



Experiences of diagnostic radiographers in the workplace and  
its effect on service quality: a case study in the eThekweni  
health district of KwaZulu-Natal

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## **DEDICATION**

This work is dedicated to my parents, Mr and Mrs Govindasami, for their unwavering blessing, faith and prayer to ensure the completion of this study.

# **ABSTRACT**

## **INTRODUCTION**

The South African public health system (SAPHS) has been plagued by a burden of diseases and ill health. Although there are many Acts and policies in place in South Africa (SA) to maintain the constitutional rights of all citizens using public health facilities, suboptimal service quality and unfair treatment of patients in public health facilities continue to be documented. At the same time, staff employed within the SAPHS perceive themselves to be overworked, overburdened, stressed and to receive no support. The workplace environment of an employee is considered a vital component in ensuring employee motivation and satisfaction; a suitable work environment improves employee productivity and service quality. Several studies on other similar health disciplines, both local and international, have found that there is a reciprocal relationship between suboptimal service quality and the workplace environment (Mosadeghrad 2014: 85-87; Nkosi 2014: 67-70; Segnon 2014: 90-93). Radiographers constitute a fundamental component of the public health service and an understanding of how they experience their workplace environment is imperative.

## **PURPOSE**

The purpose of this case study was to explore the workplace experience of diagnostic radiographers and to examine the effect/s of their experience on radiography service quality in the regional public health sector.

## **METHOD**

The study was based on a qualitative, case study design that was explorative and descriptive in nature. A constructivist approach was used to construct the workplace experiences of regional diagnostic radiographers regarding their workplace environment. A purposeful sampling technique was utilised to select the radiography managers and the snowball sampling technique was utilised to select the diagnostic radiographers. In total, 24 regional diagnostic radiographers were interviewed for this study, both at management and non-managerial/operational levels. Both semi-structured interviews and focus group interviews were employed in this study. An audio recorder was used to capture the interviews and all interview transcripts were

transcribed verbatim. The data was analysed using qualitative content analysis. All emergent themes were analysed and understood in relation to the study's conceptual framework namely: (physical workplace environment, workplace rewards and incentives, managers' support and communication) and the theoretical framework was used to guide the study findings.

## **RESULTS**

The findings show that there was a reciprocal relationship between suboptimal radiography service quality and the workplace environment that participant radiographers were exposed to whilst conducting their duties. The main study findings include the following: there were limited functional units to service the large workloads that were encountered; faulty and old equipment resulting in frequent repeats which cause a radiation hazard; and using faulty equipment physically compromises staff and results in an occupational health risk and as potential iatrogenic injuries for patients too. Radiography equipment is not ergonomically friendly and results in radiographers experiencing discomfort and strain whilst conducting their duties. These experiences are compounded by staff shortages, unmanageable workloads and inadequate ventilation and space limitations. Further to this, unsatisfactory rewards and poor incentives, together with inadequate employee management performance and development systems and employee assistance programmes, demotivate diagnostic radiographers. Some managerial concerns reported by radiographers included: suboptimal implementation of standard operating procedures; suboptimal support for orientation and professional training and development; suboptimal motivation through rapport, recognition and support; poor management of workplace conflict; unapproachable managers; and no contribution in decision-making. Other areas of concern were the communication challenges experienced due to suboptimal departmental communication channels, poor communication skills of diagnostic radiographers, and language and translation. All of these workplace experiences were seen to have a negative effect on radiography service quality.

## **DISCUSSION**

Maslow's (1968) hierarchy of needs was used to provide a meaningful interpretation of the results. Diagnostic radiographers require the realisation of these workplace needs. In relation to the physiological needs, diagnostic radiographers require adequate staffing and manageable workloads. The safety needs are to work with and provide patients with a safe environment in respect to x-ray equipment, ventilation and space. Safety needs also require that diagnostic radiographers have effective communication channels within all levels of the radiography department. They also need to be able to interact effectively with clinicians and other health professionals in conveying information regarding patients. There needs to be proper communication techniques when obtaining informed consent and positioning patients during radiography examinations. Regarding social needs, diagnostic radiographers require support for proper orientation, professional training and development, adequate implementation of standard operating procedures (SOPs), adequate workplace conflict resolution, and effective and adequate support from employee assistance programmes. Diagnostic radiographers' esteem needs appear to be addressed when they are provided with adequate compensation packages, allowances and receive recognition through well implemented employee performance management and development systems. Lastly diagnostic radiographers' self-actualisation needs appear to be attained when they are included in decision-making and are provided with adequate managerial motivation, recognition and support. This need is also attained when diagnostic radiographers are given the ability to manifest innovation and creativity in the workplace, have a sense job autonomy and an increased sense of responsibility.

## **CONCLUSION**

Diagnostic radiographers working within regional public health institutions experience various challenges relating to their workplace environment and this affects their radiography service quality. In keeping with Maslow's (1968) theory of hierarchy of needs, this study affirms that it may be possible to achieve high performance from diagnostic radiographers, when their' hierarchical needs are satisfied. The findings of this study may contribute toward policy changes that may address the challenges experienced by diagnostic radiographers and bring about

change to improve their motivation and job satisfaction. The results may benefit the National Health Insurance scheme to better implement their strategic goals and plans and could have the potential to positively influence the radiography workplace environment and ultimately bring about change in the radiography service quality.

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# TABLE OF CONTENTS

DECLARATION.....	ii
DEDICATION.....	iii
ABSTRACT.....	iv
ACKNOWLEDGEMENTS.....	viii
TABLE OF CONTENTS.....	ix
LIST OF FIGURES.....	xiv
LIST OF APPENDICES.....	xv
DEFINITIONS OF TERMS AND ABBREVIATIONS.....	xvi
CHAPTER 1: INTRODUCTION.....	1
1.1 BACKGROUND AND CONTEXT TO THE STUDY.....	1
1.2 STUDY PROBLEM AND RATIONAL.....	3
1.3 STUDY PURPOSE.....	4
1.4 CRITICAL QUESTIONS OF THE STUDY.....	4
1.5 SIGNIFICANCE AND BENEFITS OF STUDY.....	4
1.6 OVERVIEW OF THE RESEARCH STUDY.....	5
CHAPTER 2: LITERATURE REVIEW.....	7
2.1 INTRODUCTION.....	7
2.2 SOUTH AFRICAN HEALTH SYSTEM.....	8
2.3 NATIONAL HEALTH INSURANCE AND THE SA IDEAL CLINIC AND HOSPITAL INITIATIVE.....	9
2.4 RADIOGRAPHY SERVICES WITHIN SA PUBLIC HEALTH SYSTEM.....	10
2.5 NATIONAL CORE STANDARDS AS IT RELATES TO RADIOGRAPHY SERVICES.....	12
2.6 NATIONAL LEGISLATION, ACT AND POLICIES ON RADIOGRAPHY ...	13
2.6.1 Ethical Guidelines and Responsibilities of the Radiographer.....	14
2.7 QUALITY IN HEALTH SERVICES.....	15
2.8 RADIOGRAPHY SERVICE QUALITY.....	16
2.8.1 Role of QA and QC in Radiography Service Quality.....	16
2.8.2 Patient-Centred Care in Radiography Service Quality.....	18

2.8.3	An Understanding of Employees Performance and Productivity on Service Quality .....	19
2.9	THE WORKPLACE ENVIRONMENT IN THE PUBLIC SECTOR .....	20
2.9.1	The Effects of Physical Workplace Environment on Occupational Health and Service Quality .....	21
2.9.1.1	Effects of Ventilation on Occupational Health and Service Quality .....	21
2.9.1.2	Effects of Ergonomics on Occupational Health and Service Quality .....	22
2.9.1.3	Effects of Staff Shortages and Workloads on Occupational Health and Service Quality .....	24
2.9.1.4	Workplace Resources and their Effect on Service Quality .....	25
2.9.2	Workplace Rewards and Incentives and their Effect on Service Quality .....	26
2.9.2.1	Employee Assistance Programmes and their Effect on Service Quality .....	27
2.9.3	Manager Support and its Effect on Service Quality .....	28
2.9.3.1	Managerial Accountability and Responsibility.....	28
2.9.3.2	Managerial Conflict Resolution.....	28
2.9.3.3	Unapproachable Managerial Styles.....	29
2.9.3.4	Participative Management and Participation of Employees in Decision-Making Processes .....	30
2.9.4	Communication and its Effect on Service Quality .....	31
2.9.4.1	Departmental Communication and its Effects on Services Quality .....	31
2.9.4.2	Health Professionals Communication Skills and their Effects on Service Quality .....	32
2.9.4.3	Language and its Effects on Service Quality .....	33
2.10	CONCEPTUAL AND THEORETICAL FRAMEWORK.....	34
2.11	SUMMARY .....	38
CHAPTER 3: RESEARCH METHODOLOGY .....		40
3.1	INTRODUCTION.....	40
3.2	RESEARCH DESIGN.....	40

3.2.1	Paradigm .....	40
3.2.2	Qualitative Research Design .....	41
3.2.3	Case Study Design .....	41
3.2.4	Descriptive Design.....	42
3.2.5	Study Assumptions .....	42
3.3	STUDY SETTINGS .....	42
3.4	POPULATION .....	43
3.5	SAMPLE PROCEDURES .....	44
3.5.1	Purposeful Sampling.....	45
3.5.2	Snowball Sampling .....	45
3.5.3	Inclusion Criteria .....	45
3.5.4	Exclusion Criteria.....	46
3.6	DATA COLLECTION.....	46
3.6.1	Data Collection Instruments.....	46
3.6.1.1	Data Collection Method .....	47
3.7	DATA ANALYSIS PROCESS.....	48
3.8	MEASURES OF TRUSTWORTHINESS .....	52
3.8.1	Credibility .....	52
3.8.2	Transferability .....	53
3.8.3	Dependability .....	53
3.8.4	Confirmability .....	53
3.9	ETHICAL ISSUES.....	54
3.9.1	Strategies of Autonomy .....	54
3.9.2	Strategies of Beneficence.....	54
3.9.3	Strategies of Justice .....	55
3.10	SUMMARY .....	55
CHAPTER 4:	RESEARCH RESULTS.....	57
4.1	INTRODUCTION.....	57
4.2	PARTICIPANT DEMOGRAPHICS .....	57
4.3	INTRODUCTION TO THEMES .....	60
4.4	THEME ONE: THE PHYSICAL WORKPLACE ENVIRONMENT.....	63
4.4.1	Category One: Condition of X-Ray Equipment .....	63
4.4.2	Category Two: Ventilation.....	65

4.4.3	Category Three: Space and Infrastructure.....	66
4.4.4	Category Four: Staff Shortages and Workloads .....	67
4.5	THEME TWO: THE WORKPLACE REWARDS AND INCENTIVES .....	69
4.5.1	Category One: The Occupational Specific dispensation (OSD) Structures and Allowances .....	69
4.5.2	Category Two: Employee Performance Management and Development Systems (EPMDS).....	70
4.5.3	Category Three: The Quality of Employee Assistance Programmes (EAP).....	71
4.6	THEME THREE: MANAGERS SUPPORT .....	72
4.6.1	Category One: Participation in Decision-Making .....	72
4.6.2	Category Two: Implementation of Standard Operating Procedures (SOPS) .....	73
4.6.3	Category Three: Motivation through Rapport, Recognition and Support .....	75
4.7	THEME FOUR: COMMUNICATION.....	76
4.7.1	Category One: Departmental Communication Channels .....	76
4.7.2	Category Two: Communication Skills of Diagnostic Radiographers ...	77
4.7.3	Category Three: Language and Translation .....	78
4.8	SUMMARY .....	79
CHAPTER 5: DISCUSSION .....		80
5.1	INTRODUCTION.....	80
5.2	PHYSIOLOGICAL NEEDS .....	82
5.2.1	Physical Workplace Environment as Related to Physiological Needs	82
5.2.1.1	Staff Shortages and Staff Workloads .....	82
5.3	SAFETY NEEDS .....	85
5.3.1	Physical Workplace Environment as Related to Safety Needs .....	85
5.3.1.1	Conditions of X-Ray Equipment .....	86
5.3.1.2	Ventilation and Space .....	88
5.3.2	Communication as Related to the Safety Needs .....	90
5.3.2.1	Departmental Communication Channels .....	91
5.3.2.2	Communication Skills of Diagnostic Radiographers .....	92
5.3.2.3	Language and Translation.....	93

5.4	SOCIAL NEEDS.....	94
5.4.1	Managers Support as Related to Social Needs .....	95
5.4.1.1	Support of staff for Proper Orientation, Professional Training and Development .....	95
5.4.1.2	Implementation of Standard Operating Procedures (SOPs).....	96
5.4.1.3	Workplace Conflict and Managerial Approachability .....	97
5.4.2	Workplace Rewards and Incentives as Related to Social Needs .....	98
5.4.2.1	The quality of Employee Assistance Programmes (EAP).....	98
5.5	ESTEEM NEEDS .....	99
5.5.1	Workplace Rewards and Incentives as Related to Esteem Needs .....	99
5.5.1.1	OSD Structures and Allowances .....	100
5.5.1.2	Employee Performance Management and Development Systems .....	101
5.6	SELF-ACTUALISATION NEEDS .....	101
5.6.1	Manager Support as Related to the Self-Actualisation Needs .....	102
5.6.1.1	Participation in Decision-Making .....	102
5.6.1.2	Motivation through Recognition and Support.....	103
5.7	SUMMARY .....	104
CHAPTER 6: CONCLUSION AND RECOMMENDATIONS .....		106
6.1	RECOMMENDATIONS AND STUDY LIMITATIONS.....	109
6.1.1	Recommendations for KZN DOH and National DOH.....	109
6.1.2	Recommendation for Hospital and Radiography Management .....	110
6.1.3	Recommendation to Diagnostic Radiographers (Non-Managerial) and Tertiary Institutions .....	112
6.2	RECOMMENDATIONS FOR FUTURE STUDIES.....	113
REFERENCES.....		114
APPENDICES .....		138

## LIST OF FIGURES

<i>Figure 2.1: Modified version of referral map for radiography services in SAPHS..</i>	<i>12</i>
<i>Figure 2.2: Diagrammatic depiction of conceptual and theoretical framework .....</i>	<i>37</i>
<i>Figure 3.1: Diagrammatic depiction of data analysis stages .....</i>	<i>51</i>
<i>Figure 4.1: Gender of participants .....</i>	<i>58</i>
<i>Figure 4.2: Demographics of participants in the RM category.....</i>	<i>58</i>
<i>Figure 4.3: Age groups of the participants in the DR category.....</i>	<i>59</i>
<i>Figure 4.4: Years of experience of participants in the DR category .....</i>	<i>59</i>
<i>Figure 4.5: Length of service of participants in the DR category.....</i>	<i>60</i>
<i>Figure 4.6: Themes and categories and subcategories .....</i>	<i>62</i>
<i>Figure 5.1: Diagrammatic depiction of main study findings as it relates to the conceptual and theoretical framework .....</i>	<i>81</i>

## LIST OF APPENDICES

<i>Appendix A- Ethics Approval.....</i>	<i>138</i>
<i>Appendix B- Permission Letter.....</i>	<i>139</i>
<i>Appendix C- DOH Approval .....</i>	<i>141</i>
<i>Appendix D- eThekwini District Approval .....</i>	<i>142</i>
<i>Appendix E- Letter of Information and Consent .....</i>	<i>143</i>
<i>Appendix F- Semi-Structured Interview Schedule with Radiography Managers .</i>	<i>146</i>
<i>Appendix G: Focus Group Interview Schedule with Diagnostic Radiographers (non-managerial/operational).....</i>	<i>148</i>
<i>Appendix H- Editorial Certificate .....</i>	<i>150</i>

## **DEFINITIONS OF TERMS AND ABBREVIATIONS**

DHS- District Health System

DRs- Diagnostic Radiographers (non-managerial)

EAP- Employee Assistance Program

EPMDS- Employee Performance Management and Development Systems are currently used in the department of health to evaluate the staff performance and measure development.

