it was reflected that 859 KZN radiographers were registered with the HPCSA in 2012, as compared to 884 in December 2011. This however, does not provide information on whether these radiographers are employed in public or private sectors.

According to an e-mail communication from the Department of Radiography at the Durban University of Technology (DUT), an average of 58 radiographers had graduated annually between 2007 and 2012. This suggests that although the demand for radiographers in the province, particularly in the public service, is high, it is not being reduced by the number of graduates produced. The high vacancy rate was a motivation for conducting this study which aimed to investigate the factors impacting on the retention of radiographers in the KZN workplace and thus provide possible insight into the reasons for this situation. Radiographers were being produced by the university, but the shortage in the public service was not being reduced, while the private sector appeared to be well-staffed.

In the context of this study, retention is defined as the process of maintaining employed personnel in an organisation (Online Dictionary on defination of retention 2014). In this study the term “organisation” refers to radiography departments in KZN. In addition, it is noted that retention saves on the cost of attracting and recruiting employees, enhances business productivity and discourages poor customer services (Yukon Labour Market Framework 2010: 16). It is stated that recruitment and retention should meet the population’s needs in any particular profession, so as to enhance sustainable service delivery which in the context of this study, is in the profession of radiography (Page and Willey 2007: 2). The vacancies in KZN indicate that the population’s needs are apparently not being met by the available radiographers.

According to Yukon Labour Market Framework (2010: 9), the retention strategies of any organisation are crucial. They determine the number of employees in the company, indirectly affect the reputation of the company and subsequently the recruitment. The strategic approach to employee retention includes providing an effective, safe and healthy work environment, flexible work schedules and employee satisfaction. These determine the level of a company's success (Yukon Labour Market Framework 2010: 9).

This study aimed to investigate the possible factors impacting on the staffing crisis in the radiography profession in KZN. It attempted to determine the reason why radiographers emigrated to work in other countries, left their workplace or opted for other careers, as these all impact on retention. The study hoped to provide suggestions that could assist in addressing the above problems, so as to counteract the escalating shortage of professionals in the field of radiography in KZN. The need for a study, such as this one, was emphasised at a presentation by a member of the Human Resources Department of the KZN DoH in 2012, to new first-year radiography students at the Durban University of Technology. Although data was also collected at the private hospitals, this study focussed mainly on retention in public hospitals in order to provide input to the Deprtment of Health for improving retention in the province.

1.2 Study aims

The aim of this study was to investigate the factors impacting on the retention of radiographers in KZN, in order to provide information to the DoH for improving the retention of this scarce skill.

1.3 Study objectives

- To investigate the reasons why KZN radiographers resign from their places of employment.

- To investigate the reasons why KZN radiographers choose to remain in their place of employment.

- To identify factors that impact on job satisfaction amongst past and current KZN radiographers.

- To identify possible input for the improvement of the retention of KZN radiographers in the public service.

1.4 Significance of the study

The critical shortage of radiographers is noted globally, as well as across South Africa and particularly in KZN. Generally, staff shortages affect service delivery negatively. As the DoH plans to improve the quality and comprehensive healthcare to its citizens, job satisfaction is an inevitable requirement and is of paramount importance.

Job satisfaction affects the attitudes of employees positively which, in turn, contributes positively to job performance and service delivery. Conversely, dissatisfaction with the job (i.e negative job satisfaction) is detrimental to productivity and is characterised by high incidences of negative behavioural attributes, such as absenteeism and unwarranted sick leave. In order to meet the daily and annual departmental workload, the available remaining workers are required to increase their time schedules and duties. Workloads are redistributed

amongst the available staff, which in turn contributes to increased workloads and results in work burnout for those few available staff members (Ugwu *et al.* 2009: 3). These factors can result in resignations and the emigration of the staff members in search of better working conditions. In Nigeria, it was found that service delivery was impaired by psycho-social conflict that was caused by stress, which in turn, affected the retention of its radiographers (Ugwu *et al.* 2009: 3).

The severe shortage of radiographers in South Africa, and more so in KZN, means that the daily services in radiology departments are compromised. This was also evidenced by Dageid *et al.* (2007: 4) who identified the escalation of Human Immunodeficiency Virus (HIV) and Acquired immunedeficiency syndrome (AIDS) in South Africa as a source of stress and emotional burnout amongst healthcare employees, that may have resulted in poor retention in the profession. This could possibly result in emigration, a change of profession and the resignation of radiographers from public hospitals to join a private practice. Employees that are satisfied with their job, tend to remain motivated and are thus retained. It is also known that motivated employees are often the best performers. In Nigeria, Ugwu *et al*. (2007: 125) identified job dissatisfaction as a challenge in the retention of radiographers. It is possible that this could also be the case in KZN, where there has been a decrease in the number of employed radiographers over time. This has been noted particularly in the public sector. Therefore, this study is particularly relevant and significant for the DoH and the DPSA – especially as the government is strategising to implement the National Health Insurance initiative, which is intended to improve public health service delivery. Results of this study could possibly assist the DoH in improving the radiography service in KZN, through retention of staff.

1.5 Delimitation and scope of the study

This study is limited to the retention of radiographers in KZN. Although their recruitment was mentioned, where necessary, it has not been the focal point. The study did not include the challenges facing supplementary radiographers, darkroom technicians and student radiographers. Their experiences and challenges are different from those of the radiographers referred to in this study. Therefore, the results of this study will be relevant only for qualified radiographers in all four disciplines in KZN and may not be generalised to those in other provinces. However, a similarity in other provinces should not be ruled out.

1.6 Overview of the research study

This research dissertation is divided into six chapters, which are outlined below.

Chapter 1

This chapter provides a brief overview of the study. It highlights the research problem; the aim and objectives; the significance; as well as the scope of the study.

Chapter 2

This chapter reviews available literature related to the topic, as well as literature on factors that impact on the retention of healthcare professionals and radiographers in various countries globally, in African countries, in South Africa and KZN in particular.

Chapter 3

In this chapter, the research methodology and design that were used for this study are explained in detail, with regard to sampling procedures, data collection tools, data collection procedures and ethical issues.

Chapter 4

The data was collected using a questionnaire. This chapter presents the results from the questionnaire, using tables, charts and graphs. The results were stated.

Chapter 5

In this chapter, the results are discussed in terms of relevant supporting literature. Discussions were linked to the aim and objectives of the study.

Chapter 6

This chapter includes a conclusion and recommendations. It is a summary of the main points of the research findings and recommendations for improving the retention of radiographers in KZN.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The previous chapter provided an introduction and background to the study. This chapter focuses on a review of literature relating to the shortage and retention of health professionals and radiographers in particular – globally, on the African continent, in South Africa and in KZN. This section will introduce the topics, and these will be discussed further in the sections that follows.

According to the Health professions Act 56 of 1974; Regulations defining the scope of profession for radiography and clinical technology (1976: 1), radiography is defined as a profession that involves imaging of anatomical parts, physiology and treatment of the patient by use of ionising and non ionising radiation. The same Regulation states that radiography has four disciplines, namely diagnostic radiography, radiotherapy, ultrasonography and nuclear medicine technology. Diagnostic radiographers produce images, using X-ray equipment that produces ionising radiation. A radiotherapist treats cancer by using high energy ionising radiation, while ultrasonographers produce diagnostic images by using high frequency sound waves. Nuclear medicine radiographers treat and diagnose cancer using radioactive materials (Health Professions Act 56 of Act 1974: Regulations defining the scope of the profession of Radiography 1976: 1).

According to Stewart, Clark and Clark (2007: 1), in their focus on a migration policy, healthcare was noted to be in a crisis situation in both developed and developing countries. South Africa was noted to be facing challenges in the retention of healthcare professionals due to emigration (Human Resources for Health 2009: 32). Retention is the process of maintaining employed personnel in an organisation (Online Dictionary on defination of retention 2014). Therefore, retention of employees should meet the population needs in any particular

profession, so as to enhance sustainable service delivery (Page & Willey 2007: 1). As the population increases, recruitment and retention should also be adjusted to meet the high demand for radiography skills (Jones 2003: 2).

This research study focuses on the retention aspect of “recruitment and retention”. However, in the literature review, recruitment has been referred to only where it relates to retention. Retention is a global challenge – therefore, this review of the literature has highlighted various retention aspects – especially with regard to radiographers in South Africa and KZN in particular. As the literature in the next section reveals, KZN is the most affected by shortages, which would mean that retention in this province is of particular concern.

2.2 Staff shortages in healthcare

According to the World Health Organization (WHO), there was a shortage of an estimated four million healthcare professional globally (WHO 2009: 5). Fifty-seven countries were the most hard-hit by the shortages, of which thirty six were sub-Saharan African states (WHO 2010: 1). In addition, in 2010 there were still fifty-seven countries experiencing critical shortages of healthcare workers with a deficit of 2,4 million doctors amongst other health professionals (Naiker *et al*. 2009: 1). Liese (2004: 6) stated that, in sub-Saharan countries, the production and supply of healthcare workers was not keeping pace with the population growth, thus resulting in critical staff shortages. Liese (2004: 6) furthermore stated that shortages were increased when staff members opted for careers that were more rewarding or emigrated to better-paying countries.

In his findings, Connell (2010: 6) stated that from the mid-1960s, skilled healthcare professionals were noted to emigrate from the Asia-Pacific region to the United States of America (USA) and, by the mid-1990s, there was a notable increase in the emigration rates from Asian countries leaving a shortage in those countries.

The high demand in USA was brought about by factors such as aging populations, and the fact that healthcare jobs in developed countries were regarded as too demanding with a lack of recognition of their status. This was followed by a decrease in the recruitment of healthcare workers in developed countries, due to a decline in birth rate and a smaller number of young people opting for healthcare careers. The healthcare systems in the developed countries responded to the staff shortages by raising salaries, providing better working conditions and improving the status and image of careers in the field of healthcare. According to Paradath *et al.* (2003: 16), these factors influenced the attrition and emigration of healthcare workers who were then willing to pursue available opportunities in the healthcare sector in their own countries.

According to a report by WHO (2010: 1) on the international attrition of healthcare workers in African countries, the expatriation rate was above 50 percent in Mozambique, Angola, Sierra Leone, Tanzania and Liberia. The French-speaking African countries were also noted to have a high emigration rate of above 40 percent. This has resulted in shortages in the respective countries. In South Africa, healthcare workers constituted the bulk of the total number of people migrating from the Southern African Development Community (SADC) (Naicker *et al.* 2009: 62). Naicker *et al.* (2009: 61) also stated that, in 2003, there were 5 880 UK work permits issued to South African healthcare workers. A staffing crisis was noted in South Africa, as reported in a document by the Human Resources Division of the South African DoH, where only 30 percent of South African healthcare professionals were employed in the public health sector during the 2007/2008 period (South Africa 2009: 7). The document also stated that with this shortage, SA was unlikely to achieve the staff coverage rate target of 80 percent that had been set for its health-related services.

The KZN DoH's Annual Performance Plan 2010/11 – 2012/13 (South Africa 2010: 11) states that there were 67 594 healthcare professionals in KZN in 2008/09, as

compared to 59 274 in 2010 (KZN Annual Performance plan 2010: 6). This indicates a reduction in numbers, which further adds to the critical shortage of healthcare professionals in the province. The annual performance draft did not indicate the shortage in radiography. However, the scarce skills draft from the Department of Labour stated that in 2008 there was a shortage of 5 000 medical imaging professionals (also known as radiographers) in the country (South Africa 2008: 11). The radiography profession thus constitutes part of the healthcare professionals who were affected by the severe shortage.

2.3 Staff shortages in radiography

According to Ohagwu *et al.*, (2011: 30), the shortage of radiographers is a global issue. In the findings of a study performed by Owley *et al*. (2002: 4), radiographers (known as radiology technologists in USA) were amongst the leading professionals experiencing a severe staffing crisis in the USA. With a nation-wide vacancy rate of 18 percent, it was further stated that, during that year (2002), radiography was the second most affected profession after pharmacology in the USA.

According to a 2002 Australian report by Brough (cited in Australian Department of Human Services 2005: 58), there were high shortages of manpower in Australia in the fields of diagnostic radiography and ultrasound. The number of graduates being produced was not equivalent to the number of vacancies in both Victoria and New South Wales. No statistical information could be found regarding the shortage of radiographers in Australia. Nevertheless, the Agency Health Profession Reference Group on Radiography Information stated that there was a national shortage of radiographers in Australia (Tasmanian Department of Health and Human Service n.d.: 14).

According to Ohagwu *et al.* (2011: 31), Nigeria, in African, had 1 058 radiographers serving a population of 150 million people. It was also stated that radiography was

unable to attract young professionals to the career due to the poor professional image of the radiographer. This was said to be due to the radiographers' lifestyles, lack of self-esteem and a poor dress code. According to the Society of Radiographers of South Africa (2009: 1), radiographers in South Africa were leaving the public sector for the private sector and others were emigrating. Data from Human Resources (2010: 5) highlights that, in 2010, only 7 255 radiographers were employed nationally to serve the nine provinces in the country. The number of KZN radiographers registered with the HPCSA was also noted to have decreased from 884 in 2011 to 859 in 2012.

In the period 2008/2009, there were 463 radiographers employed in the KZN public sector (South Africa 2010: 42) compared to the 454 in 2010, with a vacancy rate of 49 percent. From a total of 1 621 radiography vacancies in South Africa, 437 of these were in KZN (South Africa 2010: 5). It is worth noting the data from DoH and HPCSA both demonstrate a decreasing trend in the number of radiographers employed in KZN. The number of radiographers highlited on the HPCSA statistics includes those working in private practice and may indicate those that have relocated to other provinces or countries without changing their details on the register as well as retirees who have kept up their HPCSA registration.

Table 1 below indicates an overall increase in vacancy rates of radiographers from 2004/2005 to 2009/2010. This indicates that the radiography skills shortage in KZN has not been adequately addressed.

Table 1: Radiography posts in KwaZulu-Natal (2004-2012).

Year	No. of posts	No. of posts filled	No. of posts vacant	Vacancy rates
2004/2005	595	406	189	31,8%
2006/2007	878	451	427	48,6 %
2007/2008	886	484	402	45,4 %
2009/2010	890	454	436	49 %
2011/2012	573	494	73	14 %

(KwaZulu-Natal, Department of Health website accessed 2011).

The decrease in the number of posts from 890 in 2009/2010 to 573 in 2011/2012 was due to the fact that the KZN provincial government had frozen the 13 000 vacant posts that were not occupied by the end of 2009/2010 (National Union of Public Service and Allied Workers 2013: 1).This indicated a sharp decrease in the vacancy rate. Therefore this is not a true reflection of the shortage crisis in KZN.

According to statistics by the HPCSA (2012), there was a steady decrease in the number of registered radiographers and students in KZN between 2006 and 2012, as indicated in Table 2 below.

Table 2: Radiography healthcare professionals and students in KZN

Year	2005	2006	2007	2008	2009	2010	2011	2012
Number of registered radiography health professionals, including students	1 236	1 298	1 289	1 162	1 139	1 132	1 121	1 089

(E-mail communication from Health Professional Council of South Africa on 17th July 2013.)

According to the DoH Annual Performance Plan (South Africa 2010: 12), 67 of the 1 800 radiography students who qualified in South Africa in 2010 graduated from

the Durban University of Technology (DUT), which is the only radiography training institution in KZN (Annual Performance Plan of the DoH South Africa 2010: 12). The number of DUT graduates is, however, still not sufficient to fill the vacant posts in KZN.

Contrary to the Annual Performance Plan, an e-mail communication from the DoH's Data and Information Division on 25 July 2013, indicated that there were only 54 DUT graduates in 2010. Furthermore, there was a fluctuating trend in the number of radiography students being enrolled at DUT, ranging from 48 to 70 students, as indicated in Table 3 below. However, no substantial increase has been evident in the number of graduates from the institution. Therefore, this may contribute to the vacancy rates in KZN which have remained high.

Table 3: Enrolled first-year students in Durban University of Technology

Year	2007	2008	2009	2010	2011	2012
Number of first year students enrolled	55	57	48	67	56	70

(E-mail communication from Durban University of Technology's Radiography Department on 22nd August 2012.)

From the statistics in Tables 1, 2 and 3, it can be deduced that, between 2007 and 2012, DUT produced an average of 58 radiographers per annum, whereas the need of the provincial department was an outstanding average of 364 annualy. The current study set out to investigate the possible reasons contributing to these high vacancy rates in radiography. Recruitment at undergraduate level was not included in this study – this could be an area for further study. It should be noted that the demand for radiographers was higher than the supply, which has resulted in a critical shortage of radiographers in the province of KZN.

2.4 Factors impacting on the retention of staff

The migration of healthcare workers has been the result of uneven global development within the healthcare sector (Connell 2000: 10). Most developed countries have more resources and better standards of living than underdeveloped or developing countries. Poor promotional prospects, poor management support, high workloads and inaccessibility to adequate technology, medicines and other supplies are common in developing countries.

Connell (2010: 11) has mentioned cultural factors and political crises as factors that had influenced emigration at that time. These challenges are intensified in rural areas, where healthcare workers tend to have been ignored by government and were victims of institutionalised urban bias in the development of policies. Connell (2010: 11) continues to explain that these problems have been cited for more than 30 years, indicating that the problems are due to lack of effective development and implementation of retention policies. Henderson and Tulloch (2008: 2) stated factors such as the pursuit of political stability, improved education for children, training opportunities, more desirable working conditions and family ties as further reasons for emigration to other countries.

Connell (2010: 4) found that in Asia Pacific, the decline in public hospital funding had contributed to the perception that working in the health sector was not desirable. The shortage of healthcare workers often resulted in an inappropriate skills mix (where healthcare workers had extended responsibilities and duties) within the health sector, as well as an uneven distribution of health workers. These all contribute to a compromised quality in service delivery (Henderson & Tulloch 2008: 2). Henderson and Tulloch (2008: 2) also stated that every healthcare worker forms an integral part of the healthcare system, and a shortage of any will affect the workflow in the system. Shortages result in substandard service delivery to patients and stressful conditions for staff members. Furthermore, Connel (2010:

11) has highlited that the diminished interest in health sector investment has worsened working conditions. Long overtime shifts, double shifts, early morning/'graveyard' shifts (especially when these do not receive adequate overtime remuneration), political instability and insecurity, low income, as well as challenging working conditions are factors that have all influenced the migration of healthcare workers.

From the USA, Owley *et al*. (2002: 3) report that the retention of personnel is also affected by the strenuous environment required to provide optimum standards in understaffed workplaces. Jones (2003: 3) further expounds that, in all types of institutions, the retention of employees is equally as important as recruitment, in order to provide optimum service delivery. Institutions should therefore aim to retain the employees they have. As far back as 2000, Lussier (2000: 276), also stated that replacing employees is more expensive than retaining them. Recruitment involves the training and teaching of employees, which are both costly for the company involved. In their findings in the USA, Owley *et al*. (2002: 4) stated that professional nurses that had left the profession were willing to return to patient care and healthcare services if there was better remuneration, better staffing and flexible work schedules. These findings were a reflection of similar findings on research done on radiologic technologists (radiographers) (Owley *et al.* 2002: 6) in that country.

In their findings, Vosper *et al,* (2004: 85) highlighted the fact that in the UK poor promotional prospects, poor pay and long working hours were major retention challenges for radiographers in that country. Vosper *et al.* (2004: 79) reported that attracting radiographers to the profession in the UK was diffficult, but that little empirical research had been conducted around this issue in the country at that time.

School *et al.* (2005: 1) categorised the factors that negatively affected the attraction of health personnel in Australia as being the nature of the work, staffing needs and organisational management. The authors further mentioned additional factors, such as a lack of career structures, little participation in decision making and a lack of job autonomy. These authors further stated that the gap between attracting and retaining Australian staff members was related to the needs of the individual organisation, as well as those of the community. School *et al.* (2005: 2) also stated that the lack of career-pathing, as well as social and personal isolation, constituted the main reasons for poor recruitment in South West Victoria, Australia, whereas Chan (2007: 21) identified low morale and poor financial rewards as challenges in attracting radiographers in Australia.

Henderson and Tulloch (2008: 6) highlight factors, such as lack of adequate allowances, poor working conditions, inadequate facilities and equipment, poor support and management, a heavy workload, limited opportunities for professional development, as well as limited scope to upgrade one's qualifications as the factors that motivate healthcare personnel to emigrate.

The scarcity of radiography skills in other countries, as discussed previously, is reflected in certain African countries. Liese (2004: 6) states that the production of health personnel in sub-Saharan Africa at that time had not nearly kept pace with the population growth. In Nigeria, Ugwu *et al.* (2007: 125) identified job dissatisfaction and occupational stress as challenges in the recruitment and retention of radiographers. Ugwu *et al.* (2009: 3) also stated that service delivery may have been impaired by psycho-social conflict that was caused by stress which, in turn, can affect the retention of radiographers. Eze *et al.* (2010: 12) reported the challenge of attracting radiographers (known as clinical radiation employees) in Nigeria to be due to a lack of professional titles, poor societal recognition, radiation hazards, lifestyle issues and a heavy workload.

The factors discussed above also reflect the situation in South Africa. For example, Dageid *et al.* (2007: 4) mentioned the escalation of HIV and AIDS as a source of stress and emotional burnout amongst healthcare employees in South Africa, which resulted in a poor retention rate of healthcare professionals. In South Africa, deterioration of working conditions, uncertainty about the future and lack of management support are some of the factors that have motivated health professionals to emigrate and leave public hospitals (Human Resources for Health in South Africa 2009: 34).

The afore-mentioned factors impacting on retention within the healthcare sector were used as variables in the questionnaires for this study.

2.4.1 Job satisfaction as a factor impacting on retention

Job satisfaction is an overall attitude of an individual towards his/her present job routine in an organisation. It includes the feelings, beliefs and thoughts towards any given job (Cranny *et al.* 1992 cited in Bitsch & Hogberg 2004: 2). Similarly, Razig and Maulabakhsh (2015: 718) defined job satisfaction as an employee's emotional orientation towards their role at the place of work. In this study, the researcher focussed on satisfaction in relation to the radiographers' attitude towards their job routine at their places of employment in KZN.