FGI- Focus Group Interview

HPCSA- Health Professions Council of South Africa

KZN- KwaZulu-Natal

KZN DOH- KwaZulu-Natal Department of Health

National DOH- National Department of Health

NHI- National Health Insurance

OHSACT- Occupational Health and Safety Act

OSD- Occupational Specific Dispensation

PHC- Primary Health Care

QA- Quality Assurance

QC- Quality Control

RMs- Radiography Managers (diagnostic radiography managers)

SA- South Africa

SAPHS- South African Public Health System

SADHS- South African District Health System

SAHS- South African Health System

SOPs- Standard Operating Procedures

SSI- Semi-Structured Interview

UHC- Universal Health Care

WHO-World Health Organisation

Workplace Environment:

The workplace environment can be viewed as an entity that comprises a totality of influential factors that are or potentially will affect the employee's activities and performance (Bushiri 2014: 7). It could be viewed as the entirety of the interrelationship that occurs between the employees and the workplace environment within which the employee works (ibid). The term workplace environment in this study is used to denote the following influential factors namely: physical workplace environment, workplace rewards and incentives, manager's support and communication (ibid).

# CHAPTER 1: INTRODUCTION

## 1.1 BACKGROUND AND CONTEXT TO THE STUDY

The National Department of Health in South Africa (SA) has numerous policies and Acts in place to ensure quality health services (Rowe and Moodley 2013: 3). The Constitution of SA highlights that the citizens of SA have a right to basic healthcare services and that the state should take reasonable measures to ensure that adequate resources are made available to achieve quality health care services (South Africa 1996: 1251-1255). However, Vawda and Variawa (2012: 489) state that limited resources have led to congestion in public health facilities, lack of space and privacy, and inadequate pharmaceutical services, all of which have contributed to suboptimal service quality. Jobson (2015) observes that most public hospitals are under-resourced and have been criticised for suboptimal service quality. Patients in the public health sector still have trouble in accessing basic essential health services provided by public health hospitals (Segnon 2014: 90-93).

The health profession should be characterised by care and compassion. Studies by Khoza, Du Toit and Roos (2010: 58-59) and Komape (2013: 13-15), however, reveal negative perceptions of exploitation, maltreatment and negligence of patients at SA public hospitals which contribute to suboptimal service quality. There are also numerous references in the media (Moeti 2012; Senekal 2016) regarding rudeness and arrogance towards patients, who are mainly from lower socio-economic backgrounds, pointing to a collapsing SA public health care system. Mpulo and Mthethwa (2017) share the view that the public health system is unable to deliver adequate and quality healthcare services to the most vulnerable patients in SA.

Environments that are unpredictable and overworked impact the morale of health professionals working there which negatively affects service quality (Aziz *et al.* 2015: 201-204). The workplace environment in the public sector can affect an employee's morale, productivity and engagement positively or negatively which in turn affects the employee's service quality (Chandrasekar 2011). Health service quality is said to be a product of the relationship between health professionals and patients in a supportive

workplace environment (Chandrasekar 2011; Mkoka *et al.* 2015: 1-2). Several studies on other similar health disciplines, both local and international, found that there was a reciprocal relationship between suboptimal service quality and the workplace environment (Aziz *et al.* 2015: 203; Mosadeghrad 2014: 85-87; Nkosi 2014: 3-8; Segnon 2014: 90-93). These were related to aspects such as a lack of adequately qualified staff, suboptimal workplace incentives, a poor physical work environment and inadequate communication. The data from these studies cannot be generalised to diagnostic radiographers in the eThekweni public health district of KwaZulu-Natal (KZN) as their requirements regarding the workplace environment may be different.

The radiography profession plays a crucial role to diagnose many acute and chronic diseases such as pneumonia and tuberculosis, particularly in low resource settings (Abbas 2017: 1). Radiographers make use of x-rays and other forms of energy to acquire medical images of patients to diagnose or treat certain medical conditions (Bui and Taira 2010: 21-23). Diagnostic radiographers provide the most basic form of radiography services offered through the conventional x-ray film that is utilised to diagnosis many of these acute and chronic diseases (Bui and Taira 2010: 21; Matilainen *et al.* 2017: 139-149). Computed tomography (CT) and magnetic resonance imaging (MRI) scans are used for examination of the body and brain structures that are not visible by means of conventional x-rays (Bui and Taira 2010: 23; Makanjee, Bergh and Hoffmann 2014: 3). Computed tomography and MRI scans aid medical clinicians in diagnosing diseases early and accurately, and improve patients' health outcomes (Makanjee, Bergh and Hoffmann 2014: 3). It is therefore critical that radiography services are of a high quality to maintain accurate patient diagnosis (Hoe 2007: 643). To attain this level of radiography service quality it is a reasonable assumption that a safe and well-resourced workplace environment is beneficial to enhanced productivity, a healthier workforce, and improve patient diagnosis (Vawda and Variawa 2012: 493; Gawugah 2016: 48).

Furthermore, the World Health Organisation (WHO) reported that in 2017 almost half of the world population was unable to obtain essential healthcare services (World Health Organisation [WHO] 2018b). Each year numerous people descend into poverty as they incur health expenses out of their own pockets (WHO 2018b). Universal health care (UHC) is a priority objective for the WHO and a major health reform goal for many countries (WHO 2018a). Universal health care ensures that all people have effective

and sufficient access to promotive, preventive, curative and rehabilitative healthcare services (WHO 2018b). Universal health care was further established to ensure that people do not suffer financial hardships in the pursuit of obtaining healthcare services (Ataguba and Akazili 2010: 74-77). National Health Insurance (NHI) is SA's approach to achieving universal access to quality healthcare (South Africa. Department of Health 2011a). The NHI was implemented in 2012 and was to be phased in over a 14-year period (Rowe and Moodley 2013: 3). The main intent of the NHI is to ensure that every citizen of SA has reasonable access to quality and affordable healthcare services (ibid). The implementation of the NHI aims to reduce the current disparity between the private and the public health sectors in SA (Jobson 2015). This can be realised if there is a significant improvement in the health service quality offered at public hospitals (South Africa. Department of Health 2011a).

## **1.2 STUDY PROBLEM AND RATIONAL**

There is a common perception that the SA public health sector remains problematic for its patients as it is unable to deliver efficient, effective and quality services (Nkosi 2014: 67-69). This is particularly so given the SA public healthcare environment where patients experience long waiting times and queues, disrespectful staff, limited medication and equipment to service them, and a shortage of health professionals to assist them (South Africa. Department of Health 2010). Healthcare and quality are intricately connected and the delivery of healthcare services without concern for quality is unprofessional and possibly fatal (Gawugah 2016: 16).

There are six public hospitals within the eThekweni health district of KZN that offer a CT scan service to the most vulnerable patients who require these scans for early diagnosis of acute and chronic diseases (South Africa. Department of Health KwaZulu-Natal 2018). During the period 2014-2016 four major public hospitals in the eThekweni health district of KZN witnessed non-functional CT scanners which led to detrimental health outcomes for many patients requiring urgent scans (Attwood 2015; Ndaliso 2016). The patient mortality rate increased because of patients having to wait to have urgent scans to diagnose their conditions and or receive cancer radiation treatment (Ndaliso 2016). Yet the vision of the SA Department of Health (DOH) is to ensure a long and healthy life for all South Africa citizens (South Africa. Department of Health KwaZulu-Natal 2018). A recent media report by Mthethwa (2018) describes major

concerns regarding suboptimal radiography service quality at public hospitals due to non-functional equipment that renders patients being denied imaging services. These occurrences are of concern as radiographers are dependent on the state and the condition of their workplace environment (not only limited to x-ray equipment) to offer quality radiography services.

The purpose of this case study was to explore the workplace experience of diagnostic radiographers and to examine the effect/s of their experience on radiography service quality in the regional public health sector. This contributes to the understanding of the knowledge of factors that enable or constrain/hinder radiography service quality in the public sector. This study may contribute to a further understanding of the specific workplace environment that may benefit the NHI in the implementation of their strategic goals and plans in the pursuit of achieving universal health care.

### **1.3 STUDY PURPOSE**

The purpose of this case study was to explore the workplace experience of diagnostic radiographers and to examine the effect/s of their experience on radiography service quality in the regional public health sector.

### **1.4 CRITICAL QUESTIONS OF THE STUDY**

1. What are the workplace experiences of diagnostic radiographers working at selected regional hospitals in the public sector?
2. How do the workplace experiences of diagnostic radiographers in selected regional hospitals in the public-sector affect radiography service quality and why?

### **1.5 SIGNIFICANCE AND BENEFITS OF STUDY**

In general, the radiography profession globally is perceived as a struggling emergent profession, which appears to have a low status due to its limited public rapport (Britton, Pieterse and Lawrence 2017: 28). They argue that this low status leads to a lack of recognition of this healthcare profession, which affects the confidence and self-esteem of radiographers. Similarly, in SA diagnostic radiographers may encounter their own unique contextual workplace experiences. Various studies (Mosadeghrad 2014: 85-

87; Nkosi 2014: 67-70; Segnon 2014: 90-93) have reported on health professionals who describe their unique experiences and the effect these experiences have had on their service quality. Therefore, a qualitative case study design exploring diagnostic radiographers' workplace experiences and their effects on radiography service quality in the eThekweni public health district of KZN was beneficial to identify all factors that enable or constrain/hinder radiography service quality in the public sector. Diagnostic radiographers are front-line workers who are exposed directly to the various elements of their workplace environment whilst performing their duties and delivering radiography services to patients. The unique experiences encountered by the diagnostic radiographers employed in the regional public health sector contribute to this topic by adding to and supporting the existing arguments addressed in other studies. It adds new insights and recommendations which are unique to the radiography profession in the eThekweni health district of KZN.

It is hoped that the findings could have the potential to address the challenges and establish improvements in radiography service quality offered at public hospitals. It may also help improve job satisfaction and morale for diagnostic radiographers and contribute toward policy changes that could positively affect the workplace environment and bring about a change in radiography service quality.

## **1.6 OVERVIEW OF THE RESEARCH STUDY**

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

### Chapter 1: Introduction

This chapter briefly explains the background of the research topic together with the problem statement and the rationale for the study. It incorporates the purpose statement and critical questions of this research and presents the significance of the study.

### Chapter 2: Literature review

This chapter reviews the literature relating to the defined problem of this study. It provides a background of the study and a review of all the current and relevant information around this topic. The chapter reviews the gaps within the current literature

and the need for further exploration. The conceptual framework is explained and the theoretical framework that was employed to inform the study findings is discussed.

### Chapter 3: Research methodology

This chapter provides a clear explanation of the methodology that was used to answer the research purpose and critical questions. The reason why the methodology was chosen is explained. A detailed description of the research design, study settings, study population, sample procedures, data collection and data analysis process are provided. The study's trustworthiness, ethical considerations and limitations are discussed.

### Chapter 4: Research results

This chapter provides a detailed explanation of the results found during the research analysis. The research results are reported under main themes and categories (subcategories that formulated categories) that made up each theme. The themes that emerged were understood in relation to the conceptual framework of the study.

### Chapter 5: Discussion

This chapter discusses the research results. All the emergent themes/categories are discussed in relation to the theoretical framework proposed for the study, namely, Maslow's hierarchy of needs.

### Chapter 6: Conclusion and Recommendations

This chapter concluded all the findings found in each phase of the research and the value that these findings bring to the study. Based on the findings of the research, recommendations are presented. The study limitation is also presented in this chapter.

## **CHAPTER 2: LITERATURE REVIEW**

### **2.1 INTRODUCTION**

This chapter reviews research publications, books and other documents related to the defined problem. The search of literature was carried out using several databases including the following: Pubmed, Science Direct, ProQuest, SA Radiographer, Medline and Google Scholar. The search was limited to literature found in the English medium. A considerable number of studies were found regarding the workplace experiences of other similar health professionals and the effects these have had on service quality. A limited amount of literature was found around workplace experiences of radiographers and their effects on radiography service quality based on the perceptions of international radiographers. No literature was found documenting the experiences of diagnostic radiographers in the workplace and the effect of such experiences on service quality within the eThekweni district of KZN.

This review discusses the South African Health System (SAHS) pre- and post-apartheid. It reviews the South African Public Health System (SAPHS) that was based on a district health system (DHS) approach. It further reviews the primary health care (PHC) strategy that was adopted by SAPHS. The initiatives that were directed to improve health services under the DHS approach are briefly discussed. The current flaws experienced within the DHS are reviewed and the need for health reforms such as UHC, NHI and the desire for ideal clinics and hospitals in SA are reviewed. The review also examines the role of radiography services within South African Public Health System (SAPHS) and discusses the initiatives of the national core standards as these relate to radiography services. National legislation acts and policies on radiography are reviewed and the ethical responsibilities of the radiographer are addressed. Quality in health services is examined and radiography service quality is discussed.

In this study the elements of the workplace environment as it inter-relates to the conceptual framework are the physical workplace environment, workplace rewards and incentives, manager's support, and communication. The review describes literature and studies uncovered regarding the above elements of the workplace

environment and the effect it has on service quality or radiography service quality. The review focuses on the arguments that have been uncovered in these studies and the need for further exploration within this topic is depicted. Lastly, the conceptual framework is presented and described and the theoretical framework that was used to guide the findings of this study is described and explained. This review further explains the link between the conceptual and the theoretical framework of this study.

## **2.2 SOUTH AFRICAN HEALTH SYSTEM**

During the apartheid regime, there was a fragmented health system due to apartheid government policies which resulted in some population groups being disadvantaged (Jobson 2015). He further asserts that the new democratic government sought to dismantle the effects created by apartheid by introducing a single SAHS through a DHS approach, in the post-apartheid era. A DHS system is defined as a self-contained segment of the national health system with a well-defined population, located within a visibly defined administrative and geographic location (South Africa. Department of Health 2009; Dookie 2015). A DHS comprises all healthcare activities that are inclusive of government and private entities (South Africa. Department of Health 2009; Dookie 2015). A DHS approach delegates responsibility for service delivery to the district level (Usher 2015: 55-56). Organisations are required to restructure health services and allocate distinct functions to the national department, the provinces and the districts/municipalities (South Africa. Department of Health 2009). This approach was adequate to engage community participation in planning, provisions and monitoring of services under democratically elected representatives (Usher 2015: 56).

The DHS was used as a medium to deliver the primary health care (PHC) approach which was adopted by the Department of Health (DOH) as it was the most efficient and cost-effective means of improving the population's health (Usher 2015: 56). Primary health care was enunciated by the WHO (1978) at Alma Alta and is a philosophy which is committed to improve access to health services for vulnerable groups in society based on comprehensive, promotive, preventative, rehabilitative and curative health care (South Africa. Department of Health 2009). Free PHC services and clinic-building programmes were instrumental in removing barriers to access to basic healthcare. Other positive developments under the PHC approach included expanded immunisation programmes, the creation of the largest HIV treatment

programme in the world, successful prevention of mother to child HIV transmission, and improvements in malaria control (Brauns 2013: 25; Rispel 2016: 18). These programmes were beneficial because they focused on equity and redressed the challenges experienced by the most disadvantaged groups who were affected by the apartheid policies (Rispel 2016: 18).

The above health reforms, however, were not adequate to improve the SAPHS (Rispel 2016: 18). The WHO reports that the SADHS approach was not a fully functional system because of the lack of role clarity, poor decision-making, trust and tension among members of the national, provincial, and local government spheres (Rispel 2016: 20). This dysfunctionality resulted in inequitable resources (human and financial) being allocated to districts, ineffective and inefficient management systems, lack of accountability, suboptimal leadership, ineffective programme implementations and political contestations (Usher 2015: 63). In addition, the district hospital was poorly co-ordinated with PHC services in many areas (Bheekie and Bradley 2016: 242).

The South African government has launched the UHC approach for all SA citizens to address the inadequate healthcare services, escalating private healthcare costs and widening health inequalities (Rispel 2016: 20), through the NHI. As discussed in Chapter 1, the main aims of this approach is to improve health coverage, outcomes and reduce the financial burden that people may encounter in the pursuit of obtaining essential healthcare services (Kieny and Evans 2013: 305-306).

### **2.3 NATIONAL HEALTH INSURANCE AND THE SA IDEAL CLINIC AND HOSPITAL INITIATIVE**

The NHI is an innovative system of health financing that would align the SAHS and reduce the current disparity between the public and private sectors (Jobson 2015). It is argued that the NHI aims to ensure that every citizen of SA has access to appropriate, efficient and quality health service (South Africa. Department of Health 2011a; Jobson 2015). The main initiatives of the NHI are to re-engineer and strengthen PHC through increasing the access to specialists and resources to support PHC services (Bheekie and Bradley 2016: 242). Further initiatives of the NHI include improving service quality at public hospitals through improvements in physical infrastructure, management structures and the development of national core

standards to measure health service compliance (South Africa. Department of Health 2011a).

The SA Ideal Clinic and Hospital is one of the initiatives designed to respond to the current inefficiencies found within the quality of services in PHC clinics and hospitals and act as a strong foundation for the implementation of the NHI (Fryatt and Hunter 2015: 23; South Africa. Department of Health KwaZulu-Natal 2018). The Ideal Clinic and Hospital is defined as a clinic or hospital that offers good infrastructure (physical conditions, space, essential equipment, information and communication tools), adequate medicine and supplies, good administrative processes, adopts good policies and standard operating procedures (SOPs) to ensure quality of health services (Hunter *et al.* 2017: 111; South Africa. Department of Health KwaZulu-Natal 2018). The aim of the Ideal Clinic or Hospital framework is to ensure the maintenance of service quality through a patient-centred approach (Fryatt and Hunter 2015: 23; South Africa. Department of Health KwaZulu-Natal 2018). The Ideal Clinic or Hospital framework encompasses a component for diagnostic support services that is envisioned as integral to support the function of a wide range of integrated healthcare services (Hunter *et al.* 2017: 112; South Africa. Department of Health KwaZulu-Natal 2018). An understanding of how the radiography services operate within the SAPHS is further explained in the next section of this review.

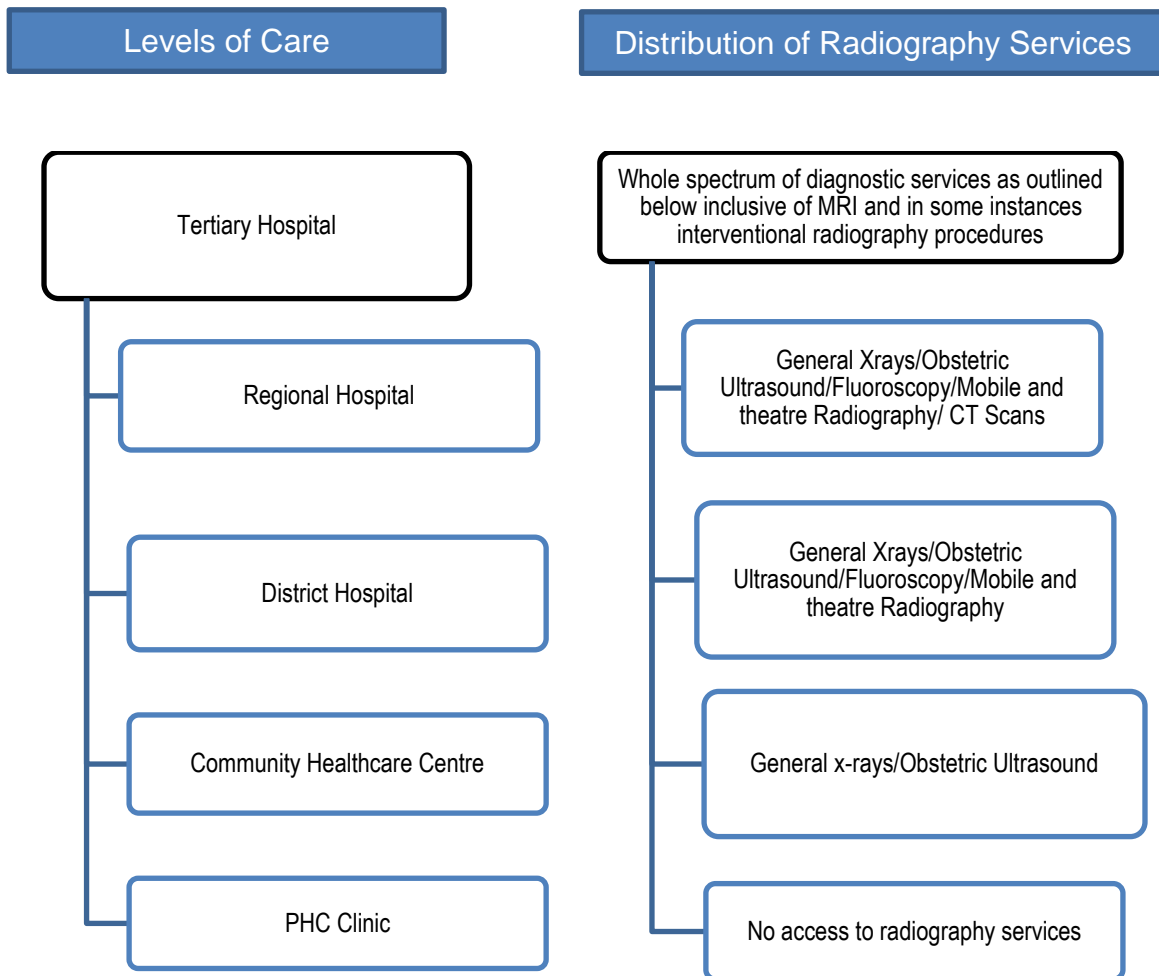
## **2.4 RADIOGRAPHY SERVICES WITHIN SA PUBLIC HEALTH SYSTEM**

The description provided for radiography services within SAPHS is the same as the structure of the public health system in the eThekweni health district of KZN (South Africa. Department of Health KwaZulu-Natal 2016). The SAPHS is organised in various hierarchical levels (South Africa. Department of Health KwaZulu-Natal 2016). Citizens requiring healthcare services must first gain access either at the PHC clinics, community healthcare centre, or district health hospitals (Jobson 2015). This forms the entry level of healthcare and offers a primary and preventative health service (Jobson 2015). At a PHC clinic in SA you will find qualified health professionals such as registered nurses but no radiographers and there are no radiography services offered at this level of care (Makanjee, Bergh and Hoffmann 2014: 2-3). Access to basic diagnostic services such as conventional x-rays and ultrasound services can be obtained at community healthcare centres (Mung'omba 2016: 31; Makanjee, Bergh

and Hoffmann 2014: 2-3). Patients requiring specialised treatment are usually referred to a district hospital (South Africa. Department of Health KwaZulu-Natal 2016). The district level of care is provided through district specialist teams and mobile services (South Africa. Department of Health KwaZulu-Natal 2016). Radiography services provided at this level of care include conventional x-rays, ultrasound, fluoroscopy along with mobile and theatre radiography services (Mung'omba 2016: 31-32).

The second level of care is offered at regional hospitals and provides a general specialist treatment and a platform for training of healthcare workers. The regional hospital accepts referrals from the primary healthcare clinics/ community healthcare centres and from a district hospital (South Africa. Department of Health KwaZulu-Natal 2016). Radiography services offered at this level include all radiography services offered at the district level of care with the addition of CT scans, mammography services and a radiologist for consultation and reporting (Makanjee, Bergh and Hoffmann 2014: 2-3).

The third and fourth level of health services are offered at a tertiary or central level of care that provide advanced specialist support and treatment procedures that are not offered at the lower levels of care (South Africa. Department of Health KwaZulu-Natal 2016). Referrals to these hospitals are generally from the regional hospitals although in an area where there are no regional hospitals a referral is taken from the district hospital (Jobson 2015). Radiography services offered at the third and fourth level of care include a whole spectrum of diagnostic services as mentioned above and include MRI scans and in some instances may offer interventional radiography procedures (Makanjee, Bergh and Hoffmann 2014: 2-4). It is important to note that referrals to the second, third or fourth level of radiography investigation is dependent on the availability of radiography services offered at an institution and is also determined on the condition of the patient (Makanjee, Bergh and Hoffmann 2014: 2). Figure 2.1 lays out the referral map for radiography services.



**Figure 2.1: Modified version of referral map for radiography services in SAPHS**  
 Source: Makanjee, Bergh and Hoffmann (2014)

## 2.5 NATIONAL CORE STANDARDS AS IT RELATES TO RADIOGRAPHY SERVICES

The national core standards are pre-set standards that have been developed by DOH to benchmark the quality of care against which delivery of services can be monitored (South Africa. Department of Health 2011b). The national core standards comprised seven domains (South Africa. Department of Health 2011b):

- Domain One covers the patients' rights and emphasises the need for radiographers to treat patients in a respectful and caring manner (South Africa. Department of Health 2011b).

- Domain Two applies to patient safety and identifies the need for radiographers to ensure the safety of the patient and enforces the need to contain the spread of infection (Whittaker *et al.* 2011: 63).
- Domain Three focuses on the clinical support services that are measured to ensure timely availability and efficient provision of radiography services (Whittaker *et al.* 2011: 63).
- Domain Four focuses on radiographers working effectively with other health professionals in promoting quality health care services (South Africa. Department of Health 2011b).
- Domain Five focuses on the radiography leadership and management that must have relevant supervisory and support structures in place to offer team work, community participation, strategic direction, proactive leadership, planning and risk management (Whittaker *et al.* 2011: 63).
- Domain Six reviews the radiography management structures that must be in place to ensure effective and efficient utilisation of human and financial resources (South Africa. Department of Health 2011b).
- Domain Seven relates to the physical infrastructure of radiography departments that should be maintained and kept in a clean, secure, safe and functional order (South Africa. Department of Health 2011b).

## **2.6 NATIONAL LEGISLATION, ACT AND POLICIES ON RADIOGRAPHY**

Radiography is a profession and so requires legal registration with the Health Professions Council of South Africa (HPCSA). The radiographer and the employer are also bound and must act in accordance with the SA constitution and various acts and policies developed for healthcare services (Beyer and Diedericks 2010: 22). The Constitution is made up of several chapters and one of the chapters is the Bill of Rights, with some of the rights pertaining to health services. The Occupational Health and Safety Act (OHSACT) and the Constitution state that every person has a right to an environment that is not harmful to their health and well-being (South Africa 1993; South Africa 1996: 1255). The Constitution states that the government must take reasonable measures to ensure that there are available resources to achieve quality health services for all citizens of South Africa (South Africa 1996: 1255).

The Batho Pele Principles and Patients' Rights Charter (South Africa 1996: 1245; South Africa. Department of Health 1999) emerged from the Bill of Rights. The Batho Pele principles act as a policy framework to improve the standard and quality of service delivery at state institutions (South Africa. Department of Public Service and Administration 1997). The eight Batho Pele Principles set a standard of expectations concerning patients' rights as well as service delivery to ensure that healthcare providers are engaged to their full work capacity and state resources are utilised effectively (South Africa. Department of Public Service and Administration 1997). The Patients' Rights Charter was established to ensure that all patients are treated with compassion in a safe and healthy environment (South Africa. Department of Health 1999).

### **2.6.1 Ethical Guidelines and Responsibilities of the Radiographer**

The complexity of the radiography profession in SA brings forward a whole host of ethical issues (Etheredge 2011). Legal and ethical issues are regarded as vital in the practice of radiography (Etheredge 2011). Radiographers have a responsibility toward their patients and co-workers and need to provide sound and ethical guidance to their patients (Peer 2003: 5-6).

The HPCSA (2008: 1-16) introduced ethical guidelines by which all radiographers must conform to and act in the best interest of their patients. This code of conduct ensures that the radiographer acts in the best interest of the patient without miss-using the privileges and powers afforded to them (Beyer and Diedericks 2010: 22). A breach of these ethical guidelines may be considered as misconduct (Beyer and Diedericks 2010: 22). The ethical guidelines and the code of conduct for radiographers emphasise the following:

- In forming a relationship with a patient, the radiographer should behave in a manner which justifies public trust and confidence (HPCSA 2008: 1-16).
- A radiographer is to behave in the highest integrity by ensuring they do not discriminate against patients based on gender, nationality/ethnicity, age, disability, religion, economic/social status or health (HPCSA 2008: 1-16).

According to the HPCSA (2008: 5-8), a radiographer should do the following: ensure a safe environment for their patients, fellow staff and visitors; ensure patient

confidentiality, privacy, autonomy and protect a patient's dignity and respect and support a patient's decision; and employ effective communication techniques to impart information regarding radiography procedures along with ensuring that informed consent is obtained for a procedure.

## **2.7 QUALITY IN HEALTH SERVICES**

Quality in health services is said to be a product of cooperation between the health professional and patients in a supportive workplace environment. Quality in health services, however, is difficult to measure, as services are intangible products that cannot be measured, touched or felt in the same way that manufactured goods can be (Mosadeghrad 2014: 77-80). Health services are produced and consumed directly and cannot be stored away for later consumption (ibid). Quality in health services is further dependent upon the level of experience and expertise of the healthcare provider (Awases, Bezuidenhout and Roos 2013: 1).

According to the South Africa. Department of Health (2011b), the quality in health service should be measured for the following purposes: identify areas for accountability; identify areas of non-compliance and areas that may need improvements; and promote enlightenment of staff regarding the need for service quality. Furthermore, the WHO (2016) states that quality in health services depends on a well-financed health system, with adequately trained and paid work force, proper communication for decision-making, good facility infrastructure and proper logistical support to deliver medicines and technologies (WHO 2016).

Øvretveit (2009: 3-4) states that there are three dimensions by which quality in health services are measured, namely:

- Professional quality, which is achieved by asking professionals their views regarding the type of quality they perceive that they offer to their patients and to understand if the consumers' needs have been addressed;
- Client quality reviews the clients receiving the service to understand if they have been satisfied; and
- Management quality, which evaluates if the services are delivered in a resource efficient manner.

This study employed the dimension of professional quality to engage the professional diagnostic radiographers' workplace experiences regarding the service quality they perceived that they offered to their patients. The unique experiences encountered by diagnostic radiographers employed in the regional public health sector contributes to this topic. This study adds new insights and recommendations that are unique to the radiography profession in the eThekweni health district of KZN.

## **2.8 RADIOGRAPHY SERVICE QUALITY**

Radiography service quality is a component of service delivery (Hoe 2007: 643). Radiography service quality is reviewed as a continuous quality improvement process that focuses on all the technical (performance of accurate and right procedure by utilising safe x-ray equipment) and functional (communication and interpersonal interactions with patients) aspects of radiographers to improve radiography service quality (Hoe 2007: 643; Gawugah 2016: 43). Traditional aspects such as quality assurance (QA) and quality control (QC) are important for maintaining a radiography service quality that is based on standards set by regulatory bodies (Gawugah 2016: 43). Hoe (2007: 643) states that good radiography service quality is also dependent on radiography departments being able to meet the desires and expectations of the patients receiving the service. Therefore, Abujudeh, Danielson, and Bruno (2016: 940) have proposed patient-centred care for radiography departments to align the profession of radiography to become more patient-centred and this will be discussed below.

### **2.8.1 Role of QA and QC in Radiography Service Quality**

In diagnostic radiography use is made of ionising radiation to produce diagnostic images that are utilised in patient diagnosis (Gawugah 2016: 59). An efficient application of ionising radiation is vital to prevent unnecessary exposure to patients and staff due to the adverse effects that are associated with radiation (Ebisawa, Magon and Mascarenhas 2009: 252). The adverse effects associated with ionising radiation led to the WHO and the International Atomic Energy Agency designing and implementing regulatory QA and QC programmes (Gawugah 2016: 59). In SA ionising radiation is regulated through the South Africa. Hazardous Substance Act (1973) which stipulates the legal measures that must be taken to ensure adequate installation

and optimal functioning of x-ray equipment. Radiography departments are mandated by this Act to ensure compliance of x-ray equipment through well developed and implemented QA and QC programmes.