Job satisfaction is crucial in the retention of employees in any organisation. Job satisfaction directly affects employees' happiness and performance. Therefore, human motivation is vital for effective human performance (Dizgah *et al.* 2012: 1 735). It is stated that employees who are satisfied with their jobs are unlikely to leave their employers (Society for Human Resource Management 2009: 5). Healthcare workers may become dissatisfied and therefore prone to migration for a variety of reasons, such as being demotivated by poor healthcare infrastructure, inadequate healthcare management and general problems within the working

environment. It follows therefore, that radiographers that are satisfied with their job will likely be productive and unlikely to resign.

Bateman and Snell (2011: 469) postulate that a job is presumed to be both satisfying and motivating if the needs of the worker are met. The same authors refer to Frederick Herzberg's two-factor theory on satisfaction-hygiene factors and mention working conditions, governing policies and remuneration as the key conditions for job satisfaction in any organisation. They further state that motivating factors include opportunities for personal growth, recognition and a feeling of achievement. When the above-mentioned factors are met, the job should be satisfying and motivating (Bateman and Snell 2011: 469). Similarly, in South Africa, deterioration of working conditions, uncertainty about the future and a lack of management support are some of the factors prompting healthcare professionals to emigrate and leave public hospitals because they have become demotivated and dissatisfied with their jobs (Human Resources for Health in South Africa 2009: 34). Therefore, it is essential to improve the working conditions of staff, so as to improve the retention of radiographers and healthcare workers by improving their levels of satisfaction. Connell (2010: 11) stated that the motivational factors in the workplace are contained in a wider social context, economic life and family structures.

The factors impacting on the motivation of radiographers were tested in this study to determine if they were applicable in KZN, by incorporating them into the questions in the research questionnaires.

2.5 Strategies to address retention problems

It is stated that retention strategies affect the level of happiness of the employees which, in turn, affects service delivery (Drake International n.d : 6). The same publication also states that poor retention strategies have high financial

implications, due to consumer dissatisfaction. In the context of this study, the consumer, being the patient, is likely to receive poor service delivery. In order to curb the migration of the healthcare professionals, various countries have developed strategies that are discussed below.

Coombs *et al.* (2003: 3) stated that radiography in the UK is a career that enjoys little general public recognition, has radiation hazards and involves a high workload. The authors in their study, recommended flexible working hours and increasing the number of employees as possible solutions to attract radiographers. Paradath *et al.* (2003: 31) propose the introduction of dual citizenship and nationality for healthcare workers that have emigrated, so that they may be afforded the opportunity to work in their country without losing their status. Owley *et al.* (2002: 4) proposed the introduction of a radiographer-to-patient ratio. This should be implemented to address the challenge of workload regarding the adequacy of staffing. The ratio should be based on the daily, monthly and annual projected patient statistics. This concept was introduced in Australia's Victoria province and is working particularly well in the nursing sector. On the other hand, Naicker *et al.* (2009: 4) propose that developed countries should train more health professionals to meet their own needs and thus end active recruitment from developing countries.

The DoH in South Africa previously adopted a policy on scarce skills and rural allowances, in an attempt to retain those with scarce skills, such as radiographers, within the government service and to encourage the retention of people working in rural areas (Human Resources for Health in South Africa 2009: 35). A Community Service policy was introduced in SA in March 2004, to improve service delivery within specific health professions, including radiography, but it did not appear to address the issue of retention (Human Resources for Health in South Africa 2009: 39).

The adoption and approval of the Occupation-Specific Dispensation (OSD) on 31 March 2008 was aimed at establishing a new salary dispensation and a recognised career path for radiographers (SORSA 2008: 9). The OSD was one of the main strategies developed by government to curb the exodus of radiographers and attract them to government service (SORSA 2008: 2). The OSD has not improved the issue of retention of the healthcare workers in rural areas, as the rural and scarce skills allowances were discontinued with the introduction of OSD. It was implemented for radiographers in 2010 and therefore still needs to be evaluated scientifically to determine if it has been successful in retaining employees and attracting radiographers back into the public service. The questionnaire used in the current study was, therefore designed to include some questions related to the implementation of OSD in KZN.

According to Henderson and Tulloch (2008: 1), research findings in Pacific and Asian countries indicated that the shortage of healthcare workers was critical. These authors suggested that the situation could be addressed through policy reform, improved planning and the implementation of innovative strategies, such as incentives for retaining and motivating healthcare workers. Broughs (2002), cited in the Australian Department of Human Services (2005: 59), concluded that there were more vacancies than diagnostic radiography graduates in Australia, with both Victoria and New South Wales appearing to have the most significant staffing problems. This seems to mirror the situation in KZN.

Role extension and expansion were cited as some of the strategies implemented to address the recruitment and retention problem. This resulted in an increase in the number of radiographers in Australia (Australia Department of Human Services 2005: 56). The United Kingdom (cited in the Australian Department of Human Services 2005: 57) implemented flexible working hours to enable staff to meet family and other commitments; rewards such as attractive salaries for hardworking radiographers; and better career progression to improve retention. These all

resulted in an overall increase in the number of radiographers, including a return of those that had left the profession.

2.5.1 Salary supplements, benefits and allowances

The Asia-Pacific countries implemented financial allowances, such as rural allowances, public sector retention allowances and accommodation allowances. Other financial benefits included a pension plan, health/life insurance, contract gratuities and a transport allowance. They also offered staff a domestic market allowance, which is given when public service salaries are lower than those in other domestic labour markets, as well as hardship allowances to retain the healthcare workers in the rural areas (Henderson and Tulloch 2008: 7). According to Drake International North America, a structured salary increase to withstand the competitive market is proposed in order to improve on retention (Drake International n.d.: 6). The latter allowance is awarded according to the level of remoteness of the place of employment. A non-private practice allowance was also considered and put in place for healthcare workers who did not work in a private practice. The Asia-Pacific countries also introduced a special work-related payment for services offered outside official working hours. Furthermore, a medical gratuity was provided for those working in rural areas (Henderson and Tulloch 2008: 7).

2.5.2 Improved supervision and management

Sufficient technical support, feedback, recognition of achievements, good and efficient communication, a clear allocation of roles and responsibilities, as well as norms and a Code of Conduct were noted to be vital in improving the distribution of healthcare workers in Australia (Henderson & Tulloch 2008: 7). Communication between employees and senior management was repeatedly at the top of the list of the five elements of employee job satisfaction, as had been identified by Human

Resource Professionals (Society for Human Resource Management 2009: 18). Communication and adequate supervision are vital elements of management.

This study included questions related to management in order to determine its impact on retention of radiographers.

2.5.3 Continuing education, training and professional development

The creation of opportunities for training, education and continuing professional development were identified as important motivational factors by Henderson and Tulloch (2008: 10). The study anticipated that the participants may suggest the possibility of implementing e-learning to reach those people at places that were distant from the university. This would make it easy for the radiographers to access education wherever they might be located, therefore questions were included in the questionnnaire relating to education and training.

According to Bourgain, Pieretti and Zou (2009: 2), strategies to curtail the emigration problem and reduce the shortage of healthcare professionals are dependent on budgetary resources. These strategies include increasing the number of qualified healthcare workers; developing a training infrastructure; and reimbursing educational expenses incurred. A survey by the Society for Human Resource Management (2009: 18) in South Africa found that subsidised training and reimbursement for tuition are important for employees. The researcher therefore anticipated inputs that would align with the above-mentioned policies in KZN.

2.6 Conclusion

The staff shortage crisis in the health sector is a global issue. In South Africa, and in KZN in particular, this is a critical challenge. The nature of work, employees' needs, unattractive salaries; insecurity, heavy workload, poor promotional prospects, inadequate management support, limited access to good technology, medicine and other supplies, were common factors in developing countries. In addition long hours of overtime; double shifts; and working on the early-morning/'graveyard' shift or over weekends (especially when these people do not receive adequate income supplementation) are some of the factors identified as having a negative effect on the retention of healthcare personnel.

On the international front, role extension and expansion are strategies that were implemented in some countries to recruit and retain radiographers. Flexible working hours were introduced to enable employees to meet family and other commitments. In South Africa, the study by Kekana *et al.* (2015: 1123) found that in principle, both radiologists and radiographers support radiographers' role extension to inject contrast media. They have however recommended that radiographers should first obtain additional postgraduate qualifications.

In South Africa, Community Service and OSD were implemented. Community Service is a policy that was introduced by government for radiographers and other medical professionals as a legal requirement, where a professional is expected to serve the public for a specific time period. OSD is a strategy that was implemented to attract and retain radiographers. These strategies have not yet been evaluated to measure their effectiveness in addressing government's objectives regarding radiographers in KZN. This current study was therefore aimed at exploring the factors impacting on the retention of KZN radiographers, in order to provide information to the DoH that could highlight issues pertinent to the retention of KZN radiographers.

The following chapter will discuss the research methodology used in this study.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 Introduction

The preceding chapter was a review of literature relevant to this study. This chapter will focus on the research methodology employed in this study.

Methodology focuses on the research process, tools and procedures that are applied to the research study (Mouton 2011: 56). The research methodology describes the participants, research design, sampling plan, data collection procedure, apparatus and measuring instruments (De Vos *et al.* 2009: 252). It also explains the logic behind the research methods and techniques (Welman *et al.* 2009: 20). According to De Vos *et al*. (2009: 73), research methodology is categorised into two main research approaches, namely, qualitative and quantitative approaches. In this study a quantitative approach was used.

The researcher chose a descriptive survey, using a cross-sectional design where data was collected within a set time from different participants, rather than from the same participants at different time intervals (Brink 2010: 105). The researcher was interested in determining factors that affected the retention of radiographers in KZN at that particular time. According to Welman, Kruger and Bruce (2009: 25), descriptive research attempts to understand situations or things by explaining the phenomena and predicting the behavioural outcome. Descriptive research is not experimental, as there is no manipulation of the variables. The researcher in this study was interested in observing the variable outcomes as they took place, with the aim of describing the phenomena and explaining the relationship of the outcome of the variables that affected the retention of radiographers in KZN (Brink 2010: 102).

A sample is a fraction of a whole or entire population, selected by the researcher to participate in the research study (Brink 2010: 124). The target sample size was estimated at 300 radiographers from all four categories in both public and private hospitals, however the researcher obtained only 191 participants who were working in public and private hospitals. For the collection of data from the radiographers who had emigrated and those who had left the profession, the researcher contacted all the available known participants. The population of the emigrants and those that left the profession was unknown – therefore, the researcher contacted all those who were available.

The research tool was a questionnaire with closed-ended and a few open-ended questions to collect data. The questionnaire was used to collect the data because it is less expensive, it requires a shorter time to collect data from a large group of participants and provides a consistent format for all the feedback. Unlike the interview method, it does not involve direct participation of the researcher (Brink 2010: 147).

According to Brink (2010: 31), human rights should be respected by the researcher in accordance with three fundamental principles, namely respect for people, beneficence and justice. The human rights to be protected relate to anonymity, protection from harm and discomfort, confidentiality, fair treatment and the right to self-determination. The researcher observed these three fundamental principles, which guided him throughout the research. He obtained ethical clearance from the University's Institutional Research Ethics Committee (see appendix A) and sought permission from the KZN provincial DoH (appendix B), the KZN DoH's district offices (Appendix C) and the respective hospitals and private practices. Informed consent was sought from the participants who signed the letter of information and consent (see appendix D) as a confirmation of acceptance to participate in the study.

3.2 Research design

The researcher chose the quantitative design. Welman *et al.* (2009: 6) categorise quantitative and qualitative design into positivism and anti-positivism respectively. Quantitative research is a positivist approach, which utilises a natural scientific method, that is limited to that which could be observed and measured objectively and exists independently of individuals' feelings and opinions. The anti-positivists resist the application of natural scientific methods in studying human behavioural sciences, as they are not molecules or organisms, but rather focus objectively on the experience of human behaviour.

There are three approaches to research, namely the positivism, interpretive and critical theory (De Vos *et al*. 2009: 5). De Vos *et al*. (2009) further state that only the phenomena that are observable can be considered as a source of knowledge. The critical theory (constructivism) focuses on feelings. In the interpretive approach, the researcher reads and interprets the meaning of written words and pictures. Quantitative research focuses on verifying the research propositions by converting them into precise mathematical formulae and expressing functional relationships. Only quantitative data that is conclusively valid or is considered of high quality, is used (Sechrest 1992 cited in Guba and Lincoln 1994. 106). The researcher thus used the quantitative approach as defined by Welman *et al.* (2009: 6).

Unlike physical objects, human behaviour, feelings and perception cannot be predicted or generalised.. Although statistical generalisations often seem meaningful, it may not be applicable to individual cases. For example, one might state that "66 percent of patients presenting with the symptoms of coughing and chest pain are TB positive". This statement may not apply to each individual patient. This ambiguity of generalisation is avoided by the qualitative approach.

3.3 The study location

This research was conducted in public and private hospitals in KZN – one of the nine South African provinces. According to statistics pertaining to the radiography profession, there were 463 radiographers employed in KZN during 2008/2009, compared to the 454 employed (with a vacancy rate of 49 percent) in public hospitals in 2010 (South Africa 2010: 42). Private practice statistics were unavailable as these are confidential.

From a total of 1 621 radiography vacancies in South Africa, 437 were in KZN (South Africa 2010: 5). Therefore, with KZN being amongst the provinces hardest hit by a severe shortage of radiographers, it was the site selected for this research study. The province is served by both private and public hospitals. The private hospitals are located mainly in urban centres.

3.4 Target population

According to Welman *et al.* (2009: 126), a target population is the entire group of persons or objects that the researcher is interested in collecting the data from, or generalising the research results to. A target population can also be defined as the study population or the accessible number of participants from which the data was collected or will be collected (Kumar 2011: 55). In an e-mail communication on 17 July 2013, the HPCSA's Statistics and Data Analysis Department, stated that there were 859 radiographers serving in both private and public hospitals in KZN during 2012 (HPCSA: 2012). This was the target population for the study. The province has a total of 73 hospitals with radiography departments, of which 19 are private hospitals and 54 are public hospitals (Hospital and Nursing Yearbook for Southern Africa 2012: 141). In the public sector, there are regional and tertiary hospitals and some of these are classified as both regional and tertiary institutions.

The researcher selected one private and one public hospital in each of KZN's 11 districts. In districts where there were no private hospitals, a tertiary or regional public hospital was therefore selected instead. The target sample size was estimated at 300 radiographers from all four categories in both public and private hospitals, however the researcher obtained only 191 participants. The population size of KZN radiographers was 859; a sample size of 266 was required at a 95% confidence level. However, with the high attrition rate, the sample of 191 was more than adequate for the available number of respondents and was considered to be statistically acceptable by the statistician.

3.5 Sample selection

According to Kumar (2011: 397), a sample is a subgroup of the entire population on which the research study is focused and should be representative of the entire population. However, the number of individuals that one obtains data from is the sample size, which is denoted as (n) of the total population. According to Welman *et al.* (2009: 55), the sample must be representative in order to generalise the results and to save cost, time and other resources.

Sample bias is a research sampling error caused by a researcher, which occurs when samples are not carefully selected. Examples of sources of sampling bias are when the time that the research is conducted and personal preference influence the researcher in the selection of some of the participants. According to De Vos *et al*. (2009: 193), sampling involves taking a portion of the population as representative of the population. The research findings can be generalised only when it can be assumed that what is observed in a sample would also be found in the population. Private and public hospitals in KZN were selected and the participating radiographers were those working in the hospitals or who had previously worked in KZN. A stratified non-random sampling method was used to

select the public and private hospitals from which data was collected and an attempt was made to include all radiographers on duty at each site.

3.5.1 Public hospitals and private practices

A stratified non-random sampling method was used to select the public and private hospitals from which data was collected (Brink 2010: 110). In stratified non-random sampling, the target population is divided into small groups or into strata and then, from each strata, the sample is taken either randomly or non-randomly (Brink 2010: 130). In this case a non-random sampling was used because the target population was from only 11 districts where the researcher collected the data so as to obtain more reliable and valid results.

KZN has 11 districts and each of the districts had both a private and public hospital sampled – i.e. in each district, one public and one private hospital was selected to participate in the study. In districts without a private practice, an additional public hospital was selected. For example, seven health districts of KZN had no private hospitals so the researcher collected data from a district public hospital where a regional/tertiary hospital had initially been selected. This was to ensure that the total sample of public hospitals selected was representative of the different levels of healthcare facilities in KZN. The researcher collected data from the 11 tertiary/regional hospitals, 7 district hospitals and 4 private practices to get a total of 22 hospital.

3.5.2 Radiographers

The target sample size was estimated at 300 radiographers from all four categories in both public and private hospitals, however the researcher obtained only 191 participants. The population size of KZN radiographers was 859; a sample size of 266 was required at a 95% confidence level. However, with the high attrition rate,

the sample of 191 was more than adequate for the available number of respondents. Due to the abolished of the rural allowance in some hospitals, radiographers had opted to leave and work in urban areas. Most hospitals therefore had an average of two to four radiographers. To ensure maximum return, the researcher opted to e-mail the questionnaire to the heads of departments so that radiographers who were not available on the day the researcher collected the data, could complete the questionnaires beforehand.

Prior to the data collection day, participants were given the opportunity to discuss difficult questions telephonically with the researcher. The researcher returned calls to the participants in order to avoid them incurring telephonic costs. In addition, radiographers who were available, were able to complete the questionnaires before the arrival of the researcher. A convenience sampling method was used which is described by Welman *et al.* (2009: 69) as collecting data from participants who are the easiest to access, so as to meet the sample size.

3.5.3 Inclusion criteria

The radiography sample was selected according to the following criteria:

- Radiographers and radiography managers working in public and private hospitals in the selected districts who were currently registered with the HPCSA in any of the four disciplies of radiography.

- Radiographers who had left radiography – i.e. radiographers who had requested a voluntary erasure from the HPCSA register, as well as those who had not paid the HPCSA registration fees for more than five years, but were not retired. All the available radiographers were contacted by telephone, e-mail and social networks. The postal addresses of the participants were purchased from the HPCSA.

The participants were asked to introduce colleagues who they knew of, who had left the radiography profession to the researcher. For example, the radiographers who left to become marketing representatives at private companies could introduce their colleagues by providing their details to the researcher, but only if the colleagues gave their permission. The researcher applied the "snowball sampling" technique to obtain assistance from participants in order to reach more representatives of the potential population. This technique is applied where it is difficult to obtain access to the population. The researcher used this as the best method to reach the participants who were unfamiliar to him (Brink 2010: 134).

- Radiographers who had previously worked in KZN, but had left the country to practise radiography in another country. All the available radiographers were contacted through various social networks, such as Facebook. They provided their e-mail addresses, which were then used to send them the questionnaire. The lecturers who had trained the "then students" also introduced the emigrants to the researcher, with permission from the radiographers.

3.5.4 Exclusion criteria

The following groups were excluded from the study:

- Student radiographers as they would have had limited knowledge of the challenges facing radiographers at a professional level.

- Supplementary radiographers because the scope of the supplementary radiographers is limited, and they may not necessarily have faced the same challenges as the diploma/degree-qualified radiographers.

- Radiographers who had retired as their inputs could be perceived to be outdated.

- Managers who were not radiographers because they were possibly not hands-on, and hence would not share similar duties as working radiographers. They would also have had different remuneration scales.

3.6 Data collected

The data collected can be categorised into two groups, depending on the sources, namely primary data and secondary data. Secondary data is that which is collected and used by other researchers, while primary data is that which is collected first-hand by the researcher (Kumar 2011: 140). Secondary data is also data obtained from records such as staff files. The researcher used both primary and secondary sources for the data collection.

The following data was collected:

- **Biographical details:** Brink (2010: 150) states that biographical information constitutes the basic details of the participants that are usually asked at the beginning of the questionnaire. The same author further proposes that a researcher should ask the easier questions first and the more sensitive questions towards the end of the questionnaire. This increases the confidence, as well as the accuracy of the answers given by participants. The biographical data provided a profile of the respondents – this was primary data.

- **Responses from questionnaires:** This primary data was collected from the participants who completed the research questionnaire.

- **Exit Interview Data:** The managers used the staff records with the information on exit interview questionnaires to complete the research questionnaires. This was secondary data as it was obtained from staff records.

3.7 Data collection method

This section will discuss the procedures that were used for collecting the required data from the participants.

3.7.1 The data collection tool

A questionnaire is a list of written questions with answers that are recorded by the participant. The questionnaire should be designed in an interactive style – i.e. the participants should feel free to answer the question as though someone is talking to them at that moment (Kumar 2011: 145). A questionnaire is the easiest method to ensure reliability and validity and it is not expensive to use. It also assures greater anonymity than a face-to-face interview (Brink 2010: 147).

The questionnaire does, however, have the disadvantage that it cannot be used with illiterate, very old or disabled people and it also lacks the opportunity to clarify the answers to the participants (Kumar 2011: 148). The questionnaire can include closed-ended questions or open-ended questions. The closed-ended type of question provides a choice of possible answers, whereas open-ended questions allow the participants to write down their own individual answers.

The first part of the questionnaire used in this study covered the biographic details. This part was used to make participants feel relaxed and free before they answered the difficult questions, which were strategically positioned towards the

end of the questionnaire. The researcher used mostly closed-ended questions with a few open-ended questions. The open-ended questions allowed participants to provide responses of their own without being limited or directed by the researcher. All the questions were categorised and analysed so as to address the objectives of the study. For example, the objective to investigate the reasons why KZN radiographers resign from their places of employment was answered by the questions on the level of workload and the duration of the period that radiographers were working. The open-ended and closed-ended questions were analysed separately, using the appropriate analytical methods.

An online questionnaire was used to access the emigrants and the radiographers who had left the profession. A website link was developed so that the participant could easily access the questions online. The online questionnaire was less expensive than mailing the data collection tool, as it only required e-mail addresses. The disadvantage was that it required constant follow-up. The questionnaire was piloted in one of the non-participating hospitals in KZN. This allowed the researcher to edit and correct any possible challenges that may have arisen during the data collection process (Kumar 2011: 11).

Three questionnaires were constructed to target the respective participants. One questionnaire was completed by radiographers working in both government and private hospitals (appendix F). The second questionnaire was for those who had emigrated to work abroad (appendix G). Finally, the last questionnaire was directed at those who had left the radiography profession (appendix H).

3.7.2 Data collection from radiographers and radiology managers

Written permission was granted to collect data in the hospitals and dates for the data collection were determined telephonically with radiography managers. The radiography manager advised as to which days most of the participants would be

on duty. Since the data collection took place at the peak period of the year (November/December), when most radiographers were on leave, the researcher opted to send the questionnaires to the departments before the date of the data collection. The researcher was available telephonically to explain any difficult questions to participants who wished to complete the questionnaire beforehand. The participants were asked to answer the questionnaires, place them in a sealed envelope and hand them to the radiography managers.

On the day of the data collection, the questionnaires were hand-delivered by the researcher to radiographers and radiography managers on duty in both public and private hospitals during their break time, so as to avoid disrupting the workflow. They were administered to all available radiography managers and radiographers in all four categories who were on duty on that day, so as to maximise the response rate after they completed the consent forms (appendix D). The researcher waited while participants completed the questionnaires, so as to ensure a maximum return rate. Moreover, the researcher was able to explain any difficult questions to the participants while they were completing the questionnaire. Radiographers were given the choice of completing the questionnaires online if they wished. The section relating to the exit interview was completed by the radiography managers based on the cases of resignation as documented in the hospital records. Data was extracted from the exit interview questionnaire records.

3.7.3 Radiographers who left the profession and those who emigrated

An online link to the questionnaire was e-mailed to radiographers who had emigrated, as well as to those who had left the profession. The researcher was introduced to the participants by mutual colleagues in order to encourage participation and to verify that the questionnaire was genuine. For example, lecturers who had taught the emigrants and those who had left the profession did

an online introduction of the researcher to the participants in order to create confidence and trust in completing questionnaires.

The researcher made constant follow-ups to ensure that the participant completed and sent back the questionnaires. The online questionnaire was designed in such a way that, if the participant stopped answering the questionnaire at any level or was interrupted; the answers of the completed part of the questionnaire were automatically stored on the database. In addition, after resuming the answering of the questionnaire, the participant would continue from the point where he/she had left off.

3.8 Validity and reliability

The validity of a data collection instrument indicates whether the instrument accurately measures the data it was meant to measure under the conditions which the data was collected (Brink 2010: 159). The reliability of the instrument is the measure of its consistency and stability. This refers to the ability of the instrument to collect the same information if it were used again under similar conditions (Kumar 2011: 181).

The researcher compared the content of the questions asked in the questionnaire with the objectives of the research by conducting a pilot study. The questions were then adjusted to ensure that the answers to the questionnaires were relevant to the questions asked. In addition, the researcher consulted a statistician on the content of the questionnaire and its validity. A pilot study is also called a feasibility study (Kumar 2011: 11), or a preliminary study. It is conducted on a limited number of participants so as to detect flaws in the measuring instrument and determine if the variables are observable and measurable (Brink 2010: 166).

The pilot study in this research was conducted on radiographers who were not selected as participants, in order to identify any problems, such as the wording of the questions and the ability of the participants to understand and answer the questions correctly. The researcher adjusted the instrument for reliability and validity of the results. The wording and the sentence structures of the questionnaire were corrected. When compiling the questionnaires, the researcher included variables that had been used by other researchers in the field. These were obtained from the literature review. For example, in section 2.4 of the literature review, Connell (2010: 10) mentioned factors such as poor promotion possibilities, poor management support, heavy workloads and inaccessibility to good technology and adequate supplies, which are common in developing countries. These were some of the variables that the researcher included in the compilation of the questionnaire.

Before the questionnaire was used in the field to collect the data, the content and face validity were reviewed by a statistician. Both external and internal supervisors evaluated and constructively criticised the cohesiveness of the research questions in relation to the objectives that were being addressed.

3.9 Data analysis

The responses on the questionnaires were analysed with the assistance of a statistician, using the statistical software SPSS version 21.0. The descriptive statistics were analysed, summerised and presented in tables and graphs. The responses to the open-end questions were coded and analysed according to themes and then presented in tables and bar charts. Various frequency and cross-tabulation tables were generated. Inferential statistics using Pearson's, Spearman's correlations and chi-square tests at a significance level of 0.05 were used. P-values less than 0.05 were considered to be significant.

3.10 Ethical considerations

De Vos *et al*. (2009: 57) define ethics as moral principles that were put in place by an individual or a group of people, and were accepted and offered rules and behavioural expectations about correct conduct. On the same note, ethics act as a basis upon which researchers should evaluate their conduct throughout the research work.

According to Brink (2010: 30), the Declaration of Helsinki constitutes ethical principles that were put in place with regard to human experimentation and was developed for the medical community by the World Medical Association. It provides the ethical guidelines that are used by various governmental bodies, as well as professional organisations involved in the conduct of the researcher on human participants all over the world. The South African Medical Research Council has developed guidelines, referred to as Ethical Consideration in Medical Research, which were published in 1979 to guide researchers (Brink 2010: 31). According to the national DoH in South Africa, the National Health Research Ethics Council was established in terms of the National Health Act, 2003 (Act No. 61 of 2003 ; Ethics in health research principles, structures and processes 2004: 10).

The National Health Research Ethics Council registers and audits all Health Research Ethics Committees in the country. The Health Research Ethics Committee was established by the Medical Research Council Council of South Africa to review all research involving human participants. The National Health Act, 2003 (No. 61 of 2003), proposes that higher education and research institutions should have research ethics committees that are responsible for the ethical review of the research protocols in respective universities and other research centres.

According to Brink (2010: 30), a researcher is responsible for conducting research ethically; otherwise the scientific process is undermined and could have a negative

impact. The researcher is expected to conduct research competently, manage resources honestly, acknowledge those contributing towards the research, communicate the results fairly and consider the impact that the research would have, either positively or negatively, on the participants.

The South African DoH has research ethics principles, structures and processes in place, so that humans involved in the research are treated with dignity and their well-being is not compromised. Participants are required to sign an informed consent form prior to participation in the research (South African Department of Health Research Ethics Principle 2004: 10). Brink (2010: 31) states that the three fundamental ethical principles that were established to guide researchers are respect for persons, beneficence and justice.

With regard to research ethics clearance and approval, Durban University of Technology's Institutional Research Ethics Committee gave full approval for this research proposal on 3 August 2012 (appendix A). The researcher contacted the 11 district managers, in writing, to obtain permission for collecting data in the respective hospitals. The last approval was received on 1 October 2012. The 11 permission letters (see appendix E) were all delivered to the KwaZulu-Natal provincial DoH office, and full provincial approval and permission was granted on 2 October 2012 (see appendix B). The researcher disseminated the provincial letter of permission to the 11 managers, and the research began after medical managers, CEOs and radiographer managers had given permission to the researcher.

Brink (2010: 35) states that the letter of informed consent is used to ensure that the intended participants are protected from harm through the principle of voluntary participation. The letter should clearly explain the type of information required from the participants, and should state that the subject has a right to choose whether or not to participate. Confidentiality refers to the responsibility of the researcher not to

make the participant's data available to any other person (Brink 2010: 35). Confidentiality means that participants' information is safely guarded by ensuring privacy and anonymity with regard to the participant's identity and other personal details.

The consent letter was given to each participant. After reading the introductory letter and signing the consent, the participant then completed the questionnaire, which was anonymous, and all information was treated as confidential. The application of ethical principles is crucial to the research process. The researcher ensured that a high standard of ethics was applied to the research process, in keeping with the requirements of the Institutional Research Ethics Committee of Durban University of Technology.

The chapter that follows deals with the presentation of the results.

CHAPTER 4: PRESENTATION OF THE RESULTS

4.1 Introduction

The previous chapter discussed the research methodology used in this study. This chapter presents the results after the data was analysed regarding the factors that impacted on the retention of radiographers in KZN. Three questionnaires were used, namely one for radiographers that had worked in KZN and left the profession (referred to as “Left the Profession”); those that had worked in KZN and emigrated (referred to as “Emigrants”), and those who were working in KZN (referred to as “Working”). A number of factors from literature, which were assumed to have possibly had an impact on the retention of radiographers in KZN, were identified and included in the questionnaire where the participants selected answers, rated options or gave their opinions. The responses on the tested variables were grouped together to facilitate answering the objectives of the study. The participants included radiographers from the four disciplines of the radiography profession, namely ultrasonographers, radiotherapists, nuclear medicine technologists and diagnostic radiographers. The demographics have been described, and the objectives of this research study have been addressed under separate headings in this chapter. The objectives below have been addressed in the data presentation.

4.1.1 Research objectives

- To investigate the reasons why KZN radiographers resign from their places of employment.

- To investigate the reasons why KZN radiographers choose to remain in their places of employment.

- To identify factors that impact on job satisfaction amongst past and current KZN radiographers.

- To identify possible input for the improvement of the retention of KZN radiographers in the public service.

All the available radiographers who left the profession and those who emigrated were contacted and issued with online questionnaires. Of the 19 radiographers who had left the profession, sixteen (84 percent) responded. Twenty nine emigrants were contacted and twenty (69 percent) responded. The researcher personally delivered the questionnaires to the radiographers working in the selected KZN hospitals. From a target population of 300 participants, one hundrend and ninety one (63 percent) completed questionnaires.

The data was analysed with the assistance of a statistician, using the statistical software SPSS version 21.0.

The statistical aspect of the research included the following:

- Descriptive statistics using frequency and cross-tabulations and various types of graphs, including bar charts.

- Inferential statistics using Pearson's, Spearman's correlations and chi-square tests at a significance level of 0.05. P-values less than 0.05 were considered as significant.

4.2 Demographic information

In this section, participants' demographic information regarding employment in public and private hospitals, age, gender and number of years worked in KZN. This information provides a profile of the participants.

4.2.1 Employment in Public Hospitals and Private practices in KZN

The table below is a summary of employment in public and private practices for the three categories of respondents.

Table 4: Employment in Private and public hospitals

	Left			Emigrants			Working		
	Yes (%)	**No (%)**	**N**	**Yes (%)**	**No (%)**	**N**	**Yes (%)**	**No (%)**	**N**
Have you ever worked in a public hospital in KZN?	87,5	12,5	**15**	62,5	37,5	**16**	93,7	6,3	**188**
Have you ever worked in a private hospital in KZN?	50,0	50,0	**15**	66,7	33,3	**14**	49,5	50,5	**188**
Did you ever leave a public hospital to work in private in KZN?	37,5	62,5	**14**	43,8	56,3	**15**	32,8	67,2	**186**

Left the profession: The table indicates that a little more than a third of the respondents (37,5 percent, n = 5) had left the public sector to work in the private practice.

Emigrants: Nearly two-thirds of the respondents had some experience in public hospital and private practice. However, 43,8 percent (n = 7) indicated that they had moved from public to private practice.

Working: Most of the respondents had some public hospital experience (93,7 percent, n = 176), but about a third (32,8 percent, n = 61) had left and joined a private practice. A small percentage (6,3 percent, n = 12) had only worked in private organisations.

Comment: Although nearly two-thirds of the emigrants had some experience in public hospital and private practice, less than half the respondents (43,8 percent, n = 7) had left a public hospital to work in a private hospital. In the three respective groups, 37,5 percent (n = 5), 43,8 percent (n = 7) and 32,8 percent (n = 61) had moved from public to private practices. On average, over 80 percent of the respondents across the three categories had worked in public hospital while 50 percent had worked in private practices.

4.2.2 Age and gender

This section presents the age and gender of radiographers who left the profession, those who emigrated and those who were working in KZN at the time of the data collection.

Table 5: Age and gender representation

	Left Profession			Emigrants			Working			
Age	**Male (%)**	**Female (%)**	**Total (%)**	**Male (%)**	**Female (%)**	**Total (%)**	**Male (%)**	**Female (%)**	**Total (%)**	**Total (n)**
19 - 24	0	0	0	0	0	0	12,5	28,4	25,7	**12**
25 ≤ 30	0,0	23,1	18,8	0,0	43,8	43,8	21,9	20,0	20,3	**48**
30 ≤ 40	66,7	7,7	18,8	0,0	18,8	18,8	37,5	30,3	31,6	**40**
40 ≤ 50	0,0	61,5	50,0	0,0	18,8	18,8	18,8	8,4	10,2	**92**
50 ≤ 60	33,3	7,7	12,4	0,0	18,8	18,8	3,1	10,3	9,1	**26**
≥ 60	0	0	0	0,0	0.0	0.0	6,3	2,6	3,2	**3**
Total (%)	18,8	81,2	100	0,0	100,0	100,0	17,1	82,9	100,0	**206**
Total (n)	**3**	**13**	**16**	**0**	**16**	**16**	**32**	**157**	**189**	**221**

Table 5 indicates percentages in the various columns, with the last column representing the total numbers (n) across the three categories of participants. The bottom row represents the total number of males and females in each category.

Left the profession: In the category of participants who left the profession, 81,2 percent (n = 13) were female and 18,8 percent (n = 3) were male, indicating a dominance of females.

Emigrants: With regard to the gender representation of the emigrants, all the participants were female. The largest group (43,8 percent, n = 7) of participants who had emigrated was between 25 ≤ 30 years of age.

Working: Amongst the participants who were working in KZN, 82,9 percent (n = 157) were female and 17,1 percent (n = 32) were male participants.

Comment: The total number of female participants across the three categories is 186, which is almost six times the number of their male counterparts (n = 35). The greatest number of the participants (n = 92) were between 40 and < 50 years of age and the smallest group was in the age category 50 ≤ 60 (n = 26).

4.2.3 Duration that participants worked in KwaZulu-Natal

This section presents the duration that the participants across the three categories had worked in KZN. It also provides the duration worked before the radiographers either left the profession or emigrated.

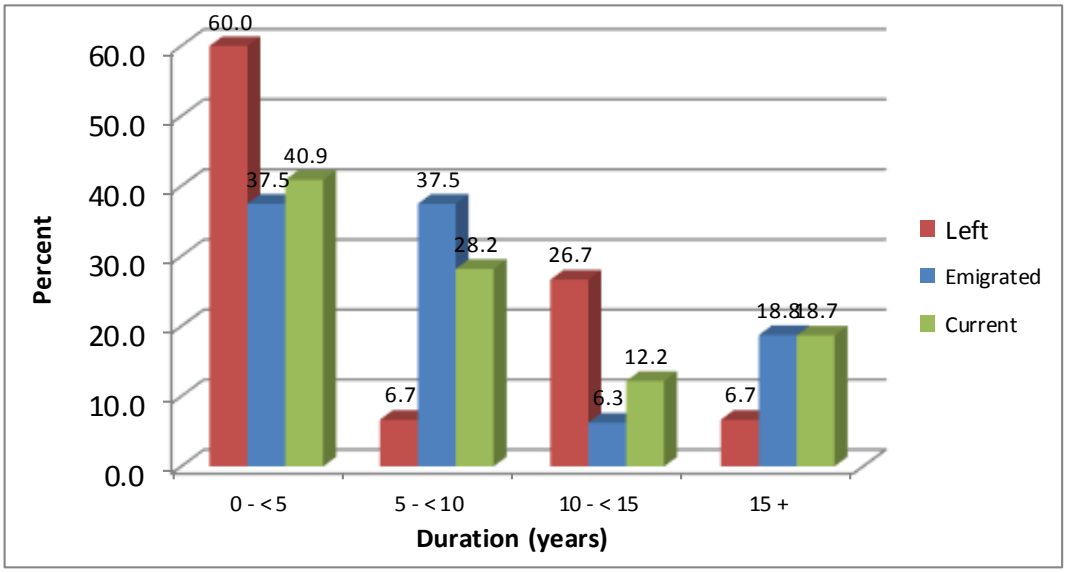

Figure 1: Duration that participants worked as radiographers in KwaZulu-Natal

Left the profession: Although some of the radiographers who had left the profession had been qualified for some time, as was indicated in Figure 1, the majority, namely nine (60 percent) had worked as radiographers for less than five years. Four (26,7 percent) had worked 10 ≤ 15 years, one (6,7) percent had worked for 15 and above years.

Emigrants: Most of the emigration took place within 0 ≤ 5 and 5 ≤ 10 years, as represented by six (37,5 percent) participants in both time brackets, whereas only one (6,3 percent) emigrated within 10 ≤ 15 years.

Working: Seventy-four (40,9 percent) of participants in this group worked in KZN between 0 and < 5 years, fifty one (28,2 percent) worked for 5 ≤ 10 years, thirty four (18,7 percent) for 15+ years and twenty two (12,2 percent) worked for 10 ≤ 15 years. These results were current for this group on the day of data collection.

4.3 Objective 1: Reasons why KwaZulu-Natal radiographers resign

This section presents the results for the reasons why radiographers resigned from their places of employment. It includes reasons for leaving public hospitals for private practice; reasons for resigning as obtained from exit interviews.

4.3.1 Reasons for leaving public hospitals for private practice

The results represent the three categories of participants who had worked in public and then moved to the private sector.

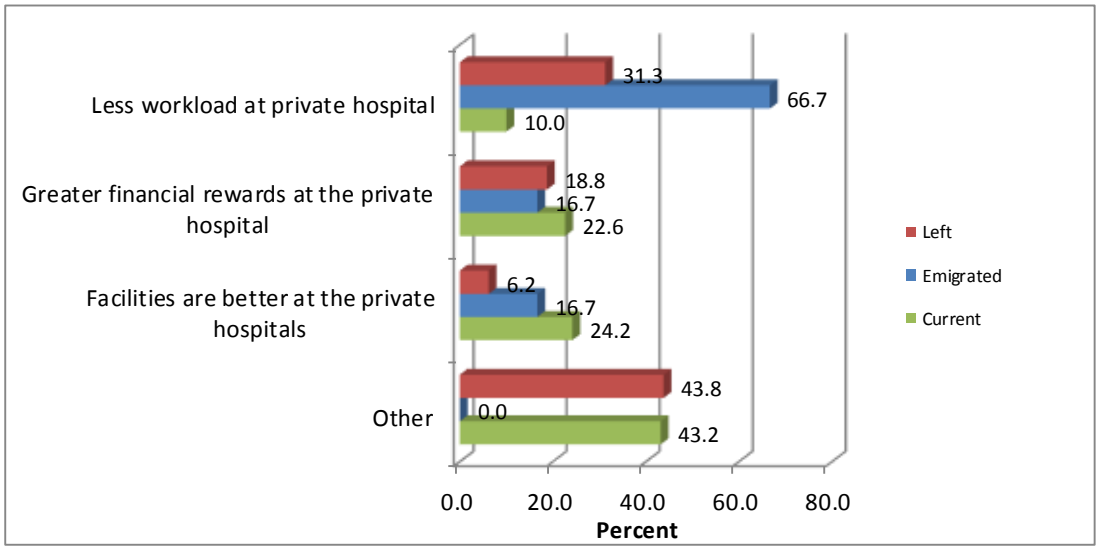

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Figure 2: Reasons for leaving public hospitals for private practice

Left the profession: Seven (43,8 percent) of the participants stated factors such as moving closer to their families and the transfer of their spouses as the main reasons for moving to private practices. Five (31,3 percent) of the radiographers stated the high workload at public hospitals as their reason for moving; three (18,8 percent) stated there were better financial rewards at private practices. One stated that better facilities at private practices had motivated them to leave public hospitals.

Emigrants: The greatest number of emigrants, namely four (66,7 percent), indicated that the primary reason they had left public hospitals was because there was a lower workload at the private practices than in KZN public hospitals. Two (16 percent) stated that there were greater financial rewards at private hospital, and one (6,7 percent) indicated that there were better facilities, as well as greater financial rewards in private practice.

Working: Eighty-two (43,2 percent) of this group stated factors such as wanting to be closer to their home, paying back private practice bursaries from their sponsors

and dismissal as reasons for moving from private practice to public hospital practices. Forty-six (24,2 percent) stated that there were better facilities in private practices than in public hospitals. Forty three (22,6 percent) stated that there was greater financial reward at private practices and ninenteen (10 percent) stated that a lower workload had prompted them to move to a private practice.

4.3.2 Reasons for resignation as stated in exit questionnaires

This section presents radiographers' reasons for their resignation as was provided by managers in radiology departments, from the exit interview/questionnaires. Managers extracted this information from the exit interview questionnaires in the staff records. These results were applicable to radiographers who had resigned from a public and/or a private hospital.

Table 6: Reasons for the resignation of radiographers (exit questionnaires /interviews)

	Managers	
	%	n
Family ties, such as a. lack of career opportunities for partners in the area.	58	7
The lack of social and cultural infrastructures in the area	67	8
A high workload and responsibilities due to an insufficient number of employees.	75	9
Hospital facilities and infrastructures were poor for the users, as well as insufficient.	8	1
Poor remuneration.	100	12
Emigration – moving closer to family and relatives.	100	12

Table 6 presents the reasons for the resignation of radiographers from departments as extracted by managers from exit interviews conducted with the radiographers. Twelve managers from the public and private sectors answered this section of the questionnaire. The number (n) indicates the number of managers who stated various reasons for radiographers' resignations.

Poor remuneration and moving closer to family and relatives were stated as being the main reasons for resignations. Both reasons were indicated by all twelve (100 percent) managers as reasons for emigration. Nine (75 percent) of managers stated that radiographers had resigned due to a high workload and responsibilities caused by insufficient staff/employees. A lack of social and cultural infrastructures were also reasons stated by eight (66 percent) of managers. Seven (58 percent) of managers stated that social factors, such as family ties and lack of career opportunities for their partners in the area had also been contributing factors. One manager stated that radiographers had resigned due to poor and insufficient hospital facilities and infrastructures.