The OHSACT enforces maintenance of all machinery and equipment to ensure that they are safe to utilise and are without health risks for employees (South Africa 1993). Quality assurance is a maintenance programme that is utilised by radiography departments to preserve optimal diagnostic image quality with limited dose to the patients as enshrined by the as low as reasonably achievable (ALARA) principle (Korir *et al.* 2013: 84). Quality assurance is an assurance to patients that radiography departments operate within minimum quality standards and are compliant and meet accreditation requirements as set by the regulatory bodies (Gawugah 2016: 59). A QA programme consists of periodic QC tests; QC is a part of the QA programme. Quality control is a process of continuously monitoring the x-ray equipment to ensure the continued and reliable performance of radiography services (Korir *et al.* 2013: 84). Quality control procedures are routine measurements of the physical parameters of the x-ray equipment. For example, some of these important tests include:

- Performing daily checklists to check the safety of the physical parameters of the x-ray equipment.
- Ensuring planned routine annual service and maintenance are conducted by the designated x-ray manufacturer.
- Light beam alignment checks, timer accuracy checks.
- Tube leakage checks, grid alignment checks.
- Development of a reject analysis to evaluate the number of and the reasons for why x-ray films may have been rejected and implement corrective actions to prevent high reject rates.

(Gawugah 2016: 57).

Quality assurance programmes also consist of administrative elements such as keeping records of all x-ray equipment service reports and documenting all QC test results (Korir *et al.* 2013: 84). An ideal QA programme also provides an in-service programme to equip radiographers with the necessary knowledge they may require when performing QC tests. Furthermore, a QA programme allows for the development of orientation programmes for new radiographers which teach proper usage of x-ray

equipment (Korir *et al.* 2013: 84; Hoe 2007: 643). Typically, QA programmes foster continuous assessment to check the efficacy of radiography services and provide a means to initiate corrective action such as timeously ensuring that faulty x-ray equipment is repaired (Hoe 2007: 643; Korir *et al.* 2013: 84; Gawugah 2016: 12). These measures are instilled to ensure that x-ray equipment is compliant with regulatory standards and to ensure reliable performance, consistency and quality from the x-ray equipment (Ebisawa, Magon and Mascarenhas 2009: 253).

### **2.8.2 Patient-Centred Care in Radiography Service Quality**

Patient-centred care is focused on informing and involving patients in decisions regarding their own health, addressing the patient's health needs and expectations, and striving to ensure that patients are treated with dignity and respect (Reynolds 2009: 133-134). As alluded to earlier, patient-centred care is an initiative that can improve service quality within radiography departments (Gawugah 2016: 55). However, it is argued that diagnostic radiographers are image-focused and less patient-centred (Reeves and Decker 2012: 82). A main reason seems to be related to the shorter period of contact with their patients compared to other allied health professionals such as physiotherapists, occupational therapists and therapy radiographers (Gawugah 2016: 55).

In an article by Abujudeh, Danielson, and Bruno (2016: 940), a solution was proposed for a patient-centred radiography quality process map. This quality process map outlines various initiatives that can align the profession of radiography in the patient-centred direction. These initiatives include increasing patient access to radiography services (MRI or CT scans) and reducing the scheduled waiting times for examination (Abujudeh, Danielson, and Bruno 2016: 942).

Obtaining informed consent should not only be a written engagement, but rather should be an appropriate discussion between the diagnostic radiographer and the patient (Einstein *et al.* 2014: 1483). During the informed consent process the information regarding the risks and benefits of the examination must be adequately discussed (*ibid*). This technique allows the patient to be involved in shared decision-making regarding their health (*ibid*). A teach-back standardised checklist should be

employed in this process as it allows the patient to confirm their understanding of the information that was communicated (Abujudeh, Danielson and Bruno 2016: 942).

Other aspects of patient-centred care include a clean and comfortable physical environment which meets a patient's expectation of being treated within a reliable, safe and conducive environment (Abujudeh, Danielson and Bruno 2016: 943). Moreover, radiographers must not only focus on their technical competencies but must also display excellent communication, empathetic and interpersonal skills (Einstein *et al.* 2014: 1482). Effective communication is vital at each stage of the radiography examination (ibid). There is compelling evidence to suggest that through these initiatives the radiography profession could become more patient-centred and positively influence radiography service quality (Abujudeh, Danielson and Bruno 2016: 945).

### **2.8.3 An Understanding of Employees Performance and Productivity on Service Quality**

The success of achieving employee performance is dependent upon a safe physical work environment, adequate resources (equipment and staff), providing motivation and meaningful work to employees, providing good employee incentives to reward performance, maintenance of standard operating procedures, and development of employee's knowledge, skills and attitudes (Stup and Maloney 2003; Naharuddin and Sadegi 2013: 68). It is imperative that organisations provide an adequate workplace environment to enhance employees' performance and productivity (Bushiri 2014: 16).

A well-performing workforce is one that uses methods that are responsive, unbiased and efficient to attain the best health outcomes given the available resources and conditions (WHO 2016). The WHO (2006) adopts indicators that are used to measure health institutions performances, including:

- Availability: Performance is dependent on the availability of equipment and staff.
- Productivity: Strategies to improve productivity include improving health workers' rewards and incentives and providing job tasks that increase employee accountability and responsibility.

- Competence: Health workers should be able to receive support or supervision to perfect their knowledge, skills and technical abilities in performing their duties.
- Responsiveness: This is the ability of the health system to meet the expectations of the both the patients and health workers. Healthcare workers expect the organisations to provide them with the ability to bring innovation and creativity when performing work tasks and functioning independently within a team. Patients expect to be treated with respect and dignity, have space to allow privacy for consultation and be treated in an environment that is safe. (WHO 2006; Oswald 2012: 11-12).

## **2.9 THE WORKPLACE ENVIRONMENT IN THE PUBLIC SECTOR**

The workplace environment can be viewed as an entity that comprises a totality of influential factors that are or potentially will affect the employee's activities and performance (Bushiri 2014: 7). The workplace environment could be viewed as the entirety of the interrelationship that occurs between the employees and the workplace environment within which the employee works (ibid). The term workplace environment in this study is used to denote the following influential factors: physical workplace environment, workplace rewards and incentives, manager's support and communication (ibid).

A healthy workplace environment is considered an important factor in attracting and retaining experienced radiographers (Kubik-Huch *et al.* 2010: 378). An organisation that can offer a good workplace environment will achieve immense economic advantage (Kubik-Huch *et al.* 2010: 378). The workplace environment can affect an employee's morale, productivity and engagement either positively or negatively, which in turn affects the employee's service quality (Leblebici 2012: 38). Research by Segnon (2014: 69-73), and Awases, Bezuidenhout and Roos (2013: 1-8) on the workplace environment for nurses shows that when patients encounter a favourable experience of nursing care; nurses too experience a favourable and healthy workplace environment.

An unsafe and unhealthy workplace environment has negative consequences for the employer, employees and the recipient of the service (Aziz *et al.* 2015: 201-204). The

quality of the employee's workplace is an important aspect for an organisation to consider when ensuring that an employee performs his or her duties with minimal error rate (Chandrasekar 2011; Mkoka *et al.* 2015: 2). According to Raziq and Maulabakhsh (2015: 718), a major challenge for any organisation is to ensure that employee motivation and satisfaction is maintained within a constantly evolving workplace environment whilst striving to achieve an optimal service quality.

### **2.9.1 The Effects of Physical Workplace Environment on Occupational Health and Service Quality**

The physical workplace environment must be comfortable and conducive in order to increase an employee's productivity (Oswald 2012: 47-50). The physical workplace environment is an important determinant to ensure improved employee health and safety and in turn improves the employee performance and service quality (Sarode and Shirsath 2014: 2735-2737). The physical workplace environment is made up of several factors including ventilation and space, ergonomic design of equipment and buildings and workplace accessories (Chandrasekar 2011; Naharuddin and Sadegi 2013: 66-78; Sarode and Shirsath 2014: 2735). It is further posited that an organisation must ensure that the workplace infrastructure and equipment is in a proper and safe working condition (Naharuddin and Sadegi 2013: 66-78). Other components of the physical workplace environment are related to the need for adequate staffing and the creation of manageable workloads as these provide an employee with assurance and a conducive workplace environment (Segnon 2014: 73; Gumede 2017: 63).

#### **2.9.1.1 Effects of Ventilation on Occupational Health and Service Quality**

Adequate ventilation is essential in ensuring that employees are alert and responsive in performing their duties with minimal error rates as this also improves their productivity (Sarode and Shirsath 2014: 2736). Physical infrastructure with poor ventilation has led to many staff acquiring opportunistic infections that result in frequent staff absenteeism and reduces productivity (Makanjee 2004: 28; Chandrasekar 2011). Proper ventilation is critical in waiting and examination rooms as these areas are generally considered to contain infectious patients e.g. tuberculosis (TB) patients (Makanjee 2004: 28 and Ackah 2015: 109).

South Africa is one of the countries with the highest burden of TB; the WHO reports a statistic of 454 000 cases of active TB in the year 2015 (Kanabus 2018). The Eastern and Western Cape and KwaZulu-Natal were reported as the provinces with the highest TB incidents (Kanabus 2018). Healthcare workers in high TB incident provinces are therefore at a high risk for TB infection (Loveday, Smith and Day 2014: 144). In SA, most patients suspected of having TB are referred for smear microscopy followed by a screening chest x-ray (Makanjee 2004: 28). This result in an increased number of TB patients being referred to the radiography departments in regional hospitals and elsewhere. Subsequently, diagnostic radiographers working within these regional/district hospitals are likely to have increased exposure to TB infected patients (Ackah 2015: 4). It is therefore essential that x-ray waiting areas and examination rooms be designed with proper in-house ventilation systems (open windows, extractors and air-conditioning systems) or natural ventilation to prevent transmission of TB and other infectious airborne diseases (Makanjee 2004: 28; Ackah 2015: 109).

Radiography departments within the eThekweni health district of KZN still utilise a darkroom for conventional film processing (Abbas 2017: 2). Proper ventilation within the darkroom is critical as the chemicals that are used for conventional processing emit fumes that results in occupational health risks (Chingarande *et al.* 2013: 116). Studies conducted by Nhivativa, Mukwasi and Chingarande (2014: 286) in Zimbabwe and Okeji *et al.* (2015b: 28-29) in Nigeria found that respiratory diseases were frequently reported from technicians working within poorly ventilated darkrooms. The advent of digital imaging systems in modern radiography practices prevents the need to use hazardous chemicals for x-ray film processing (Mangano *et al.* 2015: 95; Abbas 2017: 2). Images can now be acquired, stored and distributed digitally, and, as an added benefit there is no requirement for a darkroom (Mangano *et al.* 2015: 95). Thus, digital imaging systems are a safer means of producing x-ray images and reduces the related occupational health hazards (Abbas 2017: 2).

### **2.9.1.2 Effects of Ergonomics on Occupational Health and Service Quality**

Ergonomics has played a substantial role in recent radiography practice as it is essential to avoid injury and fatigue associated with radiographers' duties (Ofori-Manteaw, Antwi and Arthur 2015: 97-98; Garcia-Lallana *et al.* 2011: 512). Radiographers are at risk of developing a wide range of work-related and

musculoskeletal injuries as they incur repeated tension on their spine caused from rapid movements of the x-ray equipment (Brusin 2011: 141). The occupational health risks associated with these occurrences have a negative impact on employee productivity and inevitably affect the radiography service quality (ibid). It is crucial that organisations review the design of their equipment and furniture to ensure that employees conduct their duties efficiently and effectively (Brusin 2011: 141; Naharuddin and Sadegi 2013: 69-70).

Adaptable equipment and furniture that can be easily manipulated by the employee has been demonstrated to have a positive effect on employee productivity (Chandrasekar 2011). A study undertaken on radiographers in Rio de Janeiro shows that nonadjustable x-ray equipment results in radiographers experiencing postural constraints and incur frequent associated occupational health risks (Pais *et al.* 2012: 1821). In addition, it was identified that low work counters result in radiographers experiencing excessive spine curvature when conducting their duties and such counters are therefore an occupational health risk (Pais *et al.* 2012: 1822). Ofori-Manteaw, Antwi and Arthur (2015: 97-98) found that non-ergonomic and poorly maintained x-ray equipment in Ghana resulted in x-ray equipment being difficult to manipulate. This resulted in radiographers suffering from severe lower back alignments, therefore, compromising the safety and comfort of radiographers.

The quality and design of an x-ray room or a venue for meetings has consequences regarding productivity and satisfaction of employees (Leblebici 2012: 38-40). A limited work space is perceived to cause employees to incur injuries associated with collision and result in long-term absenteeism thus affecting productivity which invariably affects service quality (Leblebici 2012: 38-40). According to Ajala (2012: 141), a closed office design is preferable as it allows staff to have an increased sense of workplace safety and privacy as there are fewer distractions. Naharuddin and Sadegi (2013: 70) report that ample work space is essential to allow employee comfort and also limits the potential occupational health risks that arise from confined work spaces. Radiographers employed in Ghana suggest that work space and room layout of radiography departments contribute to improved productivity and positively influence the radiography service quality (Ofori-Manteaw, Antwi and Arthur 2015: 97-98). In addition, Ofori-Manteaw, Antwi and Arthur (2015: 98) report that limited space for rest

rooms in radiography departments in Ghana shows that participants find it difficult to recuperate and were more likely to make mistakes during imaging as a result.

Ergonomics in radiography should be designed to incorporate approaches to prevent high or unmanageable workloads that could potentially cause employee fatigue, exhaustion and related occupational health risks (Pais *et al.* 2012: 1822). In their study conducted in Rio de Janeiro, Pais *et al.* (2012: 1822) found that unmanageable workloads caused fatigue thus reducing productivity and negatively influencing the radiography service quality (*ibid*). Sonographers attributed their frequent wrist injuries to the high patient numbers that they were required to scan (Okeji *et al.* 2015a: 387). An ideal approach to prevent exhaustion and fatigue experienced by radiographers and sonographers encountering unmanageable workloads is to have adequate break intervals to allow for rest (Pais *et al.* 2012: 1822; Okeji *et al.* 2015a: 387). Developing a more structured shift roster also helps to avert strain caused from unmanageable workloads as experienced by international radiographers (Okeji *et al.* 2015a: 387; Gumede 2017: 63).

### **2.9.1.3 Effects of Staff Shortages and Workloads on Occupational Health and Service Quality**

According to the WHO (2018c), the global health workforce shortage is estimated to reach 12.9 million by 2035. Health workforce shortages are a grave concern as there are limited numbers of skilled workers to service the growing world population (WHO 2018c). In respect to radiography, the shortage of radiographers is a global issue (Thambura 2016: 10-11). The KZN annual performance health plan 2017/2018 – 2019/2020 shows high vacancy rates for medical specialists {27.7%}, radiographers {12.5%}, pharmacists {10.5%} and professional nurses {10.4%} (South Africa. Department of Health KwaZulu-Natal 2017). A study undertaken by Nkosi (2014: 65) shows that vacated posts in the SA public health system are not being timeously filled, and this has a negative effect on the remaining staff who experience unmanageable workloads that emanate from additional work tasks and high patient numbers. Thambura (2016: 74) identifies that one of the main reasons that diagnostic radiographers vacated the public health sector in KZN was due to unmanageable workloads. Thambura (2016: 98-99) states that DOH should develop sound retention strategies that include opportunities for learning and development, flexible working

schedules, and role expansion for radiographers, as these were considered to be important strategies to ensure retention of radiographers.

Studies that looked at work related stressors that affect radiographers in KZN (Gam 2015: 80) and Gauteng (Gumede 2017: 63-65) show that unmanageable workloads and staff shortages contribute to high employee occupational stress. Another study conducted in Japan by Tohmiya, Tadaka and Arimoto (2018: 1-3) shows similar results. All three studies report that high occupational stresses has negative consequences for organisations, as this leads to an increase in absenteeism; compounding the unmanageable workloads for remaining staff. Gumede (2017: 76) recommends that the DOH urgently consider addressing the high vacancy rates of radiographers as a means to counter these challenges and improve radiography service delivery.

Both Nkosi's (2014: 61) and Gam's (2015: 80) studies highlight that the unmanageable workloads within KZN public hospitals can partly be attributed to poor documentation of the type of services offered at various public hospitals and the poor intake referral systems. Both authors recommend that services offered at the various public hospitals be adequately documented, and that public hospitals should devise strict intake referral systems as these strategies can have the potential to reduce the high patient numbers that contribute to unmanageable workloads.

#### **2.9.1.4 Workplace Resources and their Effect on Service Quality**

The availability of resources affects the provisions of service quality because high-quality services are directly proportional to high-quality equipment; working with a low-quality equipment reduces employee productivity (Oswald 2012: 49; Akacho 2014: 14-18). A study undertaken by Nkosi (2014: 65-66) reports that vital hospital equipment in the SA public health sector is not well maintained and this consequently leads to non-functional equipment that ultimately affects the availability of hospital equipment to service patients. Limited hospital equipment availability invariably affects patient treatment and impacts negatively on service delivery and quality (Nkosi 2014: 65-66). In another study by Segnon (2014: 95), nurses in SA public health hospitals recommend that the DOH invest in high-quality equipment as they perceived high-quality equipment to be more reliable. Additionally, a study in Ghana reports that non-

functional x-ray equipment results in limited x-ray equipment to service the patient numbers and this can be identified as a contributory factor to suboptimal radiography service delivery in Ghana (Gawugah 2016: 198-199).

### **2.9.2 Workplace Rewards and Incentives and their Effect on Service Quality**

Introducing rewards and incentives to meet radiographers' needs significantly enhances radiographers' morale, improves their performance and contributes positively to radiography service quality (Dargahi, Changizi and Gharabagh 2012: 253; Gawugah 2016: 229-230). The rewards and incentives in a workplace are an imperative determinate to ensure employee performance, productivity, morale and job satisfaction (Mosadeghrad 2014: 80-81; Aziz *et al.* 2015: 202-204). Applying the concept of workplace rewards and incentives allows an organisation the ability to offer efficiency, effectiveness and quality in their services (Kinyili, Karanja and Namusonge 2015: 254-260). Workplace rewards and incentives are monetary and non-monetary in value. Monetary rewards and incentives are normally classed as salaries, bonuses, cash rewards, profit sharing plans and employee stock options (Scott 2018). Non-monetary rewards and incentives are benefits that include flexible work hours, training opportunities and programmes developed to assist employees deal with their social or personal issues (Scott 2018).

A study undertaken by Awases, Bezuidenhout and Roos (2013: 4-7) reports that professional nurses working in Namibia were discouraged by the lack of strategies employed at their public hospitals to reward their performance. Mbaruku *et al.* (2014: 6) highlighted that low salaries had a significant impact on the satisfaction and motivation of health workers, which in turn affect performance and productivity. Several recent radiography studies show that radiographers in the Gauteng province are demotivated and dissatisfied due to suboptimal rewards and incentives, a lack of recognition and professional development (Britton, Pieterse and Lawrence 2017: 29-31), due to the suboptimal employee performance management and development systems (EPMDS) together with unfair treatment by their supervisors (Khoza, Pieterse and Motto 2018: 29). Another study that looked at retention of radiographers in KZN, affirms that the main reasons why radiographers leave the public health sector are suboptimal salaries and a lack of professional development (Thambura 2016: 51-54).

To improve recruitment and retention of health workers across the health sector, the SA DOH developed a financial retention strategy termed the Occupational Specific Dispensation (OSD) (South Africa. Department of Public Service and Administration 2011). However, several discipline specific studies (Doodhnath 2013; Kunene 2014; Theunissen, Butler and Akleker 2015), show that this strategy has failed to meet its intended outcomes as it does not reward employee performance, nor does it recognise employee experience and additional qualifications. It is argued that this in turn negatively contributes to poor employee performance. The current study was conducted approximately 7 years post the OSD implementation and highlights the current challenges experienced by diagnostic radiographers in relation to their workplace rewards and incentives. This study further highlights the importance of a well-developed workplace rewards and incentives system to improve employee motivation, performance and productivity which invariably leads to improved radiography service delivery and quality.

### **2.9.2.1 Employee Assistance Programmes and their Effect on Service Quality**

Employee assistance programmes (EAPs) within an organisation aims to support an employee's social and psychological health, which in turn contributes to improved employee performance (Rajin 2012: 13-14). EAPs are a form of incentive an organisation can offer to their employees (ibid). South Africa is one of several countries who have adopted this approach to enhance employee performance (ibid). These programmes are reported to aid radiographers to effectively deal with social issues and psychological health that may have an influence on their work performance and hence their radiography service quality (Gam 2015: 56-58). Issues such as chemical dependency (alcohol and drugs), depression, anxiety, financial issues and job monotony are managed by an EAPs (Rajin 2012: 15-16).

In contrast, studies in SA highlight that the EAPs adopted by DOH are not effective as they lack clarity regarding their function (Rajin 2012: 41- 42; Segnon 2014: 86). Both studies recommend that the function of EAPs be clearly documented so that their role within a workplace setting (nurses and police officers) is understood and that EAPs be coupled with occupational social workers to assist employees to deal with social issues more effectively. While a study conducted by Gam (2015: 56-58) found that diagnostic radiographers were aware of the presence of EAPs and agreed that they were

beneficial in reducing occupational stress, the study did not address the quality of services offered by the EAPs. The current study intended to explore this further and describes the experiences that regional diagnostic radiographers encountered from using EAPs.

### **2.9.3 Manager Support and its Effect on Service Quality**

Managers must be equipped with various skills such as motivating, supporting and encouraging radiographers to take increased responsibility to achieve high performance (Kubik-Huch *et al.* 2010: 383; Chandrasekar 2011). A manager must be able to gather and distribute resources (for instance, orientation and in-service training as a form of continuous professional development) needed by employees to perform their services effectively (Chandrasekar 2011). A manager should possess the capabilities of being able to support and drive a change within an employee in areas of training and development, ethics, behaviour, commitment and professionalism (*ibid.*).

#### **2.9.3.1 Managerial Accountability and Responsibility**

A manager should display a sense of support, accountability and relay positive feedback or consult with employees as this encourages employees to perform and positively influence service quality (Naharuddin and Sadegi 2013: 69-70; Gam 2015: 71). Studies undertaken in Gauteng (Lawrence, Poggenpoel and Myburgh 2011: 1-7) and Iran (Mosadeghrad 2014: 84) confirms that a lack of expertise, professionalism, accountability, transparency and consultation from managers regarding new policy implementation results in confusion and demotivation among subordinates which leads to suboptimal performance and service quality. The current study attempted to explore the experiences of diagnostic radiographers in the eThekweni district of KZN, in this regard.

#### **2.9.3.2 Managerial Conflict Resolution**

Workplace conflict can be defined as a state of discord caused by differences in values, needs and interests between people (Wikipedia 2018). Workplace conflict can be positive when it encourages innovation and creativity in employees. However, negative conflict causes tension and resistance to change and distrust within the

organisation (Onyejiaku, Ghasi and Okwor 2018: 38). Workplace conflict that is not adequately managed has serious consequences for organisations and causes a reduction in productivity, disinterest in work tasks and in extreme cases causes a complete breakdown of the organisation (Chandrasekar 2011). This was confirmed by studies undertaken in the Indian (Sharma, Webster and Bhattacharyya 2014: 5-7) and the Dutch (Kieft *et al.* 2014: 6-7) public health sectors that show that the lack of workplace conflict management results in a decline in employee morale, performance and contributes to poor service quality. The opposite is true, as is shown in the Onyejiaku, Ghasi and Okwor's (2018: 38) study where it shows that when conflict is adequately managed it improves employees' motivation and performance.

Rahim (2002 as cited in Onyejiaku, Ghasi and Okwor 2018: 42-43) proposes various strategies that can be used to manage workplace conflict, including:

- Collective bargaining: A process where groups of people come together and try and find a solution to resolve the conflict.
- Conciliation: A process that involves groups who have failed to resolve conflict re-attempts to meet and find a solution.
- Negotiation: A process where a representative of each group attempts to negotiate and reach a settlement.
- Mediation: A process where both conflicting parties with the assistance of the mediator arrives at a resolution.
- Arbitration: A process where an individual is selected as a judge and listens to the disputes and arrives at a settlement.

### **2.9.3.3 Unapproachable Managerial Styles**

Unapproachable managers are generally classified as being autocratic; they limit employees' suggestions and prevent employees in actively contributing towards organisational decision-making (Akor 2014: 148). The Dutch study (Kieft *et al.* 2014: 6-7) shows that autocratic and unapproachable managerial styles was cited as one of the reasons why staff do not seek advice or make suggestions to managers and this invariably leads to a decline in staff motivation. A study undertaken in KZN that focussed on occupational stressors of radiographers in the workplace shows similar results, where radiographers felt that their managers were ill-equipped to deal with

their grievances (Gam 2015: 70). This was a quantitative study, so the current study intended to explore these findings further through a richer and more in-depth dataset.

#### **2.9.3.4 Participative Management and Participation of Employees in Decision-Making Processes**

Participative management or leadership involves including employees in decision-making processes (Appelbaum *et al.* 2013: 222). This management style is considered to be an effective strategy to enhance employee performance and productivity (Appelbaum *et al.* 2013: 222; Burhanudin 2013: 6). In participative management, managers encourage employees to become a part of the organisational decision-making process (Burhanudin 2013: 34). This management style actively engages the employees' contributions as a means to make employees feel valued and recognised (*ibid*). Furthermore, Irawanto (2015: 159) states that inclusion of employees within decision-making processes increases their motivation and commitment towards the organisation and improves employee performance. In addition, if an employee is allowed to contribute to decision-making this provides an opportunity to bring innovation and creativity to organisations' problem-solving strategies (*ibid*).

A research paper by Rust and de Jager (2010: 2277-2287) reveals that due to centralised provincial control, SA hospital managers were not adequately engaged in decision-making regarding budgeting, procurement and staff discipline. As a result, there were no clear lines of accountability and authority and this has negative consequence for service quality (*ibid*). Mubyazi and Njunwa (2013: 50) state that health workers in Tanzania were demotivated by the limited access that they had in the decision-making processes for resource and fund allocation as these areas were controlled by central government authorities. Mosadeghrad (2014: 84) states that managers in the public health sector in Iran had limited power over decision-making due to prescriptive forms of national policies. Similarly, Dargahi, Changizi and Gharabagh (2012: 253) found that radiographers in Iran were not included in the organisational decision-making and this negatively impacted performance and affected radiography service quality. There seems to be compelling evidences to suggest that inadequate engagement of middle management or non-managerial workers in decision-making renders a decline in effective organisational decision-making and negatively affects service quality. The current study adds to the

importance of managerial support and provides a unique account of radiography managers and diagnostic radiographers' experiences within eThekweni health district of KZN. This is further elaborated in Chapters 5.

#### **2.9.4 Communication and its Effect on Service Quality**

There are various levels at which communication occurs within radiography departments and includes the communication among radiographers, between radiographers and medical clinicians, and other health professionals and patients (Kubik-Huch *et al.* 2010: 384). Beyer and Diedericks (2010: 22-23) suggest that good verbal and interpersonal communication forms the basis of a firm relationship between radiographers, medical clinicians, other health professionals and patients on an interpersonal level. Moreover, it is vital that radiographers implement proper communication in delivering informed consent, explanations and instructions to patients as this would instill patient trust and confidence (Peer 2003: 5-6; Beyer and Diedericks 2010: 22-23).

##### **2.9.4.1 Departmental Communication and its Effects on Services Quality**

Proper communication between the radiographers and fellow health care professionals is an important determinate for creating a positive workplace environment in a team of radiographers (Kubik-Huch *et al.* 2010: 384). Sharma, Webster and Bhattacharyya (2014: 6) state that, due to limited information sharing between health supervisors in India, certain tasks became redundant and negatively influenced the service delivery and quality. It is argued that the healthcare team must display good interpersonal skills in listening attentively to fellow colleagues to prevent communication errors. Good communication between health professionals relating to medical requests results in improved patient outcomes (Akacho 2014: 22-25) and a breakdown in communication between health care professionals may lead to increased or unnecessary use of expensive diagnostic tests. Aside from the wastage of resources, there is the concern of unnecessary radiation exposure to patients (Wanjau, Muiruri and Ayodo 2012: 118-119; Akacho 2014: 22-25; Wang *et al.* 2018: 81-82).

Wang *et al.* (2018: 86-87) suggests that communication tools, such as daily goal sheets or white boards and door communication cards, are effective to document

relevant patient information and are considered to be an excellent way of relaying information between the nurse and clinicians. A 'multidisciplinary structured work shift evaluation system' facilitates open communication between various members of the health disciplines (ibid). They assert that open communication disperses misunderstandings regarding work roles and responsibilities of each health discipline and allows health professionals to collaborate in problem solving and improves the learning among the interdisciplinary team. They further argue that if health professionals develop a sense of understanding of the work roles and responsibilities it is possible for information to be adequately conveyed between the respective health professionals thus improving the overall communication (ibid).

#### **2.9.4.2 Health Professionals Communication Skills and their Effects on Service Quality**

Both the ethical code of conduct as outlined by the HPCSA (2008: 6-7) and the National Patients' Rights Charter (South Africa. Department of Health 1999) iterate the importance of proper communication when dealing with patients. A study by De Jager and Du Plooy (2007: 96) on the determinants of providing quality health services in SA found that patients derive the highest satisfaction from clear and precise communication. Several studies emphasise the importance of health professionals taking the initiative to listen to their patient with empathy and care and show that it reduces patients' anxiety (Wanjau, Muiruri and Ayodo 2012: 118; Chang, Chen and Lan 2013: 7-8). There is compelling literature to highlight the importance of effective communication to facilitate improvements within radiography service quality and promote a more patient-centred approach (Kitapci, Akdogan and Dortyol 2014: 161-162; Einstein *et al.* 2014: 1482). The ability for radiographers to communicate with compassion and empathy is a vital predictor of patient satisfaction as shown by Lang *et al.* (2013: 9) and they recommend that radiographers need to learn how to adapt their behavioural and interpersonal skills when interacting with patients. They argue that this should be an important consideration in the curriculum for radiography education.

Therapeutic communication is a process adopted to help patients to better understand information through verbal and nonverbal communication (Popa-Velea and Purcărea 2014: 39). Zivanovic and Ciric (2017: 1-2) affirm that this form of communication has

immense benefits as it reduces the negative emotional state of patients, solves health problems and facilitates plans and activities that contribute to improving a patient's diagnosis and treatment and overall health outcomes. There are various communication techniques used in therapeutic communication, some of which include: actively and attentively listening to patients, being empathetic with a patient by accepting and understanding the patients' version of reality regarding their illness, encouraging patient communication, utilising touch as a way to relax a patient and make them feel comfortable to communicate. In addition, health professionals should encourage the patient to initiate the conversation; this can be achieved by the health professional remaining silent over intervals in their communication with the patients. This form of communication has proved to be advantageous in assisting patients to adequately comprehend verbal and non-verbal information that is communicated (Sherko, Sotiri and Lika 2013: 458; Zivanovic and Ciric 2017: 1-4).

#### **2.9.4.3 Language and its Effects on Service Quality**

South Africa is a multi-cultural country with 11 official languages out of the 44 recognised languages (Levin 2011: 11). Additionally, South Africa is home to many foreign internationals who are versed in various other languages (ibid). However, English is still the dominant language used by most SA health professionals, resulting in most of the medical interactions occurring across language and cultural barriers (Hussey 2013: 190-193). According to Hussey (2013: 190-193), the language barrier remains a critical challenge for many SA health institutions to be able to honour the right for every citizen to receive an equitable health service. According to Segnon (2014: 74-75), nurses experience a challenge in communicating with foreign patients and this results in patients feeling disrespected and discriminated. A particular challenge that health professionals face is the inability to provide adequate explanation of examination procedures and to obtain proper informed consent form patients. This invariably incurs negative outcomes for patients (Akacho 2014: 22-25). As alluded to earlier, the patient-centred model of health care places emphasis on patients' autonomy and encourages their active contribution to decisions relating to their own health (Van den Berg 2016: 229-231).