4.4 Objective 2: Reasons for remaining in their current employment

Although some of the radiographers emigrated, left the profession, moved from public to private practices and vice versa, some opted to remain in their places of employment. This objective addressed the factors that motivated radiographers to remain in their workplace.

4.4.1 Factors that motivated radiographers to remain in public hospitals

These section addressed factors that motivated some radiographers to remain in the public hospitals.

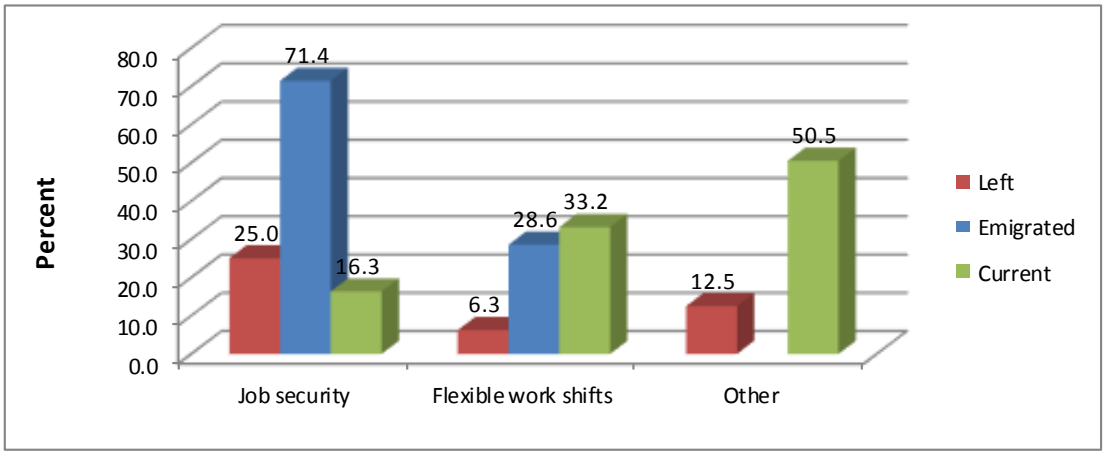


Figure 3: Factors motivating radiographers to work in KwaZulu-Natal public hospitals

Left the profession: Four (25 percent) of participants stated that job security had motivated them to remain in KZN public hospitals, whereas one stated flexible work shifts as motivation.

Emigrants: Five (71,4 percent) of the participants stated that they opted to remain in KZN public hospitals because there was job security, and two mentioned flexible work shifts.

Working: Similarly, ninety five (33,2 percent) of radiographers who were working also identified flexible work shifts as a reason to remain in public hospitals, whereas for thirty one (16,3 percent) of them it was job security.

4.5 Objective 3: Factors impacting on job satisfaction

Job satisfaction could be negative or positive so in the context of this study those who experienced negative satisfaction could be said to be dissatisfied and those who experienced positive job satisfaction would be deemed to be satisfied with their jobs. This objective addressed radiographers' expectations and factors resulting in satisfaction.

4.5.1 Radiographers' expectations

The results presented in Table 7 reflect the responses of radiographers who had left the profession in KZN those who had emigrated. If expectations were not met, this could possibly contribute to dissatisfaction with their jobs, and if they were met it could contribute to satisfaction.

Table 7: Expectations of radiographers

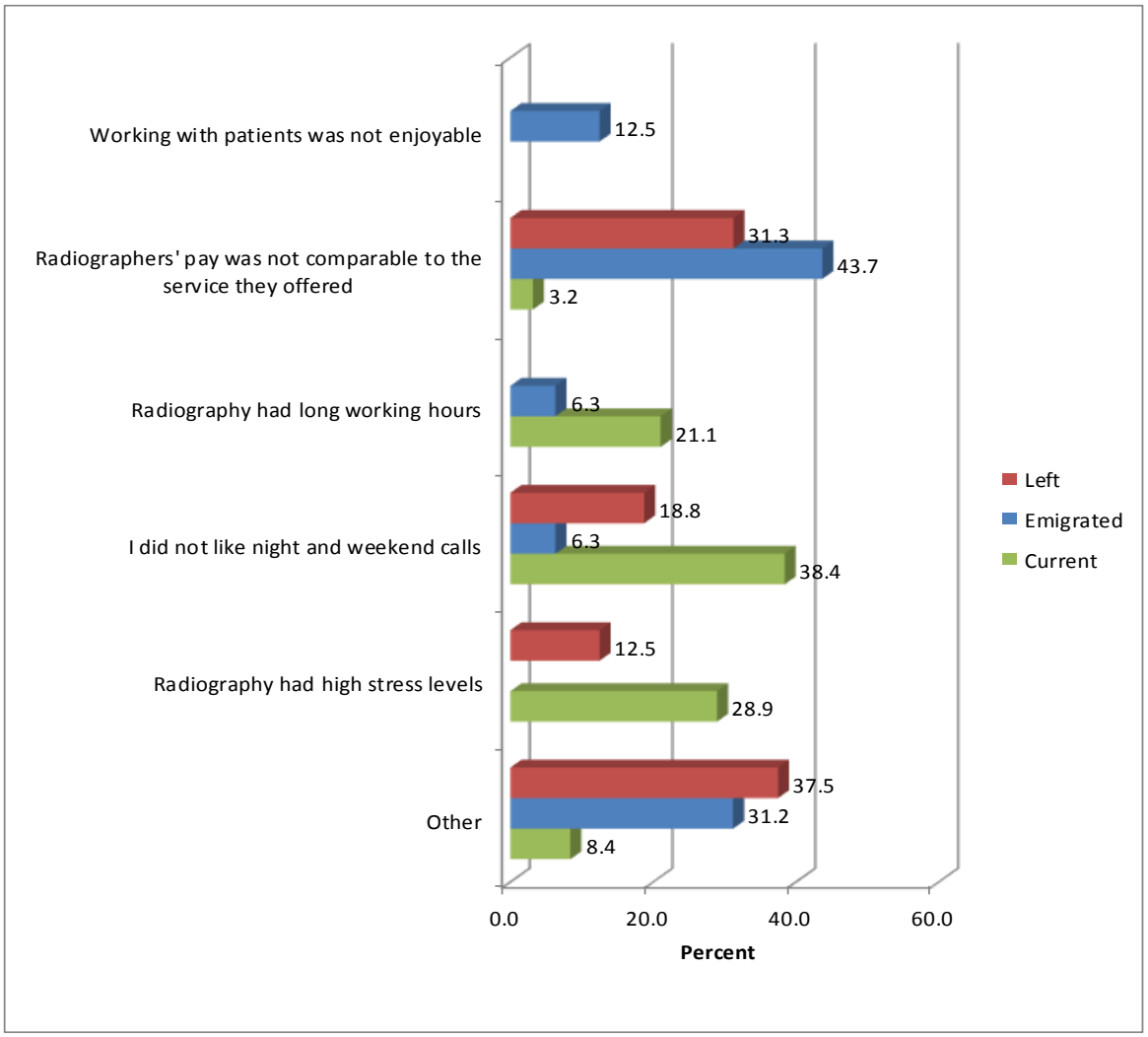
	Left the profession		**Emigrants**	
	%	**n**	**%**	**n**
Good remuneration	45,5	5	68.8	11
Good working conditions	36,4	4	18.8	3
Stress-free working environment	18,2	2	100.0	16

Left the profession: Five (45,5 percent) of participants expected good remuneration, four (36.4 percent) expected good working conditions and two (18,2 percent) stated that they had expected stress-free environments.

Emigrants: The majority of emigrants (68 percent) expected good remuneration, while 18,8 percent expected good working conditions.

4.5.2 Factors Leading to dissatisfaction

Factors that contributed to radiographers' dissatisfaction are discussed below. The three categories of respondents provided responses regarding factors that contributed to their overall negative feelings towards their jobs. These have been summarised on the figure 4.0 below.



FFigure 4: Setbacks to radiographers enjoying their profession

Left the profession: Five (31,3 percent) of participants stated that radiographers' remuneration was not comparable to the services they provided. Three (18,8 percent) stated that they did not enjoy night shift and weekend calls, while two (12,5 percent) stated that radiography caused high stress levels.

Emigrants: Seven of the participants stated that remuneration for radiographers was low in relation to the services they offered and five (31,2 percent, n = 5) stated that radiographers were poorly represented at regional level. One of the participants stated that he/she did not enjoy night shifts and weekend calls, while another mentioned the long working hours.

Working: Fifty-five (28,9 percent) in this category stated that the high stress levels in radiography were responsible for radiographers not enjoying the profession, while four (21,1 percent), mentioned long working hours.

4.5.3 Hours worked in a week in KZN

This section presents the hours worked by the three categories of participants whilst working in KZN. This could contribute negatively or positively to job satisfaction.

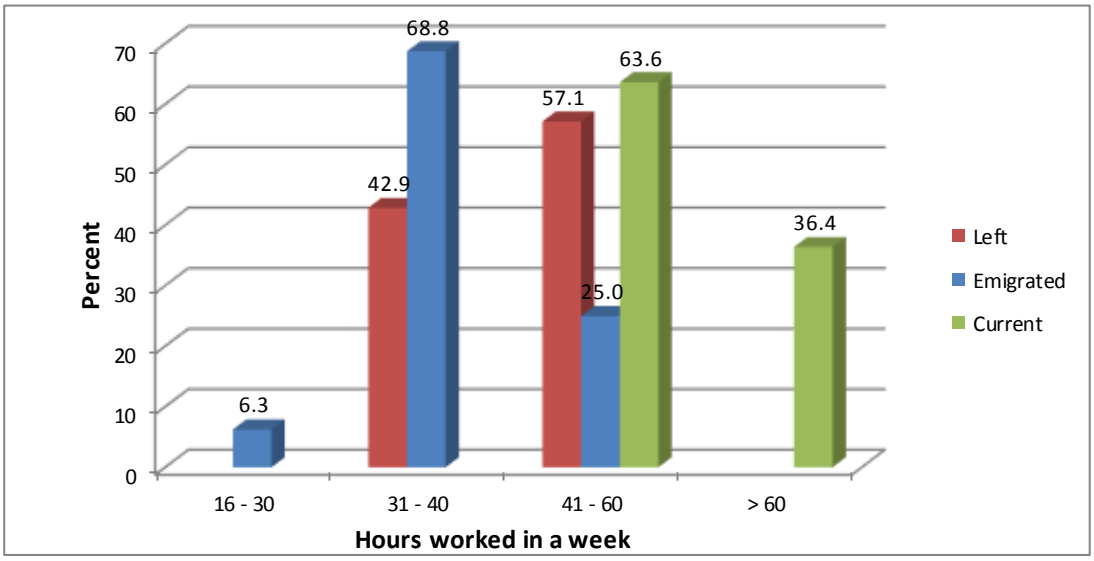


Figure 5: Hours worked by radiographers per week.

Left the profession: The majority in this category (four, 57,1 percent), worked between 41 and 60 hours per week, while the minority (six, 42,9 percent) worked between 31 and 40 hours per week.

Emigrants: The majority in this category (eleven, 68,8 percent) worked between 31 and 40 hours, whereas four (25 percent) worked between 41 and 60 hours a week.

Working: It was noted that one hundrend and twelve (63,6 percent) of the radiographers in this category worked more than 40 hours a week, while sixty four (36,4 percent) worked more than 60 hours per week.

4.5.4 Overtime and compensation

These results indicated the overtime worked as well as the method of compensation for overtime.

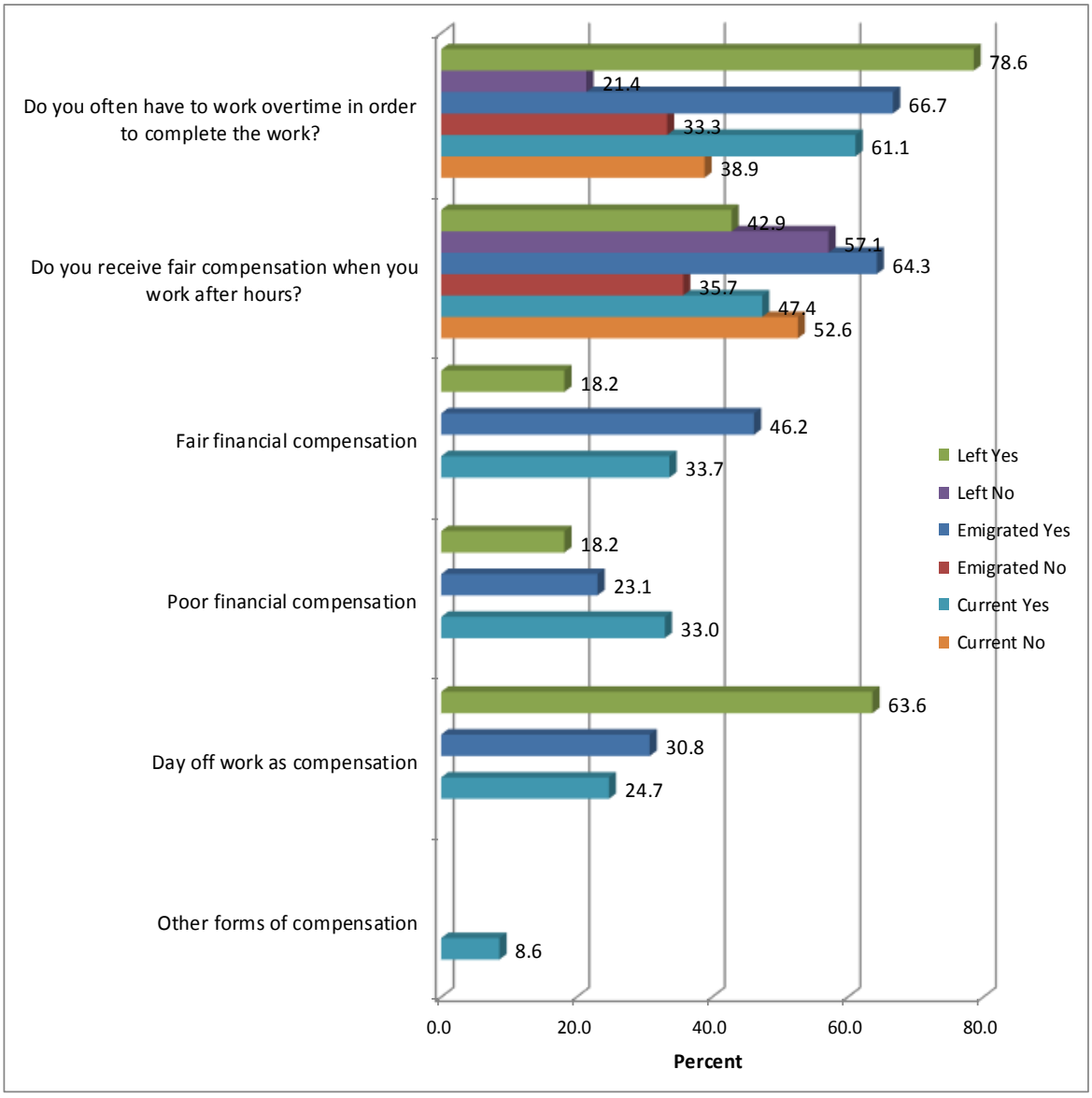


Figure 6: Overtime and compensation

Left the profession: Eight (78,6 percent) of the participants stated that they had to work overtime in order to complete their work. Although seven (63,6 percent) stated that they received a day off as compensation, six (57,1 percent) stated that they did not receive fair compensation when they worked overtime.

Emigrants: Ten (66,7 percent) participants stated that they had to work overtime in order to complete their work and nine (64,3 percent) stated that they received fair compensation.

Working: Some one hundred and five (61,1 percent) participants stated that they often had to work overtime in order to complete their work. Ninety (52,6 percent) of the participants stated that they did not receive fair financial compensation. Sixty four (36,4 percent) stated that they received a fair financial reward, whereas sixty three (33,0 percent) felt that the financial rewards were poor. Sixteen (8,6 percent) participants stated that other forms of compensation, such as performance appraisal by management and certificates of appreciation were used.

4.5.5 Symptoms associated with work routine in radiography

This section presents results that may indicate a relationship between the profession of radiography and the disease symptoms listed and could impact on job satisfaction. This data was based on the opinions of the participants.

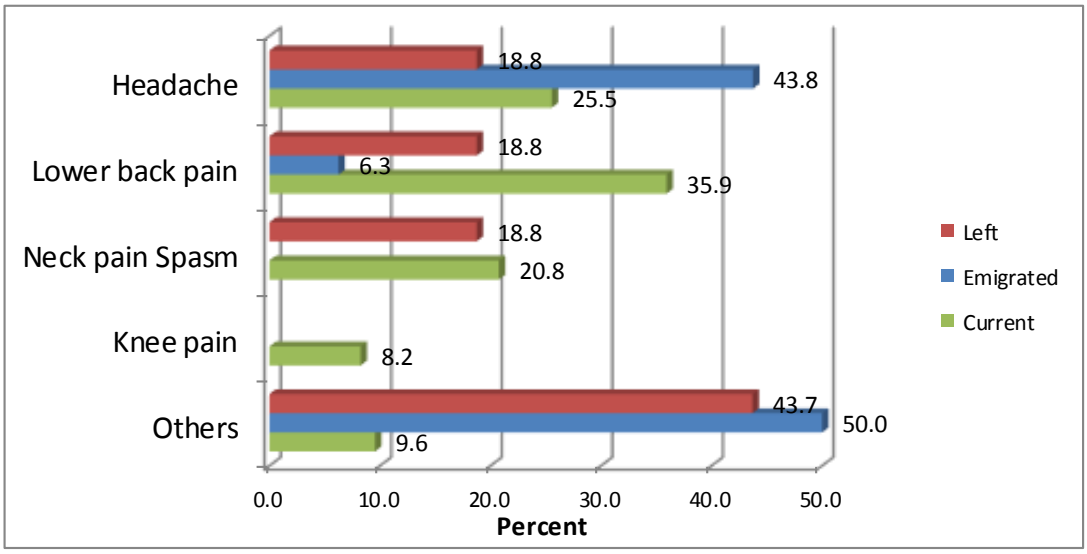


Figure 7: Symptoms associated with work routine

Left the profession: Six *(*43,7 percent) participants claimed that other factors, such as weak nails, painful feet, a hernia due to lifting patients and loss of an eye which could be associated with radiation effect, were related to their work. On the other hand, headache, lower back pain, neck pain and spasms were indicated by three (18,8 percent) of the participants as some of the symptoms they felt were related to their work.

Emigrants: Eight (50 percent) participants identified muscle spasm, a painful body and stress as possibly being work-related, while seven (43,8 percent) stated that they experienced headaches and one (6,3 percent) experienced lower back pain.

Working: Some one hundrend and thirty five (35,9 percent) of these radiographers experienced lower back pain, ninty six (25,5 percent) experienced headaches, Seventy eight (20,8 percent) suffered neck spasms, thirty one (8,2 percent) identified knee pain, while thirty six (9,6 percent) stated other factors, such as pulmonary tuberculosis due to poor ventilation; sleeplessness, immunosuppression; as well as wrist, thumb and shoulder pain, psychological and physical stress as being possible work-related symptoms.

4.5.6 Implementation of Occupational-Specific Dispensation

The section on OSD was directed only at radiographers who were working in KZN at the time of data collection as some of the radiographers in the other two groups may have left the profession or emigrated before its implementation in 2008.

It was found that one hundred and thirty seven (84,6 percent) of the participants were not satisfied with the implementation of OSD, whereas twenty five (15,4 percent) were satisfied. This data reflects the opinions of the participants.

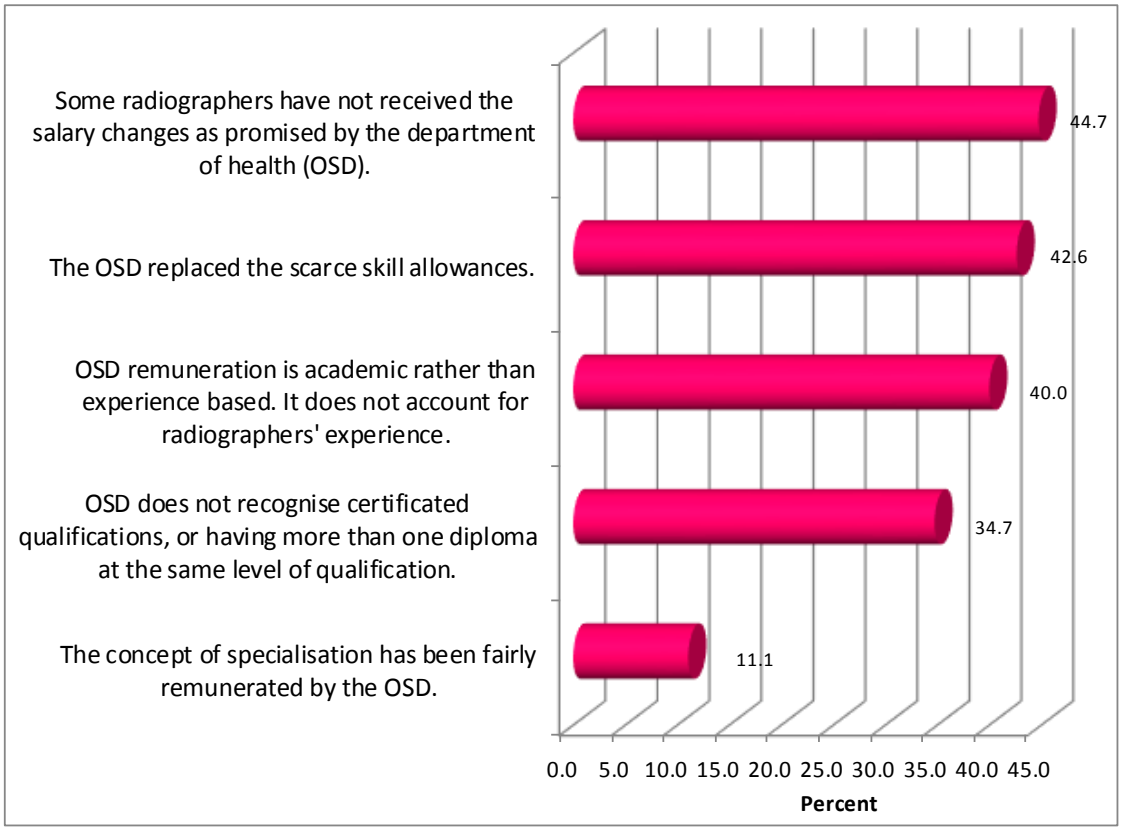


Figure 8: Effect of implementation of Occupation-Specific Dispensation

Almost half of the participants (eighty five, 44,7 percent) stated that radiographers had not received the salary changes as had been promised by the DoH. Eighty one (42,6 percent) stated that OSD had replaced the scarce skills allowances that were received before OSD. Seventy six (40 percent) pointed out that the OSD remuneration was based on academic criteria and not experience. However, in contrast to this, sixty five (34,7 percent) participants stated that OSD did not recognise certificate qualifications or the possession of more than one diploma at the same level. These responses were based on the opinions of the participants.