To reduce the communication challenges associated with the language barrier it has been recommended that health care workers in SA be versed in various language

skills (Levin 2011: 11-13). Hussey (2013: 190-193) and Levin (2011:11-13) emphasise the need for SA health institutions to be equipped with trained language interpreters to assist in the delivery of quality health services. Furthermore, the use of non-verbal communication like body gesture, sign language and tone of voice is encouraged in effectively communicating with non-English speaking patients (Antwi, Kyei and Quarcoopome 2014: 29). Both the ethical code of conduct as outlined by the HPCSA (2008: 6-7) and the National Patients' Rights Charter (South Africa. Department of Health 1999) states that confidentiality of patients' information and informed consent are fundamental aspects for radiographers through proper communication.

## **2.10 CONCEPTUAL AND THEORETICAL FRAMEWORK**

A conceptual framework is a scheme of variables a researcher uses to achieve the set objectives or purpose of their study (Maxwell 2008: 221-222). The conceptual framework depicts a map that provides rationality to the research investigation (Maxwell 2008: 221-222). The conceptual framework in this study depicts the workplace environment and how it affects diagnostic radiographers' productivity which in turn affects their radiography service quality. The workplace environment in this study encapsulates the physical workplace environment and all other influential factors, including workplace rewards and incentives, manager support, and communication.

A theoretical framework is a guide which is used to build and support a research topic (Grant and Osanloo 2014: 12). It consists of a selected theory or theories that underline the researchers thinking related to planning a research topic (Grant and Osanloo 2014: 12). It explains concepts and definitions from the theory that are relevant to the topic and informs the study (Grant and Osanloo 2014: 12). The theoretical framework that informed the findings of this study was based on Abraham Maslow's theory. According to this theory, humans are individuals whose needs guide their behaviour; these needs influence a person's activities until they have been satisfied (Maslow 1968). According to him, if people develop in an environment in which their needs are not met, they are not likely to be able to perform as healthy or stable individuals (Maslow 1968; Kaur 2013: 1061).

Maslow (1968) states that an individual is motivated by five basic needs, namely:

- Physiological needs are the first needs positioned at the base of the triangle and include the smallest or the most basic needs that have to be satisfied. These are the essential biological drives such as food, air, water and shelter (Maslow 1968).
- Safety needs occupy the second level of needs and follow the physiological needs when those needs are met (Maslow 1968; Bushiri 2014: 13).
- Social needs are referred to as the third level of needs and are the need for love and belonging. This need is triggered after the safety needs are met.
- Esteem needs are the fourth level of needs and include the need for self-worth and acceptance by others (Maslow 1968; Kaur 2013: 1062).
- Self-actualisation needs occupy the last level of needs which are situated at the top of the triangle and are referred to as the need to develop to one's fullest potential (Bushiri 2014: 13). When a human being ascends through the levels of the hierarchy an individual is said to have become self-actualised. Failure to meet the lower level needs disrupts a person's ability to progress to the next higher level of needs (Maslow 1968; Kaur 2013: 1062; Bushiri 2014: 13).

Maslow's theory applied to employees in an organisation shows that it is important to satisfy an employee's basic needs first to ensure that an employee increases their performance and productivity thus contributing positively towards improved service quality (Akacho 2014: 28). Organisations need to ensure employees' motivation and satisfaction by developing and maintaining the following:

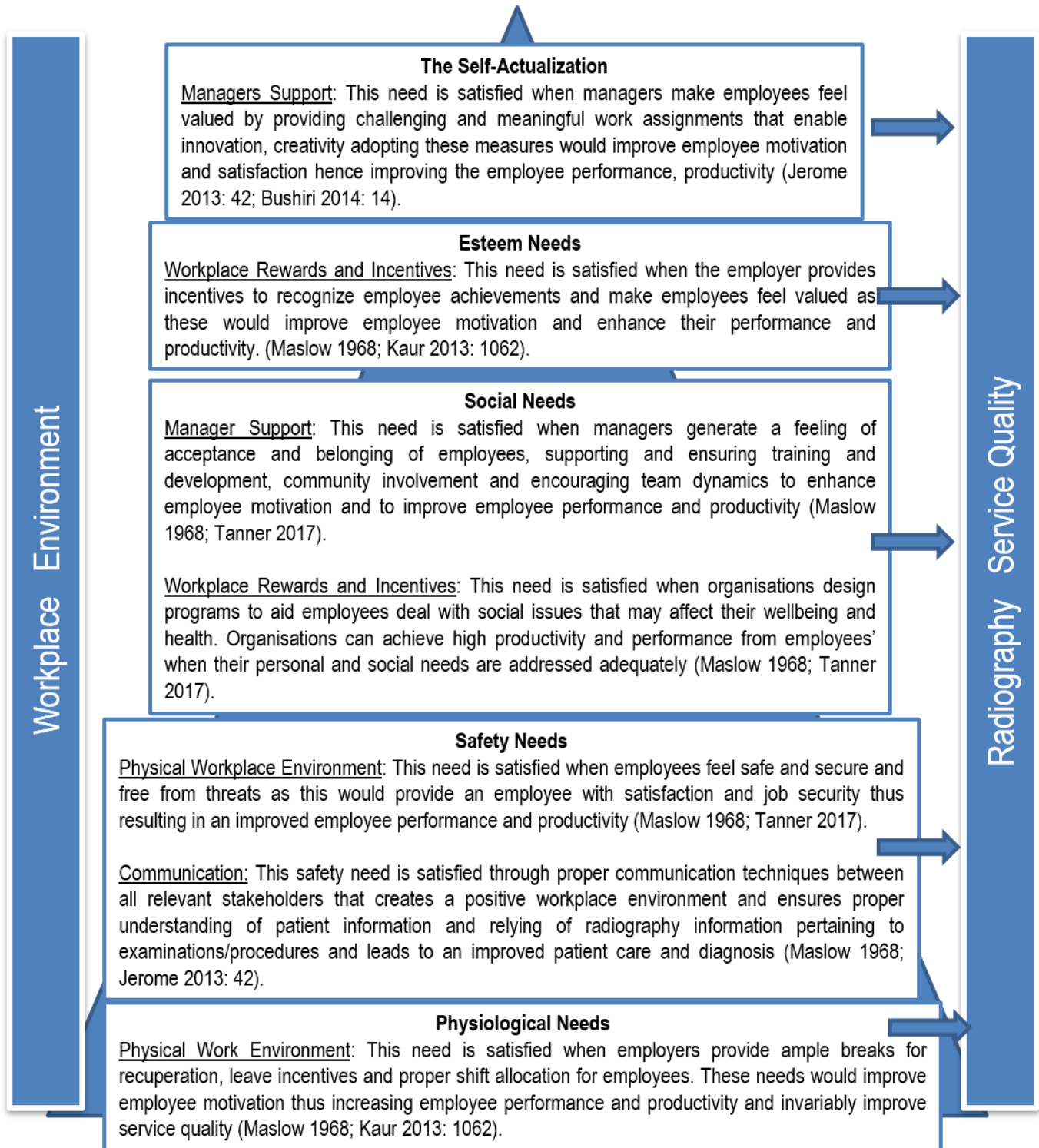
- Physiological needs: This need is satisfied when employers provide ample breaks for recuperation, leave incentives and proper shift allocation for employees. Meeting these needs improves employee motivation and increases employee performance and productivity which then invariably improves service quality (Maslow 1968; Kaur 2013: 1062).
- Safety needs: This is achieved by organisations providing a workplace environment that is safe and secure relative to employees' jobs, and which is free from threats and abuse of employees (Maslow 1968; Tanner 2017). Proper communication techniques are included under this level of needs and are imperative to ensure a positive and healthy workplace environment for radiographers (Maslow 1968; Tanner 2017). Proper communication is also essential to prevent potential examination errors and is vital to ensure that all

relevant information pertaining to radiography examinations and procedures are adequately communicated (Maslow 1968; Jerome 2013: 42).

- Social needs: Organisations can accomplish this by generating a feeling of trust, acceptance and belonging of employees, supporting and ensuring training and development and community involvement, and encouraging team dynamics (Maslow 1968; Bushiri 2014: 14).
- Esteem needs: Organisations can achieve this by recognising and valuing employee achievements by providing good incentives and rewards (Maslow 1968 and Kaur 2013: 1062).
- Self-Actualisation: Organisations must encourage, motivate, and create challenging and meaningful work assignments that enable innovation and creativity. Adopting this would adequately engage employees and improve their performance (Maslow 1968; Jerome 2013: 42; Bushiri 2014: 14).

Figure 2.2 illustrates Maslow's Hierarchy of Needs as applied to organisations.

# Maslow Hierarchy of Needs



**Figure 2.2: Diagrammatic depiction of conceptual and theoretical framework**  
 Source: Tanner (2017)

According to Maslow (1968), it is paramount that employee's needs are satisfied as this ensures that job productivity is enhanced. Aziz *et al.* (2015: 202-204), affirm that job satisfaction is a particularly important area of interest since health practitioners are required to provide quality health services whilst working in a stressful work environment. Therefore, job satisfaction and employee motivation have a substantial impact on the health and wellbeing of employees (Raziq and Maulabakhsh 2015: 718). A study undertaken by Pillay (2009: 1-2) shows a positive correlation between professional nurses' job satisfaction and patient satisfaction and he argues that an 'unhappy' employee would in turn produce suboptimal and ineffective services that result in declining patient care that may lead to increased mortality rates.

There are many aspects that affect work satisfaction of health professionals. Several studies (Akacho 2014: 22-25; Mosadeghrad 2014: 85-87 and Segon 2014: 93) show that health professionals who are dissatisfied in their workplace environments generally offer poor service quality to their patients. There are no known studies that have documented the experience of diagnostic radiographers in the eThekweni health district of KwaZulu-Natal. This study will contribute to this discussion and provide an insight into the experiences that regional diagnostic radiographers encounter and how these experiences affect radiography service quality in the way that it does and why.

## **2.11 SUMMARY**

The SAHS has undergone drastic changes post-apartheid, but the rapid increase of ill health and burden of disease has resulted in the SAHS struggling to meet the demands. This is despite the SA government having various acts and policies in place to protect and promote the rights of all citizens using its health institutions. The SAPHS has constantly been criticised for suboptimal service quality. Literature covered in the SA health context (Segnon 2014: 93, Nkosi 2014: 61-62) has shown that poor workplace environments are not conducive to providing good service quality and renders these policies and acts ineffective. Studies (Akacho 2014: 22-25; Mosadeghrad 2014: 84; Kieft *et al.* 2014: 6-7; Aziz *et al.* 2015: 202-204) from the international context highlight the need for improvements in the workplace environment to ensure improvements in service quality. Maslow (1968) demonstrates that if an employee's basic needs are not satisfied then they will be less likely to perform and organisations will bear significant loss in their service delivery and quality.

Inadequately aligned workplace environmental elements such as physical work environment, workplace rewards and incentives, manager support, and communication, negatively affects radiography service quality. These findings were predominately derived from studies with radiographers from the international domain. In this review there was no known literature documenting experiences of diagnostic radiographers in the workplace and its effect on service quality in the eThekweni district of KZN. This study contributes to an understanding of this topic from the experiences of diagnostic radiographers employed in the regional public sector of the eThekweni district public health of KZN.

## **CHAPTER 3: RESEARCH METHODOLOGY**

### **3.1 INTRODUCTION**

This chapter describes the research approach and design. The study purpose, critical questions and study assumptions are outlined. This chapter further explains the study settings, population and the sampling procedures. The study inclusion and exclusion criteria are presented, and the research instruments and data collection methods are described and discussed. The data analysis process that is employed in this study is explained and the measure of trustworthiness (credibility, transferability, dependability and confirmability) that is employed in this study is described. Lastly, study limitations and ethical considerations with respect to the strategies that are employed to ensure the study's autonomy, beneficence and justice are discussed. This chapter concludes with a summary that highlights the main aspects of the research methodology utilised.

### **3.2 RESEARCH DESIGN**

A research design refers to a blueprint/plan of the various methods and techniques that the researcher adopts and uses to answer the research question (Kumar 2011). This study adopted a qualitative case study design and used a descriptive design to convey study findings. This study was based on the philosophical assumptions of the constructivist paradigm.

#### **3.2.1 Paradigm**

A paradigm refers to a set of philosophical beliefs about the nature of the world termed ontology and how one understands the nature of the world termed epistemology (Scotland 2012: 9-10). These beliefs tend to be shared by researchers working in a particular field or those that share similar ideas (Scotland 2012: 9-10). A paradigm also includes the precise methodological strategies related to these beliefs during the execution of the research process (Willig 2001). This study was based on a constructivist (or interpretivist) paradigm which is a relativist position that presumes many versions of reality that are equally valid. It is an alternative to the positivist paradigm which has a single objective (external realism). Basically, constructivists

hold that realism is constructed in the mind of the person rather than it being an outside singular entity (Ponterotto 2005: 129). This paradigm identifies the importance of subjectivity in the human creation of meaning but does not reject the notion of some objectivity (Baxter and Jack 2008: 544-556). Therefore, the key characteristic of constructivism is the fundamental interaction between the researcher and the object of investigation, and only through this interaction can profound meaning be revealed (Ponterotto 2005: 129-130). In this paradigm participants recite their unique stories and vigorously describe their belief of reality which enables the researcher to better comprehend the participants' actions (Baxter and Jack 2008: 544-556). This paradigm allowed for the participants in this study to contribute to the construction of the meaning of the phenomenon of radiography service quality in regional public health settings (Willig 2001).

### **3.2.2 Qualitative Research Design**

Qualitative research involves understanding how people experience events and give meaning to the world through reciting their unique stories regarding their experiences (Willig 2001; Ritchie and Lewis 2003: 1-10). Qualitative research makes use of words as data which are collected and analysed in various ways (Braun and Clarke 2013). In contrast, quantitative research makes use of numbers as data and uses statistical techniques to analyse data (Braun and Clarke 2013). The purpose of this case study was to explore the workplace experience of diagnostic radiographers and to examine the effect/s of their experience on radiography service quality in the regional public health sector. The primary nature of qualitative research is exploratory and was therefore ideal for this study as it allowed the researcher to find meaning and to uncover diagnostic radiographers' workplace experiences holistically (Baxter and Jack 2008: 544-445).

### **3.2.3 Case Study Design**

The case study design was adopted as it allows for a detailed exploration of an individual unit that could either be a person, community or an organisation (Yin 2009: 3-5). A case study, therefore, allows the researcher to gain a deep and holistic view of the research purpose and it enables the researcher to describe, understand and explain the research situation or problem (Yin 2009: 3-5). In the current study, the unit

of analysis was the interview transcripts of semi-structured interviews (SSI) and focus group interviews (FGI) (Yin 2009: 3-5; Baškarada 2013: 6-8). A case study approach allows for the contextual conditions in the working environment to be uncovered as it is believed that these may influence the radiography service quality (Yin 2009: 3-5; Baxter and Jack 2008: 545). This approach is said to be the most appropriate method to use when the intent of the research is to explore a service, and when there are no clear boundaries between the context and the phenomena (Baxter and Jack 2008: 544-546; Yin 2009: 3-5).

### **3.2.4 Descriptive Design**

The objective of qualitative descriptive studies is to provide a comprehensive detailed summary of the daily specific events experienced by individuals (Lambert and Lambert 2012: 255). Moreover, a descriptive qualitative study provides a content analysis of the descriptive data that are provided by participants (Polit and Beck 2010: 273). Providing a good precise description of events is fundamental for the research and adds considerably to our knowledge of the shape and nature of society (Lambert and Lambert 2012: 255). The study was descriptive in nature, as it provides an accurate representation of what is being studied and allows a construction of the findings from the perspective of the diagnostic radiographers' workplace experiences (Vaismoradi, Turunen and Bondas 2013: 389-409; Willig 2001).

### **3.2.5 Study Assumptions**

The study assumed that all participants answered the interview questions in an honest and sincere manner (William 2015).

## **3.3 STUDY SETTINGS**

The data was collected at four regional public hospitals within the eThekweni health district of KwaZulu-Natal which included King Edward VIII Hospital, Addington Hospital, R.K. Khan Hospital, and Prince Mshiyeni Memorial Hospital (Figure 3.1, 3.2, 3.3 and 3.4). King Edward VIII Hospital is the second largest hospital in the southern region of the eThekweni health district and at the time of data collection served at both a regional and tertiary level. It has a 852-bed capacity and services approximately 220 000 outpatients. Addington hospital is situated along the south beach of the eThekweni

health district and has a 571-bed capacity and receives referrals from approximately 16 clinics. Addington hospital serves at a district and regional level. Prince Mshiyeni Memorial hospital is located within the Umlazi district of eThekweni health district and has a bed capacity of 1 200. Prince Mshiyeni Memorial hospital serves at a district and regional level. It receives referrals from 17 different clinics and has the largest crisis centre which consults with an average of 1 500 outpatients daily. R.K. Khan Hospital is located within the Chatsworth district of the eThekweni health district and operates at a district and regional level. This hospital has a 543-bed capacity dealing with an average of 600 000 outpatients annually (South Africa. Department of Health KwaZulu-Natal 2018).

These regional hospitals were purposefully selected by the researcher due to them providing a referral base for a vast number of PHC clinics and community healthcare centres and district hospitals for patients requiring specialised studies such as Computer Tomography (CT) Scanning, Mammography and Fluoroscopy studies (South Africa. Department of Health KwaZulu-Natal 2016). They also provide a training platform for health professionals and their geographic location and access facilitated the feasibility of this study. These regional hospitals needed to be selected because they offer important radiography services and service vast catchment areas. Gathering data from diagnostic radiographers regarding their experiences of working in these hospitals enabled a precise understanding of their experiences, and how these experiences affect radiography service quality in those hospitals (Palinkas *et al.* 2015: 534-535).

### **3.4 POPULATION**

A population consists of all individuals with a commonly defined set of characteristics (Polit and Beck 2010: 67). Furthermore, a study population is that aggregation of elements from which the sample is selected (Ritchie and Lewis 2003: 86-87). This research purpose relates to a specific population group, namely, the diagnostic radiographers working at the select regional public hospitals in the eThekweni health district of KwaZulu-Natal. At the time of data collection there were approximately 152 diagnostic radiographers employed in the eThekweni public health district of KwaZulu-Natal (South Africa. eThekweni Health District 2017). From this population group, a smaller sample size of 24 regional public sector diagnostic radiographers were

selected for this study. These diagnostic radiographers form part of a critical post structure and provide a 24-hour emergency service at the various regional public hospitals (South Africa. Department of Health KwaZulu-Natal 2016).

Diagnostic radiographers are responsible for acquiring diagnostic images which aid in patient diagnosis. They participate in patient care and work within a range of hospital departments including accident and emergency units, operating theatres as well as mobile radiography services at ward level (Matilainen *et al.* 2017: 139-140). They work in close conjunction with a wide range of patients and other health professionals (Beyer and Diedericks 2010: 22-23). The amount of time and interaction they have with patients depend on the specialised area that they work within. They are therefore responsible for patients' safety and upholding the patients' rights along with contributing to the culture of radiation safety within their organisations (Matilainen *et al.* 2017: 139-140). Radiography managers are also responsible for the same basic functions has described above. Furthermore, radiography managers are responsible for managing the entire radiography component that includes: staff, equipment and all other resources required to provide and effective and efficient radiography service (Matilainen *et al.* 2017: 139-140). Both diagnostic radiographers and radiography managers are also required to provide sound understanding, communication, maintain confidentiality and obtain informed consent. They are to adhere to all these factors whilst ensuring effective and efficient radiography service quality. These, in turn, facilitate better health outcomes for patients (Beyer and Diedericks 2010: 22-23).

### **3.5 SAMPLE PROCEDURES**

Sampling is the process of selecting a fraction of the population to denote the entire population of interest (Polit and Beck 2010: 307). Sampling was conducted on the radiographers who were working the day shift which assisted in accessibility and feasibility (Palinkas *et al.* 2015: 534). The sample size was controlled by data saturation. Data saturation is a point in the data collection process where study categories and themes became repetitive and redundant and no new information regarding the research purpose emerges (Fusch and Ness 2015: 1408-1416). This study employed two types of sampling techniques, as explained below.

### **3.5.1 Purposeful Sampling**

Purposeful sampling is a non-random selection of participants to include in a study based on their knowledge regarding the research purpose (Polit and Beck 2010: 312). This sampling technique allows for useful data to be generated according to the criteria of relevance for the research (Palinkas *et al.* 2015: 553-555). This technique was used to select regional public-sector radiography managers (RMs) to participate in the semi-structured interviews (SSI) and ensured that radiography managers who were selected could provide the relevant information required to answer the research purpose (Palinkas *et al.* 2015: 534). Radiography managers were seen as key informants for this study.

### **3.5.2 Snowball Sampling**

Snowball sampling is a subset of the purposeful sampling technique. In this technique, existing participants are requested to provide referrals of other potential participants (Polit and Beck 2010: 319). Thus, the key informants were asked to provide referrals of other diagnostic radiographers (DRs) who could be approached to participate in the focus group interviews (FGI) (Krueger and Casey 2015: 70). These potential participants were approached to participate and were asked in turn to provide referrals of other potential participants (Palinkas *et al.* 2015: 535). Following the referrals of other potential participants, the researcher directly contacted these participants on the same day and formulated the FGIs. The study purpose and critical questions of the study was explained at the same time to all participants in the FGIs and informed consent taken. This was done to increase study credibility. The use of this type of sampling ensured that the researcher included only participants who were most knowledgeable about the research topic (Polit and Beck 2010: 491-495).

### **3.5.3 Inclusion Criteria**

This study included only diagnostic radiographers working within the selected regional public health hospitals in the eThekweni district of KZN. These participants had completed their community service and were registered as independent practitioners with the HPCSA. They had worked at their respective institutions for at least a year post community service. These criteria were adopted to ensure that participants had adequate exposure and experience.

### **3.5.4 Exclusion Criteria**

All community service radiographers were excluded.

## **3.6 DATA COLLECTION**

Data collection refers to the standardised procedure that a researcher adopts to guide the collection of data (Polit and Beck 2010: 338-343). The data collection instruments and data collection methods that were employed in this study are discussed below.

### **3.6.1 Data Collection Instruments**

There were two different interview schedules utilised in the study, the semi-structured interviews (SSIs) and FGI schedules, which were adapted from studies conducted by Segnon (2014), Akacho (2014), and Oswald (2012). Both schedules were appropriate data collection methods for this study as they enabled the participants to express themselves freely about their workplace experiences and allowed the researcher to ensure that the focus of the study was not lost (Ritchie and Lewis 2003: 139-141).

The SSI schedule (Appendix F) was used to elicit data from the radiography managers (RMs) and the FGI schedule (Appendix G) was used for the diagnostic radiographers (DRs), who were non-managerial/operational (Baškarada 2013: 11-12). The reason for this was to bring in different perspectives on the same study objectives and this also allows for triangulation of the data. Both the interview schedules had a similar format and consisted of open and closed-ended questions. There were two sections, namely Section A and Section B. Section A required participants' demographic information such as age, gender, years of experience and length of service at the hospital. Section A was included to gain a perspective of the participants without contravening confidentiality, which assisted the researcher in providing a thick description of participants and fulfilling the requirements of the case study (Baškarada 2013: 12-13). Section B had a grand tour question with various probes which allowed the researcher to gain further clarity regarding the participants' responses to questions (Ritchie and Lewis 2003: 150-152). All interviews were voice-recorded.

The focus group interviews enabled data to be extracted regarding diagnostic radiographers' (non-managerial/operational) perspectives about how they experienced their working environment (Polit and Beck 2010: 341). This method

allowed for them to comment on whether the workplace environment had contributed to any service delivery failures in their own experience (Ritchie and Lewis 2003: 170-174). This method further allowed for the following two critical questions of this study to be addressed. Firstly: What are the workplace experiences for diagnostic radiographers working at selected regional hospitals in the public sector? Secondly: How do the workplace experiences of diagnostic radiographers in selected regional hospitals in the public sector affect radiography service quality and why? The semi-structured interviews allowed for data to be extracted from the perspective of the radiography managers experiences on service delivery and potential challenges that were present. This contributed to a macro perspective of workplace experiences for diagnostic radiographers (Ritchie and Lewis 2003: 139).

### **3.6.1.1 Data Collection Method**

Data collection commenced following ethical clearance from the Durban University of Technology (IREC 49/17- Appendix A), and after receiving permission from the KwaZulu-Natal Department of Health and the selected regional public health hospitals within the eThekweni Health District (Appendix C and Appendix D). Data was collected from 24 regional public sector diagnostic radiographers. There were 4 participants from the semi-structured interviews (SSIs) and 20 participants with 5 from each participating hospital that participated in the focus group interviews (FGIs).

As indicated earlier, data was collected through SSI with purposefully selected public-sector radiography managers. According to Ritchie and Lewis (2003: 139-165), this method allows for complete coverage of an individual's personal experience and enables the interviewer to understand the participant's workplace experience in his or her own voice. The researcher telephonically contacted the radiography managers to explain the study purpose and invited participants to voluntarily participate in the study. The SSI were conducted after gaining informed consent (Appendix E) and at convenient pre-arranged times with radiography managers. All SSI lasted between 30 and 45 minutes.

The researcher also used FGI with diagnostic radiographers who were non-managerial/operational. The researcher used the referrals made during sampling and approached five potential participants who were available to participate in the FGI

(Palinkas *et al.* 2015: 535). This method of data collection proved to be an insightful technique since it enabled participants to engage with additional ideas that were generated by their colleagues (Ritchie and Lewis 2003: 171). The letter of information (Appendix E) was provided to them along with a brief explanation of the study purpose. All participants were requested to complete the informed consent form prior to the commencement of the FGI. There were a total of four FGIs, with one being held at each of the four regional hospitals. All FGIs lasted between 30 and 45 minutes.

All participants were interviewed in their natural clinical working environment at convenient pre-arranged times. This was done to adhere to the requirements of the case study approach which is structured to reveal a phenomenon in depth in its real-life context (Baxter and Jack 2008: 545-546). The researcher ensured that the environment was comfortable and free from noise and distractions (Ritchie and Lewis 2003: 134). The researcher used uncomplicated words to ensure that participants understood the questions (Sanjari *et al.* 2014: 2-6). All interviews were conducted in the English medium since all participants were conversant in English (Ritchie and Lewis 2003: 182-183). All interviews were voice-recorded. Informed consent (Appendix E) was requested from the participants prior to the use of a digital voice-recorder. All interviews were recorded in their entirety. Each interview was voice-recorded in a separate file and assigned an interview code. The researcher listened to each recording directly after the interviews and all voice-recordings were transcribed verbatim (Mack *et al.* 2005: 8-10). The voice-recording device was always maintained in good operational order and was pre-tested prior to use (Ritchie and Lewis 2003: 166-167). The data collection process ceased at data saturation. This was where information provided from the participants was becoming repetitive and redundant and no new information that was relevant to the study purpose was emerging (Fusch and Ness 2015: 1408-1416).

### **3.7 DATA ANALYSIS PROCESS**

The SSI and the FGI voice-recordings were transcribed verbatim directly after each interview. The transcripts were analysed using qualitative content analysis. The qualitative content analysis looks beyond counting the actual words, rather it focuses intensely on language in order to classify large amounts of text data into categories or units of analysis (Vaismoradi, Turunen and Bondas 2013: 399). In an examination of

the literature, it was identified that there are various views on the use of ideas, methods and clarification in qualitative content analysis together with how the results can be presented, although, there are similarities in the way the researchers explain the process (Bengtsson 2016: 11-12). Data can be analysed at either a manifest level or a latent level. At the manifest level, the researcher describes what the participants say, stays very close to the text, uses the words themselves, and describes the visible and obvious findings in the text. The latent level is an explanatory level in which the researcher seeks to find the underlying meaning of the text i.e. what the text is talking about (Graneheim and Lundman 2004: 106).

Four main stages have been identified in qualitative content analysis namely: de-contextualisation, re-contextualisation, categorisation, and compilation. In the stage of de-contextualisation, the investigator must acquaint him or herself with the data; this is achieved by reading through the transcribed text to gain an understanding of “what is going on”, prior to breaking it down into smaller meaning units (Graneheim and Lundman 2004: 106-109). A meaning unit is the smallest unit that contains some information that is related to answering the research question (Bengtsson 2016: 11-12). Codes are then assigned to the meaning units. This process is generally termed an open coding process. The process of coding assists the investigator in the analysis process. Codes enable the classification of concepts around which data can be compiled into building blocks and patterns. A coding list helps the investigator to properly provide explanations for the codes, and it reduces the cognitive change during the process of analysis in order to increase reliability of the research results (Bengtsson 2016: 11-12). Re-contextualisation refers to a stage in the analysis where the original text is re-read against the identified meaning units to ensure that the entire data content has been covered and addresses the main aim or the purpose of the research (Bengtsson 2016: 11-12).

The categorisation stage refers to the process of condensing the meaning units. This is where the amount of words is reduced without losing the content of the unit. The sub-categories are viewed for similarity and grouped to formulate categories. The categories are then grouped to form the main themes (Vaismoradi, Turunen and Bondas 2013: 399). Therefore, the identified categories should have internal homogeneity and external heterogeneity which means that no data should fall between two groups nor fit into more than one group. There appears to be no informal way to

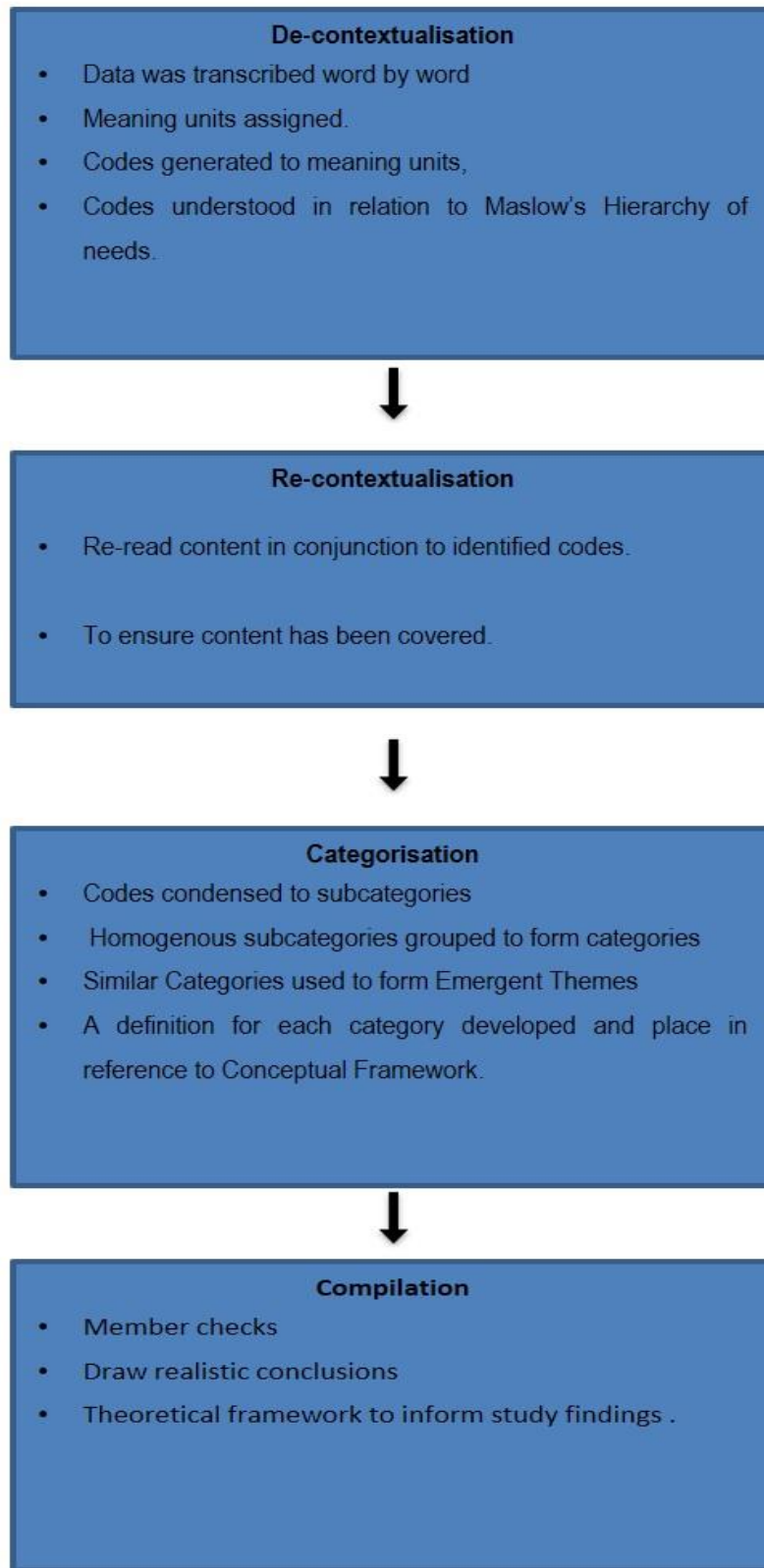
explain the exact approaches when categorisation is performed, nevertheless all categories must be ingrained in the data from which they evolve (Graneheim and Lundman 2004: 106-109). Once all the emergent themes have been identified the investigator then compiles all findings and displays results and uses the theoretical framework to explain study findings. This is referred to as the stage of compilation (Bengtsson 2016: 12).