The cross-tabulation was done on variables regarding OSD implementation and staffing in radiography departments at KZN hospitals. The Fisher's exact test produced a P-value of 1,0. This indicates that there was no statistical significance between the two variables.

4.5.7 Factors resulting in satisfaction

This section presents the factors that may have resulted in satisfaction amongst radiographers who were working in KZN.

Table 8: Factors resulting in satisfaction

	n	%
I enjoy helping patients	159	84,2
The remuneration is better than in other fields	7	4,2
Radiography is not boring	94	50,5
Other	10	5,3

This section targeted the radiographers who were working in KZN at the time of data collection. There were one hundrend and fifty nine (84,2 percent) participants who stated that they enjoyed helping patients. A little more than half of the participants stated that the radiography profession was not boring; and seven (4,2 percent) stated that the remuneration was better than in other fields. Ten (5,3 percent) participants stated factors such as the availability of a job in the radiography profession and the availability of rural allowances as resulting in satisfaction.

4.6 Objective 4: Improvement of retention in KwaZulu-Natal

This section targeted the three categories of participants regarding the possible suggestions for improving retention in the radiography profession in KZN. Firstly, radiography was compared to other careers that radiographers had moved to or would consider changing to.

4.6.1 Comparison between radiography and other careers

A comparison was made between radiography and other careers in order to provide an understanding of the factors that had motivated, or could motivate radiographers to resign and venture into other professions.

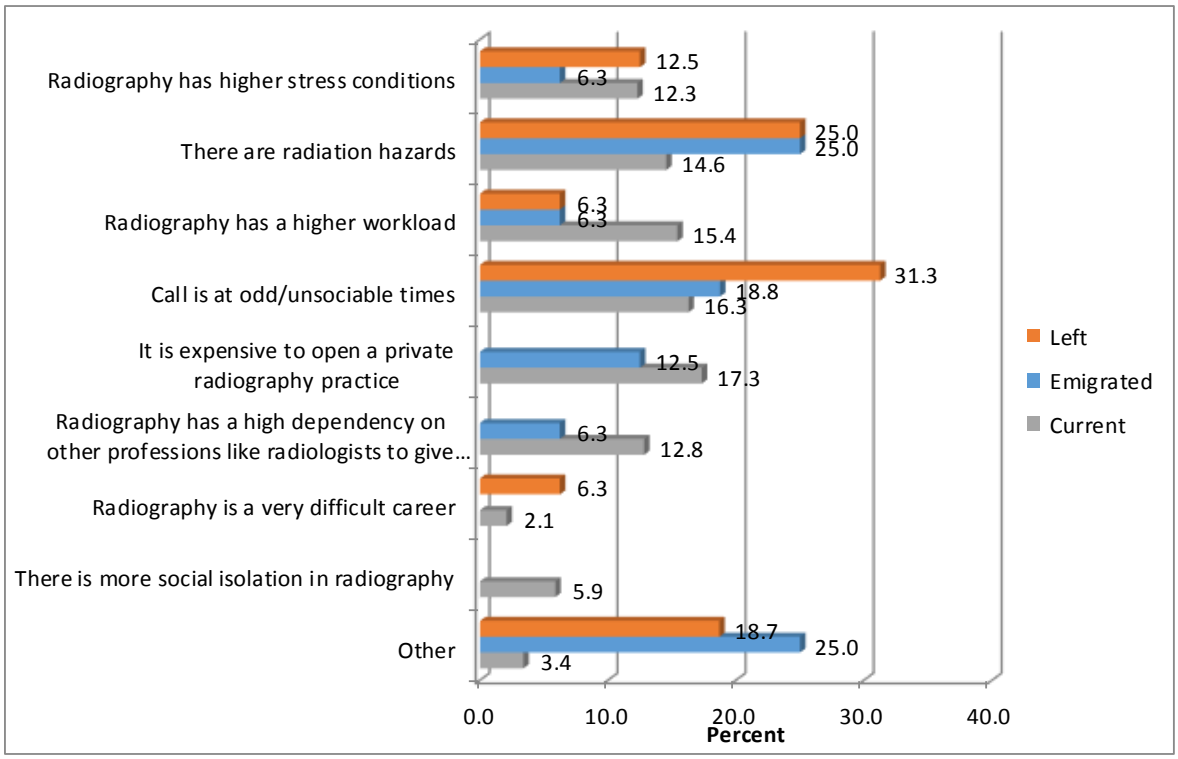


Figure 9: Comparison between radiography and other career choices

Left the profession: Despite radiography being their original choice of career, participants did identify some negative aspects as compared to other professions. Five (31,3 percent) stated that radiography had after hours calls at odd/unsociable times, while four (25 percent) stated that radiography had radiation hazards. The fact that radiography has a higher workload and is a very difficult career to follow, was mentioned by one (6,3 percent) of the participants. Three (18,7 percent) identified factors such as poor remuneration, demoralisation from peers and

understaffing as being the negative aspects of radiography, compared to the careers they had moved to.

Emigrants: Four (25 percent) of the emigrants stated that there were radiation hazards in radiography, while three (18,8 percent) identified calls at unsociable times as being negative factors. Three (12,5 percent) said it was expensive to open a private radiography practice, one radiographer identified the high dependency on other professions as a challenge, while another participant mentioned the high workload as being a challenge. Four stated other factors, such as a lack of career and professional development, as well as poor remuneration as negative aspects of radiography.

Working: Forty (17,3 percent) participants stated that it was difficult to open a private practice, while thirty eight (16,3 percent) mentioned calls at unsociable hours as challenging factors. Other factors identified were a high workload for thirty six (15,4 percent), an over-dependence on other professions was stated by thirty four (12,8 percent) and high stress levels were mentioned by twenty eight (12,3 percent). Radiography's high level of social isolation was mentioned by fourteen (5,9 percent), and five (2,1 percent) identified its high degree of difficulty as a career as being negative aspects compared to other careers. Furthermore, eight (3,4 percent) highlighted other factors, such as the high risk of nosocomial infections and poor remuneration as being negative, while it was noted that in other professions additional qualifications were recognised and remunerated.

4.6.2 Suggestions for improving retention

All groups of participants provided the suggestions stated in Figure 10 below.

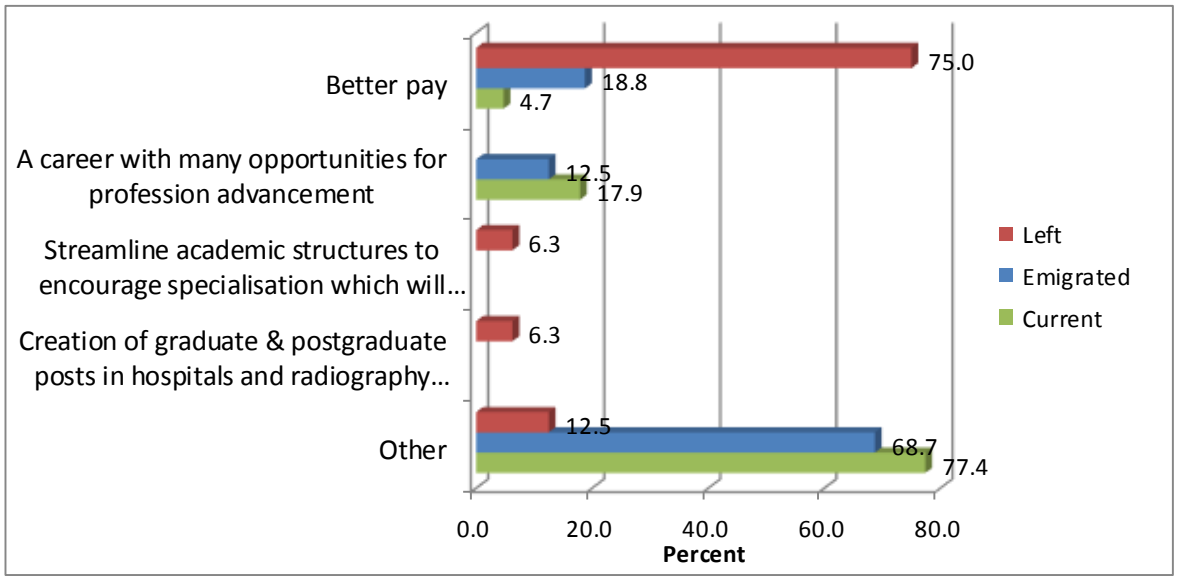


Figure 10: Suggestions for improving retention of radiographers

Left the profession: Twelve (75 percent) suggested that radiography needed improved remuneration. The need to streamline academic structures, in order to encourage specialisation that would possibly reduce stress at work, was suggested by one participant. Another participant suggested the creation of graduate and postgraduate posts at hospitals and at provincial level (for radiography administration). Two (12,5 percent) of the participants suggested other factors, such as advancing and diversifying the scope of practice for radiographers in order to avoid over-dependence on other professions.

Emigrants: Of those who had emigrated, eleven (68,7 percent) suggested the need for an improvement in salaries, and two (12,5 percent) agreed that there was a need for professional development in radiography. One participant suggested streamlining academic structures in order to encourage specialisation, which would reduce stress.

Working: Ninenty seven (51,1 percent) participants suggested the creation of graduate and postgraduate posts in hospitals and at provincial level. Some seventy

eight (41,1 percent) suggested the streamlining of academic structures to encourage specialisation, while thirty four (17,9 percent) suggested improving opportunities for professional advancement in radiography. Improved salaries were suggested by seven (4,7 percent) of the participants, whereas one hundrend and forty seven (77,4 percent) suggested remuneration for additional qualifications. The following ideas were also suggested by others: The introduction of distance learning; improved infrastructures and facilities; the empowering of radiographers and the removal of the implementation of equity.

4.6.3 Suggestions for improving the radiography profession

Participants working in KZN provided the suggestions in Table 9 that could be used as input for improving the current status of radiography.

Table 9: Suggestions for improving the radiography profession

	Working	
	%	**N**
DUT must create opportunities for further studies like its counterparts.	0,5	1
OSD must be removed or implemented via consultation with radiographers at all levels.	0,5	1
Appropriate recognition of additional qualifications – financial and promotional.	1,1	2
OSD never improved the lives of radiographers. Categories are too wide.	3,2	6
Streamline academic structures to encourage specialisation, which will reduce work-related stress.	41,1	78
The creation of graduate and postgraduate posts in government and other fields outside hospitals.	51,1	97
The scope of practice of radiographers should be advanced and diversified to avoid over-dependence on other professions, such as radiology.	53,7	102

Working: More than half of the participants (53,7 percent) stated that the scope of practice for radiographers should be advanced and diversified to avoid over-

dependence on other professions. On the other hand, ninty seven (51,1 percent) of the participants highlighted the need for the creation of graduate and postgraduate posts at government level, so as to improve the radiography profession. Seventy eight (41,1 percent) of the participants stated that academic structures should be changed in order to encourage specialisation. Others stated that OSD should be reviewed by consulting with radiographers at all levels.

4.7 Conclusion

The research results presented above attempted to address the four objectives of the study, namely the reasons why radiographers resigned, the reasons why radiographers chose to remain in their places of employment; factors that impacted on job satisfaction amongst past and current KZN radiographers; as well as the improvement of the retention of radiographers in the KZN public service.

The next chapter will present a discussion of the results of the study.

CHAPTER 5: DISCUSSION OF THE RESULTS

5.1 Introduction

The preceding chapter gave a presentation of the results for this study. In this chapter, the results and trends demonstrated on the figures and tables in Chapter 4 are discussed. They are then linked to the aim and objectives of the study. The objectives discussed are as follows:

- To investigate the reasons why KZN radiographers resign from their places of employment.

- To investigate the reasons why KZN radiographers choose to remain in their place of employment.

- To identify factors that impact on job satisfaction amongst past and current KZN radiographers.

- To identify possible input for the improvement of retention of KZN radiographers.

5.2 Demographics

Demographic information of the participants, such as employment in public and private hospitals, gender, age and number of years worked as a radiographer was used to establish the various attributes of the participants. The employment in public and private hospitals was used to obtain a profile of the participants' employment sector. The gender profile was used to indicate the gender dominance in the profession The ages of participants, the participants who were working

abroad, those who had left the profession and who were working in KZN at the time, were also compared. The duration that radiographers had worked in KZN was used to ascertain how long the KZN government was able to retain radiographers. These demographic variables were obtained to establish their significance in the retention of radiographers.

5.2.1 Employment in Public Hospitals and Private practices in KwaZulu-Natal

The respondents in the three categories had a significant number of respondents that had moved from public to private practices. There were 37, 5 percent (n = 5), 43, 8 percent (n = 7) and 32, 8 percent (n = 61) of those had left the profession, emigrated and radiographers working at that time who had moved from public to private practices. The emigrants had the greatest number and the working group had the least number of respondents that had moved from public to private practices. It is seen in Figure 2 that emigration was due to the high workload at public hospitals as compared to private practices. Similarly there was a better financial reward and better facilities in private as compared to public hospitals. Emigration from public sector to private sector in KZN was mainly due to better remuneration, better working conditions and career advancement opprtunities in private sector (Naicker (2011: 78). Similarly, job security and retirement benefits were the reasons that made employees remain at the public sector (Naicker (2011: 76). These factors could explain why radiographers chose to work in either public or private hospitals. It should be noted that all graduates are required by law to complete a year of Community service after qualifying. After this they are able to choose whether to work in private or public hospitals. This could explain the high number of radiographers who had worked in the public hospitals.

5.2.2 Gender and age

There was a great gender disparity depicted amongst participants, with females dominating the profession – as previously indicated in Table 5. This was extreme in the emigrants' category, where the total number of participants were all female. There were 35 male participants out of a total of 221 participants, which could indicate that there is possibly almost five times the number of female radiographers than males in KZN.

Radiography in South Africa is dominated by female radiographers, which could mean that, factors such as child-rearing and maternity leave, could possibly impact on absenteeism. In South Africa, maternity leave of at least four consecutive months is permitted in terms of the Basic Conditions of Employment Act, 1997 (Act No. 75 of 1997) (South Africa 2004: 14). Similarly, the WHO requires that a female radiation worker, after disclosing her pregnancy, should be accorded alternative working conditions in order to protect the embryo or fetus from receiving a radiation dose exceeding 1 mSv (International Atomic Energy Agency 2002: 198).

Although radiography was depicted as having long working hours, it was noted that, in the USA, many female workers opted for careers with flexible schedules, despite the lower remuneration, rather than careers requiring longer, rigid hours. This was due to their roles with regard to child-rearing and housework (Iversen & Rosenbluth 2011: 5). Female employees were noted to be seeking work places that offered normal hours, good working conditions and safety according to Parcheta et al. (2013: 243).

The absenteeism, selective duties for pregnant radiographers and maternity leave could possibly impact on staff shortages, as well as an increased work load and stress for other staff members in the department, thereby resulting in dissatisfaction and resignations. Therefore, an increase in the number of males in

radiography could possibly be achieved through marketing guidelines that target this gender group.

In the category of radiographers who were Working, the majority of participants were in the age bracket 40 ≤ 50, while the emigrants were in the age bracket 25 ≤ 30. It could be deduced that most of the emigrants had left South Africa soon after graduating and completion of their Community Service. Similarly in 2008, it was also noted that the majority of young radiographers had emigrated from Nigeria (Ugwu *et al*. 2008: 27).

Emigration at a young age would result in a loss of young professionals in hospitals, which would result in a severe shortage of radiographers after the majority of the working age group retires. More than 50 percent of the three categories of participants in this study were in the age group 40 ≤ 50 and above. This could be due to emigration taking place at an early age (between 25 and < 30 years), as 43,8 percent of the emigrants within this age bracket had left, which is a highly productive age. It was noted that productivity decreased after the age of 50 (Skirbekk 2003: 2) so young professionals are vital to the profession.

It could be deduced that the high rate of emigration within this young age group might be associated with the fact that young people tend to have fewer family commitments or may not have long-term credit maintenance that may prevent their emigration. The results revealed that the emigration of KZN radiographers took place soon after graduation, which meant that this very productive age was not being retained in the province. This could result in compromised service delivery and a shortage of radiographers in KZN. It is likely that this situation may worsen after the current dominating age group (30 ≤ 40) retires. Therefore, the retention of young radiographers is of paramount importance in KZN and in SA.

5.2.3 Duration that participants had worked as radiographers in KwaZulu-Natal

It was noted that most of those who had emigrated and those who had left the profession did so within 10 years of commencing work in KZN (Figure 1). Of the radiographers working in KZN, only 18,7 percent had worked for more than 15 years. The fact that the number of radiographers working seems to decrease with the increase in the number of years of experience, could signify that the retention strategies in KZN need to be addressed in order to retain the younger professionals. It appears that the older radiographers are more likely to remain in their workplaces in KZN, while the younger ones choose to leave for various reasons.

5.3 Reasons why KwaZulu-Natal radiographers resign

This section addresses objective one, which is:

- To investigate the reasons why KZN radiographers resign from their places of employment.

The reasons for moving from public hospitals to private practices and the reasons for resigning (obtained from exit interviews) are discussed below. The discussions presented below are related to the responses of the three categories of participants.

5.3.1 Reasons for leaving public hospitals for private hospitals

The significant shortage of radiography staff in KZN was noted during the period 2008 to 2010, where 463 radiographers were employed in KZN in 2008/2009

(South Africa 2010: 42), as compared to the 454 who were employed in 2010. In that same year (2008/2009), 437 of 1 621 national radiography vacancies were in KZN (South Africa 2010: 5). This represents approximately 25 percent, which is an alarmingly high vacancy rate for one province. According to SORSA (2008: 1), the shortage of radiographers could have been the result of emigration and radiographers leaving public hospitals for the private sector (Society of Radiographers of South Africa 2009: 1).

The main reason for resignations by both the emigrants and radiographers who left the profession was the workload. Private hospitals in KZN appear to have a lower work load than public hospitals. In Nigeria it was found that the low number of radiographers in the country resulted in a high work load which, in turn, resulted in resignations (Ugwu *et al.* 2008: 27). Furthermore, the high workload in this country contributed to both musculoskeletal and psychosocial stress (Ugwu *et al.* 2008: 27). The musculoskeletal and psychosocial stress experienced by radiographers in KZN could also be contributing to resignations, due to an increased workload in the public hospitals.

The participants Working in KZN identified better facilities and greater financial rewards at private hospitals as being the most significant factors that motivated them to move to private hospitals. Similarly, in the Asia-Pacific region, superior technology and high salaries were found in the private sector, which contributed to migration (Connell 2010: 14). Greater access to enhanced technology and better remuneration in developed countries also resulted in resignations and consequently emigration from developing countries to developed countries (Astor *et al*. 2005: 2 492).

This implies that there are possibly adequate staffing and a spirit of teamwork in the private sector, which could be the reason why there is a lower workload in developed countries where there are many private practices. Vosper *et al.* (2004:

1) highlight factors such as increased remuneration and improved working conditions as the key factors that motivated radiographers to remain in the profession. It is possible that radiographers in KZN moved to employers who were able to offer better remuneration and had better facilities. It was also noted that a desire to be closer to home, as well as returning to the private sector to fulfill bursary contracts to sponsors, were other factors that prompted radiographers to leave public hospitals.

5.3.2 Reasons for resignation according to exit interviews

The exit questionnaire is the final formal meeting between management and an employee who is leaving a company or an organisation. It is used as a learning opportunity for management, seeking the views of the resigning employee regarding work-related problems that had possibly caused the employee to resign from the job (Online Business Dictionary 2014). The exit interview can be face-to-face or it may be in the form of a questionnaire that is completed by the employee.

In this study, the KZN radiography managers in both public and private hospitals completed the section of the questionnaire relating to radiographers' reasons for resignation, using information from the exit questionnaire/interviews previously conducted in their departments. According to the exit interviews, the main reasons for resignation were to move closer to family and relatives and pursuing better remuneration. When referring to Frederick Herzberg's two-factor theory on satisfaction-hygiene factors, Bateman and Snell (2011: 469) mentioned remuneration as one of the key conditions for job satisfaction in any organisation. Naicker (2011: 72) stated that pharmacists in KZN had become despondent and had resigned, due to the fact that their renumeration did not match their skills and experience. This could also have been the case with radiographers who may have resigned in pursuit of better remuneration as part of a need for job satisfaction.

5.4 Reasons for remaining in their current employment

This section addressed objective two:

- To investigate the reasons why KZN radiographers choose to remain in their place of employment.

In order to address the above objective, the researcher targeted the participants who had emigrated and had worked in KZN, those who had left the profession and those who were working in the public sector. The public sector in KZN was described as having poor working conditions, poor infrastructure and poor remuneration (Table 6). Despite the poor working conditions, it was found that as far back as 2000 (Van der Vyver and De Villiers 2000: 20), there were employees working in South African public hospitals who valued the employment security and appreciated the flexible work schedules.

5.4.1 Factors that motivated radiographers to remain in public hospitals

In Figure 4, participants stated that the main factor motivating them to remain in a public hospital was job security. The flexible shifts were also a factor, as were others, such as the fact that it was not easy to be dismissed and that there was no direct intimidation from the employers. In his findings, Naicker (2011: 76) stated that job security was a vital aspect in the retention of employees in any organisation. Job security therefore seems to be the main factor motivating radiographers to remain in the public sector, as it assures them of safety in their employment.

The Human Resources for Health in South Africa (2009: 42) stated that, in order to curb attrition, government had put in place medical aid, a 13th cheque, a pension

fund, commuted overtime and rural allowances (limited to those working in rural areas). The afore-mentioned could be the incentives that provided security to government employees for many years, in spite of poor working conditions and a workload.

In the USA Owley *et al.* (2002: 4) found that nurses who had left the profession were willing to return if there were better staffing and flexible work schedules to enable employees to perform other essential duties and meet their family needs. This appears to be of great importance with regard to employee satisfaction and retention in the public sector. The retention of employees was related to job security, remuneration and working conditions at their place of work.

It was found that the job security and flexible shifts at the work place were the main factors that encouraged radiographers to remain at their places of employments.

5.5 Factors impacting on job satisfaction

This section addressed objective three, that is:

- To identify factors that impact on job satisfaction amongst past and current KZN radiographers.

This section focuses on addressing the objective and at identifying the factors that impact on job satisfaction amongst past and current radiographers in KZN. The factors that affected the overall opinion of radiographers; their perception regarding their job routine; and the working environment are discussed. Both satisfaction and dissatisfaction amongst radiographers will be discussed. The negative perception of any employee (in this case, the radiographer) could yield dissatisfaction and consequently might result in resignation. Therefore, factors that resulted in

employees leaving a job could be centred around their level of satisfaction. Bateman and Snell (2011: 469) postulate that a job is presumed to be both satisfying and motivating if the needs of the worker are being met.

The satisfaction level is an important factor in the retention of employees in any organisation. Job satisfaction directly affects the employees' happiness and performance, which means that human motivation is a priority for effective human performance (Dizgah *et al*. 2012: 1735). That being the case, if healthcare workers become dissatisfied, they may resign for a variety of reasons, such as being demotivated by a poor healthcare infrastructure, bad health management and problems in the working environment, which could contribute to their resignation.

5.5.1 Radiographers' expectations

An employee's expectations can affect his/her level of satisfaction with their work, depending on whether those expectations are met or not. A significant number of the radiographers who were working (56,4 percent) stated that they were not obtaining what they had expected from the radiography profession. This suggests that they were distracted while in their profession, which could have affected their morale and satisfaction level in the workplace, thus causing them to resign, leave the profession or emigrate.

Vosper *et al.* (2004: 85) found that, although there was employment availability in Britain, newly qualified radiographers did not recommend radiography as a profession, due to their expectations having not been met. The greatest expectations from both emigrants (eleven; 68 percent) and the radiographers who had left the profession (five; 45 percent) in KZN was better remuneration.

Remuneration could also be a factor, as was found by Chan (2007: 21), who reported that low morale and poor financial rewards were the challenges in

attracting radiographers to Australia. Three of the emigrants in the KZN study and four of those who had left the profession, expected good working conditions. The Human Resources for Health in South Africa (2009: 32) found that poor infrastructure and a heavy work loads locally were driving health staff away from South Africa and attractive salaries and better working conditions were factors that were attracting them to foreign countries. This meant that the compromise of expectations of better remuneration and better working conditions could contribute towards their resignation. Lovegrove and Price (2002: 2) confirmed that the shortage of radiographers in the UK was as a result of a lack of resources for training, but radiographers had expectations of better career prospects.

There was no significant relationship found between the duration that radiographers had worked and the remuneration they received in KZN (P-value 0,742). This suggests that the remuneration received, being a great expectation, did not play a pivotal role in the retention of radiographers as they remained in their jobs even though remuneration was not related to the number of years they had worked. The retention challenges could be associated with other factors besides the remuneration – for example, working conditions. Monetary rewards do not always result in professional satisfaction, as was stated by the Australian Department of Human Services (2005: 55) as employees opted for jobs with a lower salary that could offer greater job satisfaction.

5.5.2 Factors leading to dissatisfaction

Job satisfaction is defined as an overall feeling towards an individual's routine duty in an organisation (Cranny *et al.* 1992 cited in Bitsch & Hogberg 2004: 2). The same author states that any factor that would discourage job performance or negate the perception of duty could result in job dissatisfaction. In KZN, factors that discouraged the radiographers were identified as poor remuneration – being the main factor, then high stress levels, lack of opportunity for professional

development, poor teamwork and calls at odd hours such as nights and weekends. The greatest number of radiographers who had emigrated and those who left the profession stated that the remuneration they used to receive was not commensurate with the radiography services they provided in KZN. Similarly, in the USA, adequate compensation through better salaries and improved benefits were paramount in the retention of health care workers – especially in the understaffed departments (Owley *et al.* 2002: 17). Negative factors, such as high stress levels and long working hours in radiography departments in KZN were also mentioned.

In Australia, it was found that an additional burden and more stress are placed on radiographers when they are required to perform overtime in order to provide the required full service, thus resulting in a low morale (Australian Department of Human Services 2005: 56). Hence, some radiographers would opt for lower remuneration in a career that boosted their morale and which would meet their needs (Australian Department of Human Services 2005: 55).

The radiography profession in KZN was stated as having high stress levels. This could be caused by the fact that in some cases radiographers with a Certificate in Ultrasound were expected to work outside their scope of practice. The radiographers who refused to do so were threatened by management. In addition, the departmental duty roster was drawn up by the management who rarely understood the intensity of the work in the Radiography Department. Radiographers who held a Certificate in Ultrasound were expected to diagnose complex diseases without additional remuneration. It was also stated that the Certificate in Ultrasound was not recognised by OSD. This could be a contributing factor to radiographers' level of dissatisfaction.

In some radiography departments in KZN, it was found that there was a lack of support staff, such as clerks. Therefore, the clerical/administrative responsibilities were shifted to the radiographers. These additional responsibilities placed much

pressure on radiographers, and caused tension for them, which affected their job performance. Similarly, in the USA, understaffing negatively affected the quality of patient care due to the distribution of the workload to the available employees (Owley *et al.* 2001: 14).

Other demotivating factors that were mentioned by radiographers in KZN were poor management support and a lack of promotion criteria. Similarly the attitude of management towards radiographers in Nigeria was a cause of discouragement and had a negative impact on radiographers' performance (Ugwu *et al.* 2008: 28). The frustration due to a lack of management support for radiographers could be a cause for dissatisfaction and consequently resignation, emigration or leaving the profession in KZN.

5.5.3 Hours worked in a week in KZN

Some participants stated that they were compelled to do duo-shifts (day shift followed by night duty) due to staff shortages. Owley *et al.* (2002: 17) state that no workers should be forced to work longer than the scheduled shift, especially in the medical field, as they are involved in making decisions that impact on the lives of patients. Regarding the Amended Basic Conditions of Employment Act, 1997 (Act No.11 of 2002), the South African Department of Labour states that no employer is allowed to permit an employee to work for more than 45 hours per week or more than eight hours in any one day if the employee works more than five days a week.

The employee serving the public should be permitted to extend a shift by 15 minutes in a day, but not more than 60 minutes per week. However, the majority of radiographers were noted to be working between 41 and 60 hours and others worked more than 60 hours per week, which meant that they appeared to be exceeding the stipulated time limits (Basic Conditions of Employment Amendment Act, 2002 (Act No.11 of 2002 chapter 29). This could result in radiographers

becoming fatigued and exhausted, resulting in dissatisfaction with their jobs. It should be noted, however that the Act does make provision for those who engage in emergency work and are required to work long shifts. However long working hours may still be exhausting. Rajan (2012: 1) observed that radiographers worked long hours, which was the source of occupational stress. The high stress levels in KZN radiography departments could be associated with the time spent on duty in the department. This may result in dissatisfaction, affect productivity and consequently the service delivery in hospitals.

5.5.4 Overtime and compensation

Across the three categories of participants in this study, almost equal numbers stated that there was fair financial compensation for working overtime. However, the radiography managers and chief radiographers in the understaffed hospitals were not compensated for their overtime. They were compelled to perform duo-shifts when there was no staff to cover night shifts. Rajan (2012: 2) states that, amongst the stressors in radiography, are long working hours, shift work and overload. In an ideal situation, overtime should be compensated with time off to avoid job burnout. This does not seem to be the case in KZN. In terms of fair financial compensation, radiographers opted for financial rewards rather than time off. This, in turn, could have a negative effect on their physical and psychological well-being/stress. A stressed radiographer may under-perform by providing low-quality care to a patient. The compromised service delivery, unmotivated managers and chief radiographers could result in compromised departmental output, feelings of dissatisfaction and poor morale amongst radiographers.

5.5.5 Symptoms associated with work routine in radiography

Radiography is a physically challenging profession that requires physical strength and places pressure on the body. Radiographers are involved in moving patients

across beds, positioning patients, carrying image receptors and changing the orientation of heavy equipments. Their profession also involves long working hours, ethical dilemmas, frequent interruptions by other departmental staff members, blaming, as well as the angry nature of patients (Rajan 2012: 2).

There are frequent interruptions from the emergency and intensive care units that require an urgent diagnosis. The delay of the diagnosis and outcome of the outpatient in these circumstances results in blaming, due to delays that are beyond the radiographers' control. This places great psychological stress on radiographers and could result in illness. In Figure 7, the physical symptoms that were experienced by radiographers were mostly at pressure points, such as the knees, lower back, feet and hands. These could be associated with stress on the weight-bearing points of the body caused by the strenous nature of the work as well as heavy workloads.

Radiographers' duties are routinely associated with standing and often involve patient transfer across a bed trolley and wheelchair to the examination table. Ehrlich and Daly (2009: 119) describe the body mechanism as a principle of proper body alignment, movement and body balance, which minimise the chances of injury in the workplace. For example, bending and twisting the back while lifting weight is a common cause of back pain. The same authors advise radiographers to work at a comfortable height when lifting the weight; bend the knees and keep the back straight; and keep the centre of gravity close to the body. Avoid lifting heavy weights, and rather roll or push where possible. Radiographers appear not to be applying these principles as they do experience symptoms related to incorrect posture and body mechanics.

Radiographers work under physical and emotional pressure, especially when dealing with anger from patients, pressure from the referring staff and the need to attend to the long queue of waiting patients. These factors could be the cause of

psychological stress and headaches. Ugwu *et al*. (2008: 25) postulate that radiographers' stressors include the daily high workload and could be the cause of the brain drain in the profession.

Rajan (2012: 1) states that stress is recognised as the major health hazard of the century and presents diverse conditions, such as psychosomatic diseases and behavioural changes. According to Rajan (2012: 2), ninety percent of medical practitioners in India present with stress symptoms. The US spends US$69 billion on stress-related conditions (Manning & Jackson 1996, cited in Rajan 2012: 2). It could, therefore, be deduced that stress in the KZN radiography departments may be contributing to psychosomatic diseases, which could negatively affect productivity. It should be noted that stress is costly as staff will spend much time off duty and medical expenditures will be incurred. Staff could become ineffective due to a reduced number of staff in the radiography department, resulting in an increased workload which, in turn, would cause a low morale and dissatisfaction.

5.5.6 The implementation of Occupation-Specific Dispenstation and its effects

Occupation-specific dispensation (OSD) is one of the strategies developed by government to try and curb the exodus of radiographers and attract them to government service (SORSA 2008: 2). The adoption and approval of OSD on 31 March 2008 was aimed at establishing a new salary dispensation and a recognised career-path for radiographers (SORSA 2008: 9). This should therefore have resulted in greater job satisfaction amongst radiographers in South Afican and in KZN. It could be assumed that, if salary structures were improved, radiographers would be more satisfied with their jobs and would therefore remain in their jobs.

Most of the KZN radiographers were, however, not satisfied with the implementation of OSD. It was noted that one hundred and thirty seven of the radiographers who were working stated that they were dissatisfied with the manner in which it was implemented. According to research conducted on pharmacists in KZN in 2008, only 27 percent of pharmacists were satisfied with the implementation of OSD (Naicker 2008: 77). Radiographers in KZN stated that OSD did not recognise additional training, such as CT and MRI certificates. However, radiotherapy, nuclear medicine and ultrasound were recognised as specialities of diagnostics and salaries in these categories are higher than for diagnostics.

Radiographers qualifying with a three-year diploma in nuclear medicine, radiotherapy and ultrasound do not earn the same salary as the three-year diploma diagnostic radiographers. Similarly, Naicker (2008: 77) found that the OSD implementation was not consistent across the four radiography disciplines. The situation in KZN created much dissatisfaction amongst the diagnostic radiographers. The Department of Health did not recognise that the three-year national diplomas offered in the four disciplines of radiography in KZN are at the same level and are that there are no specialities in radiography. This appears to have demotivated the majority of radiographers in the public service and resulted in much dissatisfaction (Area 1: Radiography Managers Forum KZN 2011: 1).

Furthermore, eighty five (44,7 percent) of the radiographers who were working had not received their salary changes for periods of up to three years after OSD had been implemented. The scarce skills allowance was removed from radiographers' salaries and was lost as a benefit. As stated in a forum by Area 1 Radiography Managers, the inclusion of the 10 percent scarce skills allowance into the gross salary of radiographers did not result in any change to the Level 10 radiography managers' salary.

Level 10 radiographers are chief radiographers who occupy managerial posts. This created much dissatisfaction and a subsequent decline in service delivery. Although there was much dissatisfaction with OSD, a cross-tabulation between OSD implementation and staffing departments in KZN produced a P-value of 1,0. This indicates that the OSD implementation did not contribute much towards curbing the resignation of radiographers, which implies that there were other factors that could have contributed to resignations other than OSD.

There is a possibility that the greatest number of those satisfied with OSD were the newly qualified diagnostic radiographers, sonographers, radiotherapists and nuclear medicine technologists who were favoured by the OSD implementation. The radiographers who were working suggested that there should be a review of the OSD implementation that would include consultations with radiographers at all levels to ensure its relevance and effectiveness. Although some radiographers felt that OSD was well implemented, there was much discontentment and dissatisfaction amongst the majority of radiographers regarding OSD.

5.5.7 Factors impacting on satisfaction

Although the majority of participants were dissatisfied, some radiographers were satisfied with the profession. It was indicated that one hundrend and fifty nine (84,2 percent) of the participants enjoyed helping patients, while more than half stated that the radiography profession was not boring and seven (4,2 percent) stated that the remuneration was better than in other fields of work. These could be the factors that motivate radiographers to continue working in the public service. Dizgah, *et al.* (2012: 1735) state that job satisfaction is paramount in the retention of employees in any organisation. Any factor that results in employees leaving a job usually relates to a lack of job satisfaction. Job satisfaction is therefore an essential factor in the holistic approach towards the retention of radiographers. It directly affects

employees' happiness and performance, which means that human motivation is a priority for effective human performance.

Although the radiography profession was seen as having heavy workloads, radiographers still found their profession satisfying as it is remunerated better than other professions and is not boring.

5.6 Improvement of retention in KwaZulu-Natal

When the South African DoH noted the migration of medical professionals, it implemented several strategies to curb emigration, such as a rural allowance for those working in rural areas and the OSD, which was intended to boost the public service as well as attract and retain employees (Human Resources for Health in South Africa 2009: 41). Although the above strategies were put in place, resignations and emigration still continue. Suggestions for improving the retention of KZN radiographers will be highlighted and discussed in this section. Objective four will be addressed in this discussion:

- To identify possible input for the improvement of retention of KZN radiographers in the public service.

5.6.1 Comparison between radiography and other prospective careers of choice

It was assumed that other careers considered by radiographers had different conditions compared to radiography. Therefore, this section was intended to explore the similarities and/or differences between radiography and other professions, so as make suggestions that may assist in improving the retention rate in the radiography profession.

Contrary to radiography being their career of choice, the three categories of participants identified negative factors such as poor remuneration, demoralisation from peers, over-dependence on other professions, a high workload and understaffing, no opportunities for career and professional development, as well as high stress levels. These could be the factors that motivated KZN radiographers to consider changing to other careers (Figure 11). Vosper *et al.* (2004: 85) found that radiography graduates in the UK would not recommend radiography as a profession, due to poor renumeration, poor professional image, poor respect from other hospital staff, ungrateful patients and insufficient numbers of staff in departments – even though there were vacancies available.

The above are similar to the findings of this study, where it was found that there was a high workload at places of work in KZN (Figure 11). According to a comprehensive report compiled in Northern Ireland (Northern Ireland Radiography Workforce Report 2002: 4), radiography was identified as a career lacking in opportunities for professional progression. Radiographers in Ireland also remained static at a particular grade for a number of years, with no opportunity to progress. There was also a limited career path and poor representation of the profession, which meant a lack of inclusion in decision-making and in communication processes.

The findings in the study in Ireland are consistent with the findings of the KZN study, where it was found that there was a high dependency on other professions in the decision-making process, as well as in the radiographers' duties in radiography departments. Naicker (2008: 59) found that a lack of career advancement opportunities in KZN impacted negatively on the retention of pharmacists as was the case with radiography in KZN. The radiography profession in KZN was highlighted as having more social isolation and it was said to be a difficult career to study, compared to other careers that radiographers may have opted for.

The three categories of participants in this study identified other factors, such as radiation hazards, a high risk of contact with nosocomial infections, a lack of remuneration as well as a lack of recognition of additional qualifications in the profession, for example, certification in CT and MRI. It was found that radiographers in KZN are subjected to highly stressful conditions due to the long hours spent working with high-risk equipment that produces harmful radiation, as well as continually having to deal with ill and stressed patients. These conditions expose the radiographer to fatigue and may even result in infertility after exposure to high radiation doses (Rajan 2012: 2). Rajan's findings confirm those in the KZN study.

It can be deduced that, although radiography is seen as having more disadvantages than other prospective professions of choice, the remuneration is not comparable. There is a need for career-pathing and recognition of all qualifications obtained in radiography, as well as a decrease in working hours, so as to reduce social isolation and the harmful effects of radiation. These could help to reduce the negative perception that KZN radiographers have of the radiography profession.

5.6.2 Suggestions for improving retention

Across the three categories of participants in this study, the most common factors that were highlighted as requiring improvement were remuneration; role extension for radiographers; working conditions; staffing of hospitals; and facilities. This is similar to the findings of Vosper *et al.* (2004: 85) in the UK, where some radiographers who had left the profession could not recommend radiography, due to its poor remuneration.

In contrast to this, Bateman and Snell (2011: 469) do not mention remuneration, but they postulate that a job is presumed to be both satisfying and motivating if the

needs of the worker are met. The same authors refer to Frederick Herzberg's two-factor theory on satisfaction and state that hygiene factors create satisfaction amongst employees if they are met. These include company policies, working conditions, remuneration and supervision. However, these factors alone will not make an employee fully satisfied and motivated. The same authors also mention the motivational factors (second factors), which include the opportunity for personal growth; recognition; and a feeling of achievement.

When the above factors are met, the job is regarded to be satisfying and motivating (Bateman & Snell 2011: 469). Nevertheless, most of the participants in this study highlighted remuneration as the main factor that needed to be improved in order to retain radiographers in KZN. This indicates that radiography is not a well-paid profession in relation to services offered. Increasing radiographers' remuneration should be made a priority above other factors in order to improve retention. Not only does retention need to be addressed, but also the state of the profession itself.

It is interesting to note that although the remuneration seems to be such an important factor, the radiographers still continue to work in the profession.

5.6.3 Suggestions for improving the radiography profession

Continuous professional improvement creates a sense of career satisfaction and pride amongst professionals. This encourages and motivates professionals to remain at their places of employment, as well as in the country.

Continuous Professional Development (CPD) was implemented by the HPCSA for radiographers and other health professionals to ensure that practitioners perform evidence-based practices and remain updated. It is compulsory for all professions registered with the HPCSA (Human Resources for Health 2011: 43). Currently, the

DoH does not provide radiographers with time off in order to attend CPD activities outside the working environment, as radiographers are expected to do this in their private time.

A specific number of working hours could possibly be provided to allow radiographers to enhance their skills, as is done in Ireland (Northern Ireland Radiography Workforce Report 2002: 9). In the United Kingdom (cited in the Australian Department of Human Services 2005: 57), flexible working hours were introduced to enable staff to meet family and other commitments, such as studies. This strategy attracted the radiographers who had left the profession to return to radiography and resulted in improved retention rates.

The participants in KZN suggested that opportunities for professional development (Table 9) should be created in order to allow radiographers to improve their qualifications. The majority of participants were noted to be diploma holders (Figure 1). Participants stated that there should be streamlined academic structures to encourage specialisation in all categories, as it was felt that this could reduce work-related stress.The diagnostic radiographers are involved in many procedures in the radiology department so specialisation in a few of the special modalities would facilitate the reduction of stress and workload.

The radiographers' responsibilities need to be reviewed so that they are not engaged in excessive duties that could be undertaken by a radiography assistant or subordinate staff. Some of the participants stated that the scope of practice of radiographers should be advanced and diversified to avoid over-dependence on other professions. In a recent study done in South Africa, the need for role extension was noted as pivotal in addressing healthcare needs and in improving service delivery (Gqweta 2012: 22). One KZN participant suggested that as the only university (DUT) offering radiography in the province, DUT should create opportunities for further studies in speciality areas, such as postgraduate studies in

CT scanning and MRI. This is similar to a suggestion made by Henderson (2008: 10), who stated that the introduction of open learning centres could provide the isolated rural areas with open access to education. The introduction of distance learning for potgraduate studies in radiography would make it easier for rural radiographers to improve their qualifications.

Owley *et al.* (2002: 4) suggested the introduction of a formula for radiographer-to-patient ratio. This formula would control the annual workload so that there would be acceptable staff-to-workload ratios. A specific number of radiographers would attend to a specific number of patients annually (Northern Ireland Radiography Workforce Report 2002: 20). Adoption of a similar formula could be used as a guide towards creating equitable distribution of human resources in various hospitals in South Africa, in order to reduce unacceptably high workloads. Participants in the Ireland study suggested the creation of graduate and postgraduate posts in government and other fields outside hospitals (Northern Ireland Radiography Workforce Report 2002: 20). This suggests that there is a need for career-pathing in radiography. School *et al.* (2005: 2) found that a lack of career-pathing was the main reason for poor radiography recruitment and retention in South West Victoria, Australia.

The suggestions provided by the participants of the current KZN study include the creation of sufficient academic institutions that will facilitate academic progression and development; role extension; and career-pathing. These are crucial in developing the radiography profession so as to enhance the retention of radiographers and provide improved service delivery in hospitals.

5.7 Conclusion

The results of this research suggest that radiographers emigrate soon after their graduation. This is a highly productive age, which is valuable in the clinical

industry. The study identified workload as the main cause for the resignation of both emigrants and radiographers that left the profession. Private hospitals were found to have a lower workload, better facilities and greater financial rewards than public hospitals. The most significant motivating factor for moving from public to private hospitals, was increased remuneration. The three main factors identified as contributing to emigration were the crime rate (not related to radiography), poor financial rewards and better prospects for professional advancement abroad.

A lack of resources to offer postgraduate and skills training, as well as a lack of professional recognition and progression in radiography were identified as factors that impacted on job satisfaction in KZN. It was also stated that radiographers did not receive remuneration that was related to the services they offered. These were the factors that resulted in their low morale and demotivation in the radiography profession.

There is a need to focus on continuous professional development, where a specific number of hours could be assigned to the development of staff skills. Flexible schedules need to be introduced so that staff can meet their family commitments. The participants in KZN identified the creation of opportunities for training, as well as continuing education and professional development as being important motivational factors. With regards to workload, it is suggested that the government could adopt a formula that would control and manage the annual workload – such as a staff-to-workload ratio. The adoption of the formula would facilitate identifying the staffing needs in the radiology departments and in the hospitals.

The last chapter will focus on the conclusion and recommendations of the study.

CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

6.1 Introduction

This study represents the first known documented research of its kind to be performed in the field of radiography in KZN. However, in other professions many studies with similar topics have been performed. This study focused on factors that impacted on the retention of radiographers in KwaZulu-Natal. Three questionnaires were used to obtain data from the three categories of participants who work or had worked in KZN, namely; radiographers who had worked in KZN and emigrated (referred to as “Emigrants”), those who had left the profession (referred to as “Left the Profession”) and those who are Working in KZN (referred to as “Working”). The resultant data was analysed, using SPSS 21,0 and was presented in chapter four. This was followed by a discussion of the results where available literature was cited. This concluding chapter provides recommendations for the improvement of retention of radiographers in KZN and a summary of the main points of the research findings.

6.2 Significance of the study

It was noted in practice that radiographers were leaving the public service for private practices in South Africa, as well as seeking employment in other countries (SORSA 2008: 2). This exodus of radiographers from the public service resulted in dire staff shortages, which impacted negatively on service delivery in the country and particularly in KZN. The KwaZulu-Natal Annual Performance Plan (South Africa 2010: 42) reported that, in 2010, there were 1 621 vacant radiography posts in South Africa, with 436 of these being in KZN, thus leaving the province with a vacancy rate of 49 percent. As the government’s national DoH plan is to improve on quality and provide comprehensive healthcare to its citizens, the retention of healthcare staff is crucial.

This study was conducted to establish the factors motivating radiographers to leave the public service, the profession and the country and, therefore, attempt to make suggestions that could reduce the factors impacting negatively on the retention of radiographers in KZN. The intention was to provide scientific data for improving retention within the public sector in KZN. The study is significant for the DoH and the DPSA, as government is currently strategising the introduction and implementation of the National Health Insurance Plan, which is designed to improve public health service delivery.

6.3 Research findings

It was noted that the greatest number of radiographers who emigrated were between 25 and 30 years of age, which is the most productive age of an employee's life. This exodus of young radiographers could deprive the profession of its most productive group should they continue to emigrate. Females were found to be dominant by almost six times more than their male counterparts. However, it is known that radiography is a female-dominated profession, so this was not an unusual finding.

It was found that the main reasons why radiographers resigned were poor financial rewards; better prospects for professional advancement abroad; insecurity and crime in South Africa; and poor promotionl prospects in KZN. These factors were identified as a major threat to the retention of radiographers working in KZN. In addition, the absence of adequate allowances, poor working conditions, inadequate facilities and equipment, weak management support, a heavy workload, limited opportunities for professional development, as well as limited scope for upgrading qualifications were factors that could possibly motivate radiographers to resign. These were found to be the main factors impacting negatively on the retention of radiographers in KZN.

It was further found that radiographers remained in the public sector because work shifts were flexible; it was not easy to be dismissed from the public service; and there was no direct intimidation from employers/managers. A significant number of radiographers who were working in KZN stated that one source of dissatisfaction was a failure to receive what they had expected from the radiography profession. They expected good working conditions, good remuneration, as well as a relatively stress-free working environment, but this did not happen for them. Radiographers felt that the profession of radiography lacked opportunities for professional development. Those who had emigrated indicated that they had been over-worked while in KZN and that the remuneration they received was not comparable to the services they provided.

Suggestions for improving retention include; a need to focus on continuous professional development, where a specific number of hours should be dedicated to skills development for the staff; the introduction of flexible schedules, so that staff members could meet their family commitments; as well as the creation of opportunities for further training, continuing education and professional development. It was also highlighted that government should introduce a formula that could limit the annual workload so that there were fair and equitable staff-to-workload ratios. It is evident that motivated employees produce quality healthcare services.

6.4 Limitations

The factors below are the limitations of this research study.

The data collection was conducted in KZN and that being so, the findings of this study are relevant for radiographers in this province only and cannot be generalised to all radiographers in SA.

The data was collected from some of the hospitals in December when most of the radiographers are on leave. This reduced the number of respondents, however the sample size was still statistically acceptable.

Some of the respondents may have felt uncomfortable about answering some of the questions and this could possibly have affected the responses in some sections of the questionnaire – for example the section on the implementation of OSD. This could have resulted in them giving the responses that would impress the researcher.

It was difficult to obtain an adequate number of participants, due to the unknown number of radiographers who had left the profession and those who had left South Africa for other countries. However, a variety of methods were used to obtain their details. An average of more than 80 percent of those contacted, both emigrants and those who had left the profession, responded.

6.5 Future research

Similar studies to this one are required in the other provinces of South Africa, as each province has its own unique problems even although staff shortages are common across all of them. Results from all South African provinces would strengthen the suggestions made in this study for the improvement of the retention of radiographers in South Africa. These suggestions would provide the DoH with a comprehensive profile of the situation in radiography, nationally.

It is suggested that a follow-up study be conducted on the implementation of OSD in the provinces and nationally. Only a few questions on the OSD were included in this study, however interesting results were found. The results indicated dissatisfaction with the implementation of the OSD. A larger follow-up study could test the validity of the results of this study.

6.6 Recommendations

Participants were asked to provide suggestions for improving the retention of radiographers in KZN, as well as improving the profession of radiography. The study identified the following guidelines, namely salary structures should be reviewed for all categories of radiographers; there should be fair financial rewards and adequate compensation through improved benefits; improved workplace facilities, general working conditions and the workload. Provision should also be made for role extension and career progression of radiographers.

6.6.1 Better salaries, fair financial rewards and improved benefits

The study found that radiographers expected better remuneration than they were receiving in the radiography profession. Poor remuneration was identified as the main source of dissatisfaction by the radiographers who were working. The radiographers who emigrated also stated that the remuneration they received in KZN was not comparable to the services they offered at that time. The radiographers were expected to work longer hours and sometimes perform duo-shifts.

Government implemented OSD in order to increase the retention of radiographers by establishing a new salary dispensation. Despite this, most radiographers were still not satisfied with their salaries. There is a need for a complete “review” of salary structures so that all radiography categories with similar qualifications receive the same salary in all national diplomas in the four categories of radiography. These categories should have the same entry level salary. Recognition needs to be given for BTech, Honours, Masters’ and Doctoral degrees, as well as for Mammography, CT and MRI certificates.

Government could establish long service awards for radiographers who remained in government. These could be awarded based on the duration of time an employee remains in a public hospital. The managers' allowance could be a special allowance for radiographers in small hospitals who function as both radiographers and managers of the department without occupying a "manager" post. This would possibly provide incentives and motivation for radiographers to remain in the public service.

The main reason for resignation by both the emigrants and radiographers who left the profession was the high workload. Due to staff shortages, radiographers worked duo-shift (night and day), which may have resulted in high levels of psychological stress and subsequently in occupational health diseases and symptoms, such as lower back pain, nosocomial infections and psychosomatic diseases. It was also found that radiographers worked under great physical and emotional pressure. Private hospitals were identified as having lower workloads than public hospitals. The high workloads resulted in both musculoskeletal and psychological stress for staff members. The lower workload in developed countries contributed to the emigration of KZN radiographers to these countries.

Safe working conditions are needed for employees. The Basic Conditions of Employment Act, 1997 (Act No. 11 of 1997) states that no employer is permitted to make an employee work for more than 45 hours a week or for more than eight hours per day, if the employee works more than five days a week. However, it was noted that the majority of the participants worked between 41 and 60 hours per week and some even worked more than 60 hours per week, which meant they exceeded the stipulated time limits. This could be a source of demotivation to radiographers and subsequently result in resignation.

With regard to workload, it is recommended that there no compulsory overtime for all healthcare workers. No radiographer should be work more than the

recommended hours stipulated in the Basic Conditions of Employment Act, 1997 (Act No. 11 (of 1997), as they are responsible for making critical decisions regarding patients' lives and fatigue could impact on these decisions. The adoption of a suitable radiographer-patient ratio, as well as workload limits, is recommended to avoid fatigue and burnout.

The infrastructure and facilities in hospitals, such equipments, should be functional and should not pose a radiation threat to radiographers and patients. It is recommended that better ventilation, such as better aeration and controlled temperatures, need to be provided at workplaces to avoid the spread of nosocomial infections and contagious diseases to the employees. The poorly ventilated environments, aerated with poor temperature control, harbour microbes such as pulmonary tuberculosis (Ehrlich and Daly 2009: 22). The radiography departments receive many pulmonary tuberculosis patients for diagnosis or follow-up examinations.

The hospital supply chain is also of paramount importance, as sufficient consumables, such as X-ray films, contrast agents and disinfectants need to be supplied timeously in order to avoid frustrating the efforts of radiographers. The facilities at hospitals were noted to be of a low standard and some equipment was not regularly serviced, while some took long to be repaired and replaced. This results in the radiography services being rated lower and hence staff become demotivated.

It is also recommended that the adoption of a realistic radiographer-to-patient ratio; an appropriate skills mix; and the setting of workload limits for radiographers should be made equitable in all hospitals, so as to meet international standards and thus curb the heavy workload and stress at work. There is no known national or international standard for the radiographer-to-patient ratio. This ratio will vary depending on the number of patients examined and the types of examinations

performed in a given time. These ratios still need to be established through local research that will provide reliable scientific data.

6.6.2 Role extension and career progression

The Society of Radiographers of South Africa (SORSA) and the HPCSA recently made great strides towards extending the role of radiographers in South Africa. It is hoped that, in the near future, radiographers will be permitted to inject contrast agents after undergoing further training. There is still a need to have role extension and diversified progression in radiography. A well-defined radiography career path needs to be introduced, with job specifications and descriptions for each qualification obtained in the radiography profession. This needs to be relevant and useful with regard to the implementation of the National Hospital Insurance Plan by the DoH. Currently, there is a dire shortage of radiologists in rural areas. Therefore, there needs to be a policy for equipping radiographers with relevant image interpretation and image reporting skills, which will fill the gap left by the lack of radiologists. This however would need to be addressed through the training of radiographers at the universities and extending the legal scope of practice.

The fact that radiographers are poorly represented at provincial level is critical in KZN. The appointment of a radiography representative would help facilitate the control and management of radiography in KZN, as well as the development of a clear and structured career pathway in radiography. This would create positions for radiographers to participate in a holistic approach towards independent decision-making at workplaces. They would be prepared for advanced roles in institutional management at hospital, provincial and national level. Currently, radiographers are not represented at provincial level in KZN, which may be a contributing factor to many of their challenges not being addressed at provincial or national level. This is considered by radiographers to be an urgent problem in KZN – as all other provinces have representatives at provincial level. Consequently, when provinces

meet to make suggestions and take collective decisions, KZN is not adequately represented.

Streamlining the academic structure for radiography through career pathing is recommended in order to encourage specialisation and career satisfaction. Radiographers are expected to perform a wide range of duties in the department, making it a stressful profession. The creation of specialities such as CT scanning and image interpretation; special examinations and image interpretation; theatre work and mammography are suggested. These could be recognised as specialities and be offered as postgraduate qualifications rather than being integrated at diploma level. Specialisation could reduce stress levels in the workplace. Diversifying the scope of practice of radiographers in order to avoid over-dependence on other professionals would create a sense of belonging, independence and satisfaction for radiographers. This would also improve the status of radiography within the field of health.

6.7 Conclusion

This study was aimed at investigating factors impacting on the retention of radiographers in KZN. The study considered the reasons why KZN radiographers resigned; why they remained at their place of employmen; factors that impacted on job satisfaction; and possible suggestions that could improve the retention of radiographers in the public service in KwaZulu-Natal.

The main reasons for resignations by both the emigrants and radiographers who left the profession, were workload and seeking better remuneration. Private hospitals in KZN appear to have lower workloads than public hospitals. Radiographers were found to have emigrated due to the crime rate, poor financial rewards and the pursuit of better prospects for professional advancement in foreign countries. The radiographers who remained in the public hospitals stated that there

was job security and flexible shifts at a public hospital and, unlike private hospitals, there was no direct intimidation.

It was found that radiographers did not receive what they had expected from the profession. Poor remuneration, high stress levels in the workplace and a lack of opportunity for professional development were factors impacting on radiographers' level of satisfaction. The radiographers who emigrated, acknowledged receiving better salaries in international workplaces. KZN radiographers were not satisfied with the way in which the OSD had been implemented. Radiographers suggested that the OSD should be revised by including consultation with radiographers at all levels to avoid professional bias.

The findings of this research study indicate that, although the shortage and retention of radiographers is a challenge in KZN, the situation was not impossible to resolve. Public and private hospitals need to improve working conditions for radiographers by implementing the afore-mentioned suggestions that have arisen from this research, so that service delivery in KZN may be improved by creating happy and satisfied radiographers.

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DURBAN UNIVERSITY of TECHNOLOGY

INSTITUTIONAL RESEARCH ETHICS COMMITTEE (IREC)

3 August 2012

IREC Reference Number: **REC 37/12**

Mr J M Thambura
P O Box 15531
Sinoville
Pretoria
0002

Dear Mr Thambura

An investigation of the factors impacting on the retention of radiographers in Kwa-Zulu Natal

I am pleased to inform you that Full Approval has been granted to your proposal REC 37/12.

The Proposal has been allocated the following Ethical Clearance number IREC 025/12. Please use this number in all communication with this office.

Approval has been granted for a period of one year, before the expiry of which you are required to apply for safety monitoring and annual recertification. Please use the Safety Monitoring and Annual Recertification Report form which can be found in the Standard Operating Procedures [SOP's] of the IREC. This form must be submitted to the IREC at least 3 months before the ethics approval for the study expires.

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 SOP's. In addition, you will be responsible to ensure gatekeeper permission.

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

Yours Sincerely

[redacted]

Dr D F Naude
Chairperson: IREC

health

Department:
Health
PROVINCE OF KWAZULU-NATAL

Health Research & Knowledge Management sub-component
10 – 103 Natalia Building, 330 Langalibalele Street
Private Bag x9051
Pietermaritzburg
3200
Tel.: 033 – 3953189
Fax.: 033 – 394 3782
Email.: hrkm@kznhealth.gov.za
www.kznhealth.gov.za

Reference : HRKM123/12
Enquiries: Mrs G Khumalo
Telephone : 033 – 395 3189

02 October 2012

Dear Mr J M Thambura

Subject: Approval of a Research Proposal

1. The research proposal titled **'An investigation of the factors impacting on the retention of radiographers in KwaZulu Natal'** was reviewed by the KwaZulu-Natal Department of Health.

The proposal is hereby **approved** for research to be undertaken at all KwaZulu-Natal, Department of Health districts.

2. You are requested to take note of the following:
   a. Make the necessary arrangement with the identified facility before commencing with your research project.
   b. Provide an interim progress report and final report (electronic and hard copies) when your research is complete.

3. Your final report must be posted 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 Mrs G Khumalo on 033-395 3189.

Yours Sincerely

[redacted]

Dr E Lutge
Chairperson, Health Research Committee
KwaZulu-Natal Department of Health
Date: 04/10/2012.

health
Department:
Health
PROVINCE OF KWAZULU-NATAL

Postal Address: Private Bag X54318 Durban 4000
ss: 83 Jan Smuts Highway, Mayville, Durban 4001
Tel.031 2405308: Fax. 031 2405500
Email. nan.hoosain@kznhealth.gov.za
www.kznhealth.gov.za

Enquiries: Ms Jabu Hlazo
Tel: 031 240 5303
Date: 13 September 2012

Mr J.M Thambura: email- mthambura@yahoo.com

REQUEST TO CONDUCT RESEARCH:

Support is hereby granted to conduct research on the above topic:

An investigation of the factors impacting on the retention of Radiographers in KwaZuluNatal

Please note the following:

1. Please ensure that you adhere to all the policies, procedures, protocols and guidelines of the Department of Health with regard 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 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.

[redacted]

pp

District Manager
eThekwini
Telephone: 031 2405303
Fax : 031 2405500
Email: jabulisiwe.hlazo@kznhealth.gov.za

APPENDIX D

INSTITUTIONAL RESEARCH ETHICS COMMITTEE (IREC)
LETTER OF INFORMATION

TITLE: An Investigation of the Factors impacting on the Retention of Radiographers in KwaZulu-Natal.

I am currently doing research on the retention of radiographers in KwaZulu-Natal. I have selected you as a participant because you work in the province that exhibits problematic levels of recruitment and retention statistics in the country.

You are invited to participate in a study conducted by:

Researcher : Mr. JM, Thambura
Cell phone : 0716399818
Email : mthambura@yahoo.com

Supervisor : Ms. L, Swindon
Cell phone : 0722684355
Email : lyndas@dut.ac.za

Co Supervisor : Dr. F, Peer
Cell phone : 0837863058
Email : FozyPee@ialch.co.za

The purpose of this study is to investigate the factors impacting on the retention of radiographers in KZN, in order to provide information to the Department of Health for improving their retention strategies of this scarce skill.

This research involves no risk, discomfort or inconveniences in anyway. It is hoped that this research will result in a positive contribution to reforming the retention of radiographers in KZN by providing scientific evidence.

The procedure involves you completing the questionnaire. It will take 30 to 40minutes to answer the questions. You need to be a radiographer who is working in either private or public hospital, or who has left the profession or have left South Africa to work in foreign countries. Student radiographers, radiographer assistants and those who have retired will not participate.

You will remain anonymous. The data will be treated confidential by being identified with a code that bears none of your personal details. This consent letter will not be attached to your completed questionnaire. Any publication that is written will not disclose any of your personal details.

Your decision to participate is voluntary and you are free to withdraw your consent and to discontinue your participation at any stage without penalty. Your decision not participate will not prejudice your future relationship with myself or the university.

You will not be paid to participate in this study and all costs will be borne by my research fund.

For clarity, complaints or emergencies please contact:

Head of department
Ms S, Naidoo
naidoon@dut.ac.za
0313732875

IREC Administrator
Ms L, Deonarian.
LavishaD@dut.ac.za
0313732900

INSTITUTIONAL RESEARCH ETHICS COMMITTEE (IREC)
CONSENT

Statement of Agreement to Participate in the Research Study:

- I hereby confirm that I have been informed by the researcher, _____(name of researcher), 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, _____ (name of researcher) 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**

APPENDIX E

PERMISSION LETTER

Mr/ Mrs / Dr …….
Chairperson,
Ethics Committee,
……..hospital,
P.O Box ……..,
……

Dear Sir/ Madam.

I am currently registered as a master's student at the Durban University of Technology (DUT) in the Department of Radiography. I have a Bachelor of Technology: Radiography from University of Johannesburg, RSA (Diagnostics) and would like to further my studies in the field of radiography

The proposed topic of my project is "**An Investigation of the factors impacting on the retention of radiographers in Kwa-Zulu Natal."**

In this study, I intend to explore the retention of radiographers in Kwa-Zulu Natal (KZN). The study will attempt to identify any problems/issues that may be impacting on the shortage of staff in this province. It is hoped that the results will be able to contribute to policy making in the field of radiography within KZN by providing possible suggestions and recommendations obtained through scientific methods. It is hoped that this will assist in improving retention strategies and so increase quality of radiographic services in KZN hospitals.

The data collection procedure involves the completion of a self-administered questionnaire by radiographers, after reading and signing the consent letter. The questionnaire will be distributed by the researcher who will wait for the completed documents. This process should not take longer than 40 minutes and will be administered during tea and lunch breaks, so as not to interfere with the normal flow of work in the departments. The DUT has guaranteed the supervision of the process.
The names of the hospital and the participants will remain anonymous for the purposes of confidentiality. Neither the hospital nor the practitioners will incur expenses related to this study.

I hereby apply for your permission to undertake my research in the selected hospitals in KZN, and to use your radiography employees as participants in my research. My research proposal has been reviewed by the DUT department of radiography and ethics approval has been obtained from the DUT institutional research ethics committee.

I have attached my research proposal for your perusal. Your permission in writing will be highly appreciated.

Yours sincerely.

Researcher

Name : JM. Thambura,
Email : mthambura@yahoo.com
Cell phone : 0716399818.

Supervisor:

Name : Mrs L Swindon,
Email : lyndas@dut.ac.za
Cell phone : 0722684355.

Co- supervisor;

Name : Dr F. Peer,
Email : FozyPee@ialch.co.za
Cell phone : 0837863058.

IREC Administrator:
Name : Ms. L, Deonarian
Email : LavishaD@dut.ac.za
Phone : 0313732900

Appendix F

QUESTIONNAIRE III

<u>This questionnaire must be completed by radiographers working in private and government hospitals, heads of radiology departments/ radiology managers or radiographers in-charge.</u>

<u>Instruction:</u>
Fill in the blank spaces and/or place a circle around the number/letter of the most appropriate answer/s.

1. State your gender? A) Male B) Female
2. State is your age?.....
3. How long have you been qualified as a radiographer?……...years.
4. How long have you been employed as a KZN radiographer?.....years.....mths
5. Select your highest level of qualification?
    a) National diploma (2 years)
    b) National diploma (3 years)
    c) National diploma radiography (3 years) and a higher diploma
    d) National diploma and B-Tech radiography
    e) Bachelor of radiography
    f) Bachelor of radiography (honours)
    g) Masters
    h) Doctorate
    i) Other (be specific) .....
    .....
    .....
6. Have you ever worked in a KZN public hospital? A) Yes B) No
7. Have you ever worked in a KZN private practice? A) Yes B) No
8. Did you ever leave the public hospital to work in private? A) Yes B) NO
    i) If you left a public hospital to work in private hospital in KZN, which of the following factors made you leave? ***(you may select more than one).***
        a) Less workload at private hospital
        b) Greater financial rewards at the private hospital
        c) Better facilities are better at the private hospital
        d) Others (specify): .....
        ……
        .....
        .....
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        .....

ii) If you are working at a KZN public hospital, what are the conditions that make you remain there? ***(you may select more than one).***

a) Public service has job security
b) Public service has good pay
c) Proper appraisal
d) Flexible work shifts
e) Others (specify)…….....
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Rate the following statements on a scale of 1 - 4 where:
1 = strongly disagree, 2=disagree, 3= agree, 4 = strongly agree.

iii) Radiography is a flourishing and improving career.

1	2	3	4

iv) The expectations I had of my career in radiography in KZN were met?

1	2	3	4

v) Radiography is a well paid career when compared to its workload.

1	2	3	4

vi) Radiography has many opportunities for professional advancement.

1	2	3	4

vii) The working conditions of a radiographer are stress free.

1	2	3	4

viii) The intensity of work in my radiography department is very low.

1	2	3	4

ix) My work allows me to balance my social and work life.

1	2	3	4

x) I enjoy being a radiographer.

1	2	3	4

xi) Are you getting what you expected from your career in Radiography?

A) Yes B) No

9. How many hours do you work in a week? .....

10. How often do you get holiday/leave per year?

a) Once
b) Twice
c) More than two times
d) Never

11. If you enjoy being a radiographer, which of the following statements do you agree with:
(you may select more than one).

a) I enjoy helping patients
b) The pay is better than other field
c) Radiography is not boring
d) Others (specify).....
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12. If you do not enjoy being a radiographer what are the reasons?
(you may select more than one).

a) Radiography has high stress levels
b) Radiography has long working hours
c) Radiography has night calls and weekend calls
d) Others specify…….....
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13. i) Would any of the following factors add to your reasons for ever wanting to leave radiography? ***(you may select more than one).***

a) Lifestyles of radiographers
b) Radiation hazards
c) Poor financial rewards
d) Social and personal isolation
e) Limited opportunities for profession advancement
f) Lack of profession title
g) Poor societal recognition

h) None of the above.

I) Other factors (specify)…….....

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ii) What, in your own opinion, could be done to encourage radiographers to remain in their profession in KZN/SA? ***(you can choose more than one answer).***

a) Better pay.

b) Creation of graduate & postgraduate posts in hospitals and in administrative positions in KZN government.

c) Scope of practice of radiographers should be advanced and diversified to avoid overdependence on other professionals like radiologists.

d) Streamline academic structures to encourage specialisation which will reduce work stress.

e) Sufficient staffing of the hospitals.

f) Others (specify)…….....

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iii) How would you compare radiography with other careers you may have considered changing to? ***(you may choose more than one answer).***

a) Radiography has higher stress conditions.

b) There are radiation hazards.

c) Radiography has a higher workload.

d) Call is at odd/unsociable times.

e) It is expensive to open a private radiography practice.

f) Radiography has a high dependency on other professions like radiologists to give reports.

g) Radiography is a very difficult career. (academic subjects are difficult)

h) There is more social isolation in radiography.

i) Other (be specific) .....

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14. Which of these symptoms (if any) do you experience and would associate with your work routine? ***(You may select more than one answer.)***

a) Headache

b) Lower back pain

c) Neck pain Spasm

d) Knee pain

e) Others (specify)…….....

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15. i) Do you often have to work overtime in order to complete the work?
A) Yes B) No

ii) Do you receive fair compensation when you work after hours?
A) Yes B) No

iii) How are you compensated for working after hours?

a) Fair financial compensation
b) Poor financial compensation
c) Day off work as compensation
d) Other forms of compensation
e) Others (specify).....

…….....

iv) If you are dissatisfied with your current job, what are the reasons?

(You may select more than one answer).

a) Pay is discouraging
b) Radiation hazard
c) High stress levels at work
d) Night calls and working weekends
e) Poor teamwork
f) Demoralisation from the peer in other professions
g) Others (specify)…….....

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16. Do you experience any of these at work? ***(you may select more than one).***

a) Poor pay.
b) A very relaxing environment
c) High workload
d) Stress free environment
e) Long working hours
f) Moderate working hours
g) Others (specify)…….....

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17. Have you ever thought of leaving South Africa to seek employment in foreign countries?
A) Yes B) No

18. If yes to 17, which of these factors would contribute to your decision to emigrate?

a) Crime rate
b) Insecurity
c) Poor financial reward
d) Poor promotion prospects/criteria
e) Poor facilities at work
f) Poor infrastructures like hospital facilities and roads.
g) Better prospects for profession advancement abroad
h) Others (specify) …….....
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19. How would you describe Radiography as a career?

(you may select more than one).

a) Well paid career compared to the workload
b) A career with many opportunities for profession advancement
c) A career with few opportunities for profession advancement
d) Other (specify) .....
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20. The department of Health has addressed needs of radiographers by putting in place the Occupation Specific Dispensation (OSD).

i) Do you feel that OSD has been implemented to your satisfaction?

A) Yes B) No

ii) If your answer to i) above is No which of the following is true:

(you may select more than one answer).

a) OSD remuneration is academic rather than experience based. It does not account for radiographers' experience.

b) Some radiographers have not received the salary changes as promised by the department of health (OSD).

c) OSD does not recognise certificated qualifications, or having more than one diploma at the same level of qualification.

d) The concept of specialisation has been fairly remunerated by the OSD.

e) The OSD replaced the scarce skill allowances.

21. The two main policies that have been implemented to improve radiography salaries are the OSD and the previous scarce skill and rural allowances. What other aspect of radiography are lagging behind that need to be addressed/ or need to be implemented to improve this career?

a) Creation of graduate & postgraduate posts in the government and other fields outside the hospitals.

b) Scope of practice of radiographers should be advanced and diversified to avoid overdependence on other professions like radiologists.

c) Streamline academic structures to encourage specialisation which will reduce work related stress.

d) Other (specify) ……

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PLEASE ANSWER THIS SECTION IF YOU ARE HOD/ MANAGER OR RADIOGRAPHER IN CHARGE.

22 i) Is your department fully staffed? A) Yes B) No

ii) If **No,** how many more radiographers do you need to be a fully staffed department? .....

iii) Have you ever conducted exit questionnaires to staff that are resigning?

A) Yes B) No

iv) If **Yes** to iii) above, what were the main reasons that made radiographers resign?

a) Family ties e.g. lack of career opportunities for partners in the area

b) Lack of social and cultural infrastructures in the area.

c) High workloads and responsibilities due to insufficient number of employees

d) Poor pay

e) Emigration - moving closer to the family and relatives

f) Hospital facilities and infrastructures are poor for the users and insufficient

g) Other (specify) .....

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23. Complete the table below table with the average number of radiographers employed fulltime and average number of vacant posts during the years indicated in the table.

Year(s)	2008	2009	2010	2011
Average no. of radiographers (per year.)				
Average no. of vacant posts (per year).				

Thank you for taking the time to complete this questionnaire. Your input is very valuable.

J.M. Thambura

Appendix G

QUESTIONNAIRE II

<u>This questionnaire must be completed by radiographers that have left South Africa to work in foreign countries.</u>

<u>Instruction:</u>
Fill in the blank spaces and/or place a circle around the number/letter of the most appropriate answer/s.

1. State your gender? A) Male B) Female
2. State your age?.....years.
3. Are you currently practising as a radiographer? A)Yes B) No
4. How long have you been qualified as a radiographer? …….years .....months.
5. In which country are you currently working?…….....….....
6. How long did you work in Kwa-Zulu Natal as a radiographer? .....years.....months.
7. i) Select your highest radiography qualification when you left South Africa?
    a) National diploma (2 years)
    b) National diploma (3 years)
    c) National diploma radiography (3 years) plus a higher diploma
    d) National diploma plus a B. Tech Radiography
    e) Bachelor of radiography
    f) Bachelor of radiography (honours)
    g) Masters
    h) Doctorate
    i) Other (specify).....
    .....

    ii) If you are a still a radiographer what is your current qualification/s.....
    .....
    .....
8. i) Did you work in a public hospital in Kwa-Zulu Natal (KZN)? A) Yes B) No
    ii) Did you ever work in a private hospital in KZN? A) Yes B) No
    iii) Did you ever leave a public hospital to work in private in KZN? A) Yes B) No
    iv) If **Yes** to (iii), why did you leave the public hospital for private hospital?
    (You may select more than one answer)
        a) Less workload at private hospital.
        b) Greater financial rewards at the private hospital.
        c) Better facilities are better at the private hospitals.
        d) Higher level of motivation.
        e) Better teamwork in the private hospitals.
        f) Others (specify)…….....

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v) If you worked at a public/state hospital what were the conditions that made you remain there? **(*You may select more than one answer below).***

a) Job security
b) Good pay
c) Proper job performance appraisal
d) Flexible work shifts
e) Others (specify)…….....

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Rate the following statements on a scale of 1 - 4 where:
1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree.

vi) Radiography is a flourishing and improving career in KZN.

1	2	3	4

vii) The expectations I had of my career in radiography in KZN were met.

1	2	3	4

viii) Radiography in KZN is a well paid career when compared to its workload.

1	2	3	4

ix) Radiography in KZN has many opportunities for professional advancement.

1	2	3	4

x) My work and social life in KZN was well balanced.

1	2	3	4

(xi) I enjoyed being a radiographer in KZN.

1	2	3	4

9. State what your expectations were of a career in radiography in KZN?
(you may choose more than one answer)

a) Good pay
b) Good working conditions
c) Stress free working environment
d) Others (specify)…….....

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10. Which of your expectations were not met?
(You may choose more than one answer)
    a) Pay
    b) working conditions
    c) Stress free working environment.
    d) Others (specify)…….....

    .....

    .....

11. How many hours did you work per week in KZN? .....

12. How often did you get holiday/leave per year in KZN?
    a) Once
    b) Twice
    c) More than two times
    d) Never

13. i) If you enjoyed being a radiographer in KZN which of the following statements do you agree with ? ***(You may choose more than one option)***
    a) I enjoyed helping patients
    b) The pay was better than other fields
    c) Radiography was not boring
    d) I enjoyed night calls and weekend calls
    e) Others specify…….....……....

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    ii) If you did not enjoy being a radiographer in KZN, what were the reasons?
    (you can choose more than one option).
    a) Working with patients was not enjoyable.
    b) Radiographers' pay was not comparable to the service they offered.
    c) Radiography had high stress levels.
    d) Radiography had long working hours.
    e) I did not like night and weekend calls.
    f) Others specify…….....……....

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14. Did any of the following factors add to your reasons for leaving KZN/SA?
(You may choose more than one answer).
    a) Poor lifestyles of radiographers
    b) Poor financial rewards
    c) Limited opportunities for profession advancement
    d) Social and personal isolation
    e) Radiation hazards
    f) Lack of profession status/title
    g) Poor societal recognition
    h) None of the above
    i) Other factors (specify)….....……....

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15. i) What, in your opinion, could be done to encourage radiographers to remain in the profession within KZN/SA?

(you can choose more than one answer)

a) Better pay.
b) Creation of graduate & postgraduate posts in hospitals and radiography administration in government.
c) Scope of practice of radiographers should be advanced and diversified to avoid overdependence on other professionals like radiologists.
d) Streamline academic structures to encourage specialisation which will reduce stress at work.
e) Others (specify)

……

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ii) How would you compare radiography with any other career that you may ever consider changing to? ***(you may select more than one answer).***

a) Radiography has higher stress conditions.
b) Radiography has radiation hazards.
c) Radiography has a higher workload.
d) The call is at odd/unsociable times.
e) It is expensive to open a private radiography practice.
f) Radiography has a high dependence on other professions like radiologists to give reports.
g) Radiography is a very difficult career.(Academic subjects are difficult).
h) There is more social isolation in radiography.
i) Others.....

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iii) Which (if any) of the following symptoms did you experience as a result of your work routine as a radiographer in KZN?

(You may choose more than one answer.)

a) Headache
b) Lower back pain
c) Neck pain and Spasm
d) Knee pain
e) Others (specify)…..

.....

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.....

16. i) Did you often have to work overtime to complete the departmental work in KZN?

A) Yes B) No

ii) Did you receive fair compensation when you worked after hours?

A) Yes B) No

iii) How were you compensated for working after hours in KZN?

a) Fair financial compensation
b) Poor financial compensation
c) Day off as compensation
d) Other forms of compensation (specify)…….....

…….....

.....

iv) Which of the following factors discouraged you as a radiographer?

(you may choose more than one answer)

a) Pay was discouraging
b) Radiation hazards
c) High stress levels at work
d) Night calls and working weekends.
e) Poor teamwork
f) Demoralisation from the peer in other professions
g) Others (specify)…….....…….....

.....

.....

.....

17. Did you experience any of the following while working in KZN?

(You may choose more than one answer).

a) Poor pay
b) A very relaxing environment
c) High workload
d) Stress free environment
e) Long working hours
f) Moderate working hours
g) Others (specify).....…….....

.....

.....

.....

18. Which of the following factor(s) could have contributed to your reason for emigrating?

(you may select more than one answer)

a) Crime rate
b) Insecurity
c) Poor Financial Reward,
d) Poor promotion prospects/criteria.
e) Poor facilities at work
f) Poor infrastructures like hospital facilities and roads.
g) Better prospects for profession advancement abroad
h) Others (specify) …….....

.....

.....

.....

.....

19. How would you describe Radiography as a career in KZN?
(You may mark more than one answer).

a) Well paid career in relation to the workload
b) A career with many opportunities for profession advancement
c) A career with few opportunities for profession advancement.
d) Other (be specific) .....

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.....

Thank you for taking the time to complete this questionnaire. Your input is very valuable.

J.M. Thambura

Appendix H

QUESTIONNAIRE I

<u>This questionnaire is to be completed by radiographers that have left the radiography profession.</u>

<u>Instruction:</u>

Fill in the blank spaces and/or place a circle around the number/letter of the most appropriate answer/s.

1. State your gender? A) Male B) Female
2. State your age?.....
3. How long have you been qualified as a radiographer? …….....years.
4. How long were you employed as a radiographer? .....years .....mths.
5. Select your highest qualification when you left Radiography?
    a) National diploma (2 years)
    b) National diploma (3 years)
    c) National diploma radiography (3 years) and a higher diploma)
    d) National diploma and a B-tech radiography
    e) Bachelor of radiography
    f) Bachelor of radiography (honours)
    g) Masters
    h) Doctorate
    i) Other (Specify) .....
    .....
6. i) Have you ever worked in a public hospital in KZN? A) Yes B) No
    ii) Have you ever worked in a private practice? A) Yes B) No
    iii) Did you ever leave the public hospital to work in private? A) Yes B) No
    iv) If Yes to iii) above, why did you leave the public hospital***?***
    (you may select more than one answer).
        a) Less workload at private hospital
        b) Greater financial rewards at the private hospital
        c) Better facilities at the private hospitals

        Other (specify)…….....
        .....
        .....
        .....
    v) If you were working at a public hospital, what were the conditions/factors that made you <u>remain</u> there? ***(you may select more than one answer).***
        a) Job security
        b) Good pay
        c) Proper job performance appraisal

d) Flexible work shifts

Others (specify)…….....

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Rate the following statements on a scale of 1 - 4 where:

1 = strongly disagree, 2 = disagree, 3 = agree, 4 = strongly agree.

vi) Radiography is a flourishing and improving career.

1	2	3	4

vii) The expectations I had of my career in radiography were met?

1	2	3	4

viii) Radiography is a well paid career when compared to its workload.

1	2	3	4

ix) Radiography has many opportunities for professional advancement.

1	2	3	4

x) My work and social life was balanced.

1	2	3	4

(xi) I enjoyed being a radiographer.

1	2	3	4

xii) The working conditions of a radiographer are stress free.

1	2	3	4

xiii) The intensity of work in my former radiography department was very low.

1	2	3	4

7. i) What were your initial expectations of a career in radiography?

   a) Good pay
   b) Good working condition
   c) Stress free working environment

   Others (specify)…….....

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   .....

   ii) Which of your expectations were not met?

   a) Pay
   b) Working conditions
   c) Stress free working environment
   d) Others (specify)…….....

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8. How many hours did you work in one week?.....

9. i) How often did you get a holiday/go on-leave per year?

   a) Once
   b) Twice
   c) More than twice
   d) Never

   ii) If you enjoyed being a radiographer, which of the following statements do you agree with: ***(You can choose more than one options).***

   a) I enjoyed helping patients
   b) The pay is better than other field
   c) Radiography is not boring
   d) Others (specify).....

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10. i) If you did not enjoy being a radiographer what were the reasons? ***(you can choose more than one).***

   a) Radiography has high stress levels
   b) Radiography has long working hours
   c) Radiography has night calls and weekend calls
   d) Others specify…….....

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ii) Did any of the following factors add to yours reasons for leaving radiography?
(***Mark (X) against all that apply).***

a) Lifestyles of radiographers

b) Radiation hazards

c) Poor financial rewards

d) Social and personal isolation

e) Limited opportunities for profession advancement

f) Lack of profession status

g) Poor societal recognition

h) None of the above

I) Other factors (specify)…….....

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iii) What, in your opinion, could be done to encourage radiographers to remain in the profession? ***(you may select more than one answer).***

a) Better pay.

b) Creation of graduate & postgraduate posts in hospitals and in the government.

c) Scope of practice of radiographers should be advanced and diversified to avoid overdependence on other professionals like radiologists.

d) Streamline academic structures to encourage specialisation which will reduce stress at work.

e) Others (specify)…….....

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iv) How do you compare radiography with the career you have changed to or would consider changing to? ***(you may select more than one answer).***

a) Radiography had higher stress conditions.

b) There were radiation hazards.

c) Radiography had a higher workload

d) The call was at odd/unsociable times.

e) It is expensive to open a private radiography practice.

f) Radiography has a high dependency on other professions like radiologists to give reports.

g) Radiography is a very difficult career. (academic subjects are difficult)

h) There is more social isolation in radiography.

i) Others (specify) .....

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11. As a radiographer which of these symptoms (if any) did you experience as a result of your work routine? **(*You may select more than one answer below).***

    a) Headache
    b) Lower back pain
    c) Neck pain and Spasm
    d) Knee pain
    e) Others (specify)…….....

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12. i) Were you compelled to work overtime in order to complete the work? A) Yes B) No

    ii) Did you receive fair compensation when you worked after-hours? A) Yes B) No

    iii) How were you compensated for working after hours?

    a) Fair financial compensation
    b) Poor financial compensation
    c) Day off work compensation
    d) Specify others forms of compensation…….....

    …….....

    iv) Which of these factors dissatisfied you as a radiographer?
    (*You may select more than one answer below).*

    a) Pay is discouraging
    b) Radiation hazard
    c) High stress levels at work
    d) Night calls and working weekends
    e) Poor teamwork
    f) Demoralisation from the peer in other professions
    g) Others (specify)…….....

    …….....

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    .....

    .....

13. Have you experienced any of these in your <u>current</u> work?
    (*You may select more than one answer below).*

    a) Poor pay
    b) A very relaxing environment
    c) High workload
    d) Stress free environment
    e) Long working hours
    f) Moderate working hours
    g) Others (specify)…….....

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14. i) Did you ever think of leaving South Africa to seek radiography employment in foreign countries?

A)Yes B) No

ii) If yes to 14 above, which of the following factors would have possibly contributed to your to your decision to emigration? ***(you may select more than one answer)***

a) Crime rate

b) Insecurity

c) Poor Financial Reward

d) Poor promotion prospects/criteria

e) Poor facilities at work

f) Poor infrastructures such as hospital facilities and roads

g) Better prospects for profession advancement abroad

h) Others (specify) …….....

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Thank you for taking the time to complete this questionnaire. Your input is very valuable.

J.M. Thambura.

DURBAN UNIVERSITY of TECHNOLOGY

STATISTICIAN DECLARATION FOR CONSULTATION:

I, Deepak Singh, have read Julius Thambura's M.Tech proposal (student no: 21143607) and given him appropriate recommendations.

Signed……  **……..Date 18 October 2011**