This study used the manifest level to analyse the study data; since the study was based on a descriptive design, the researcher described the visible obvious components of what was stated by the participants (Graneheim and Lundman 2004: 106). The SSI transcripts were analysed first followed by the FGI transcripts. The first stage of analysis involved de-contextualisation where interview transcripts were read and re-read in order to gain a sense of the whole data (Bengtsson 2016: 11-12). The data was then transcribed word-by-word and any data that described a participant's workplace experience was assigned a meaning unit (Vaismoradi, Turunen and Bondas 2013: 399). Each identified meaning unit was labelled with a code which was understood in relation to Maslow's hierarchy of needs framework which guided this study (Vaismoradi, Turunen and Bondas 2013: 399).

Stage two involved re-contextualisation whereby the original text was re-read in relation to the identified codes. This was done to ensure that all aspects of the content had been covered (Bengtsson 2016: 11-12). This was followed by the third stage, of categorisation, whereby each code was further condensed and sorted into common subcategories (Bengtsson 2016:11-12). The subcategories from both the SSI and FGI were reviewed for relationships, similarities, and were then grouped into categories and then into main themes (Vaismoradi, Turunen and Bondas 2013: 400).

A definition for each main theme was developed and placed in relation to the study conceptual framework (Vaismoradi, Turunen and Bondas 2013: 400). Once the main themes had been generated, the report feedback was then relayed to the relevant participants. The feedback from participants was then utilised to modify categories or themes (Elo *et al.* 2014: 5-6). In the fourth stage, compilation, the findings were reviewed, and realistic conclusions were drawn together with using Maslow's hierarchy of needs to inform the findings (Bengtsson 2016: 12-13).

# Data Analysis stages



**Figure 3.1: Diagrammatic depiction of data analysis stages**

Source: Bengtsson (2016: 11)

### **3.8 MEASURES OF TRUSTWORTHINESS**

Trustworthiness refers to the degree of certainty or self-assurance that a qualitative researcher has in the data through applying the following criteria of credibility, transferability, dependability and confirmability (Polit and Beck 2010: 492).

#### **3.8.1 Credibility**

Credibility refers to the internal validity or confidence in the truth of the research results and ensures that the purpose of the research is well described (Polit and Beck 2010: 491-495). In this study, credibility was firstly achieved by using semi-structured interviews and FGIs that enabled the development of categories and themes. All interviews were voice-recorded and transcribed verbatim. This allowed the researcher to enhance credibility by continuous listening and transcribing of all interview voice-recordings (Elo *et al.* 2014: 4-5). Furthermore, data collection stopped at data saturation a point when the research categories and themes became repetitive or redundant and no new information emerged (Fusch and Ness 2015: 1408-1416). Member checks were conducted whereby the researcher reverted to participants to identify if the findings containing all emergent categories and themes were in keeping with the information provided by participants at their interviews (Elo *et al.* 2014: 5-6).

Triangulation of data involves the use of data from multiple sources to validate conclusions (Ritchie and Lewis 2003: 276). There are three types of data triangulation namely: time, space and person. Time triangulation involves a collection of data on the same occurrence from the same sample population at different times in the day or week. In this study, the SSI and the FGI were conducted at different times in the week to enhance the triangulation of study results. Space triangulation involves the collection of data at multiple sites to test for cross-site consistency. The researcher in this study obtained data from diagnostic radiographers employed at different regional public hospitals. Person triangulation involves the collection of data from people at different hierarchical levels. In this study, data was collected from radiography managers and non-managerial/operational diagnostic radiographers (Polit and Beck 2010: 497-499).

### **3.8.2 Transferability**

Transferability refers to the extent to which the findings of the research can be applied to other groups and settings, which is the degree to which the results of one study can be applied to other situations. This refers to an aspect of the external validity of a research study (Shenton 2004: 63-75). This study provided thick descriptions of the study findings with a detailed description of the study setting, population, and the methods used to sample, collect and analyse the data. This was performed so that the reader of the report can gain a good understanding of the environment in which the research was conducted and how it was conducted (Elo *et al.* 2014: 4-6).

### **3.8.3 Dependability**

According to Lincoln and Guba (1985), credibility and dependability are coupled and as such there is no credibility without dependability, as there can be no validity without reliability. This study employed the same measures adopted for credibility to achieve dependability.

### **3.8.4 Confirmability**

Confirmability is comparable to objectivity and ensures that the data accurately represents the information provided by the participants and are not the interpretations invented by the researcher. The researcher is an instrument of the study and shapes the analytical production of the data and is also aware of their position within the study (Polit and Beck 2010: 492). Therefore, measures must be taken to ensure as far as possible that the research findings are the consequence of the experiences and information obtained from the participants rather than the descriptions and preferences of the researcher (Polit and Beck 2010: 492). In this study, all interview transcripts were checked and analysed in conjunction with the supervisors and an agreement was reached with respect to all the emergent categories and themes to ensure confirmability of this study (Elo *et al.* 2014: 4-5). Furthermore, the researcher kept a detailed record of how data was analysed, and how conclusions were reached. All research results were presented by utilising direct quotations made by the participants. This was done to ensure that findings were as a result of participants' experiences and not the researcher's own biases. At each stage of the research process the researcher was mindful to omit their personal beliefs and assumptions from the data analysis and

re-read data continuously to describe what participants had verbalised (Shenton 2004: 72).

### **3.9 ETHICAL ISSUES**

Ethical considerations refer to protecting the rights of study participants, obtaining informed consent, and gaining institutional clearance (Polit and Beck 2010: 117). Letters of permission were obtained from the relevant regulatory gatekeepers (Appendix B, C and D). Institutional ethical clearance was obtained prior to the onset of the research procedure (Appendix A). The strategies describe in detail below were utilised to ensure ethical conformity.

#### **3.9.1 Strategies of Autonomy**

This refers to the ability of the researcher to employ techniques that protect an individual's rights and prevents exploitation of vulnerable participants (Mack *et al.* 2005: 8-10). The rights of all participants were considered. The research participants were allowed to make their own choices and their individual ideas were considered (Sanjari *et al.* 2014: 1-6). Voluntary participation was ensured by participants completing the informed consent letters (Appendix E) prior to the interview process (Creswell 2009). All the participants had received a letter of information (Appendix E) outlining the intended study and informed consent was a requirement to ensure them of their confidentiality (Sanjari *et al.* 2014: 3). Participants were further informed that they could withdraw from the study at any point. They were also informed that they could request that any statements they provided to the researcher during the process of their interviews be removed (Sanjari *et al.* 2014: 4). The researcher conducted all interviews using the English language as all participants had taken their radiography exams in the English medium and were conversant in the English medium (Mack *et al.* 2005: 8-10).

#### **3.9.2 Strategies of Beneficence**

This refers to the ability of the researcher to employ data collection methods in such a way as to reduce the mental or physical risks associated with the research participants (Mack *et al.* 2005: 8-10). The researcher used FGIs that were made up of non-managerial/operational diagnostic radiographers (Ritchie and Lewis 2003: 171-174).

This allowed participants to freely express themselves and reduced the managerial pressure that may have influenced their responses. The researcher also made use of probes to further clarify responses and prevent communication errors (Sanjari *et al.* 2014: 3-6). Member checks were employed as a means to increase the validity of all emergent categories and themes (Elo *et al.* 2014: 5-6). To further ensure anonymity all voice-recordings, transcriptions and coding of interview data, were given a pseudonym (Creswell 2009). The data was stored onto the researcher personal computer which was password controlled and all raw data will be deleted five years after completion of data collection (Sanjari *et al.* 2014: 4).

### **3.9.3 Strategies of Justice**

This concept pertains to the idea that participants who had participated in the research study should also be able to gain in terms of the study outcomes (Polit and Beck 2010: 121). This study was not treatment based and did not harm, abuse, or exploit any participant (Klopper 2008: 69-72). There was no direct benefit, although the kind of information provided may assist in improving the workplace environment for participants in this study and diagnostic radiographers employed in the public health sector of the eThekweni district of KZN. This may also lead to an improvement in the radiography service quality offered within public hospitals (Polit and Beck 2010: 121). The information obtained was made available in the form of a dissertation at the Durban University of Technology library and digital collection.

### **3.10 SUMMARY**

The researcher used the qualitative case study design to address the study purpose. Qualitative research is exploratory in nature and was ideal to reveal the diagnostic radiographer's workplace experiences holistically (Baxter and Jack 2008: 544-445). The case study method allowed for the researcher to gain a deep and holistic view of the research purpose. It further allowed for a detailed exploration of diagnostic radiographers' workplace experiences and their effects on radiography service quality in the regional public health sector (Yin 2009: 3-5). The constructivist paradigm allowed for participants to narrate their unique stories and actively describe their belief of reality which enabled the researcher to better understand the participants' actions

(Baxter and Jack 2008: 544-556). The descriptive design allowed for findings to be described as they were constructed from the participants' workplace experiences (Willig 2001). The diagnostic radiographers employed at the selected regional hospitals in the eThekweni district of KwaZulu-Natal formed the population group for this study. The purposeful sampling technique was first utilised to identify the radiography managers for the SSIs which were then followed by snowball sampling whereby referrals were used from radiography managers and fellow participants to formulate the FGIs. Inclusion and exclusion criteria were used to select the diagnostic radiographers. The data was collected at pre-arranged convenient times during the month of June and July 2017. Data was then analysed using qualitative content analysis and trustworthiness was addressed using various measures of credibility, transferability, dependability and confirmability. The researcher employed the strategies of autonomy, beneficence and justice to ensure that the ethical rights of all participants were upheld.

## **CHAPTER 4: RESEARCH RESULTS**

### **4.1 INTRODUCTION**

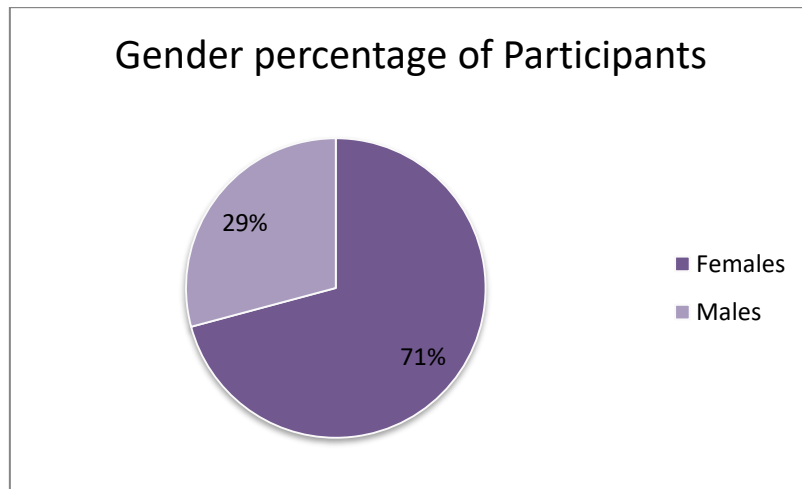
This chapter reports the findings from the data collected by means of the semi-structured interviews (SSIs) and the focus group Interviews (FGIs). The purpose of this case study was to explore the workplace experience of diagnostic radiographers and to examine the effect/s of their experience on radiography service quality in the regional public health sector. The themes and categories that emerged from the FGIs were insightful in answering the following two critical question of this study: What are the workplace experiences for diagnostic radiographers working at selected regional hospitals in the public sector? Secondly: How do the workplace experiences of diagnostic radiographers in selected regional hospitals in the public sector affect radiography service quality and why? The themes and categories that emerged from the SSIs also provide an insight as to how these workplace experiences affect radiography service quality in the way that it does. As alluded to earlier this contributed to a macro perspective of workplace experiences for diagnostic radiographers.

The findings are reported under main themes and categories (subcategories that formulated categories) that made up each theme. The themes that emerged were understood in relation to the conceptual framework of the study. Graphics are used to display the demographics of the participants. Participant quotations are used to illustrate the main themes and categories. This chapter ends with a summary that is pertinent to the main themes and categories which emerged in this study.

### **4.2 PARTICIPANT DEMOGRAPHICS**

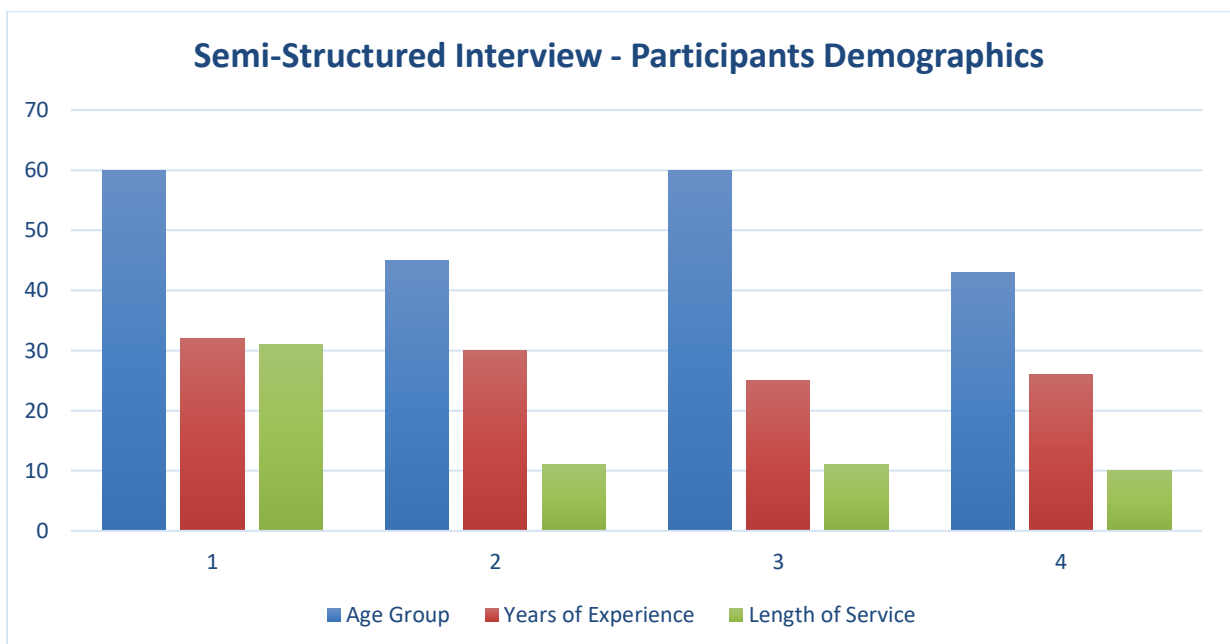
The term diagnostic radiographers used within the title and purpose statement of this dissertation represents both radiography managers and non-managerial/operational radiographers. The following will be used as abbreviations to represent the two categories of participants, namely the diagnostic radiography managers (RMs) and the diagnostic radiographers (DRs) who were non-managerial/ operational employees. The study had a total of 24 participants, four of which were RMs. As shown

in Figure 4.1, seventy one percent of participants were female, and this relates to a female dominant radiography profession in South Africa.



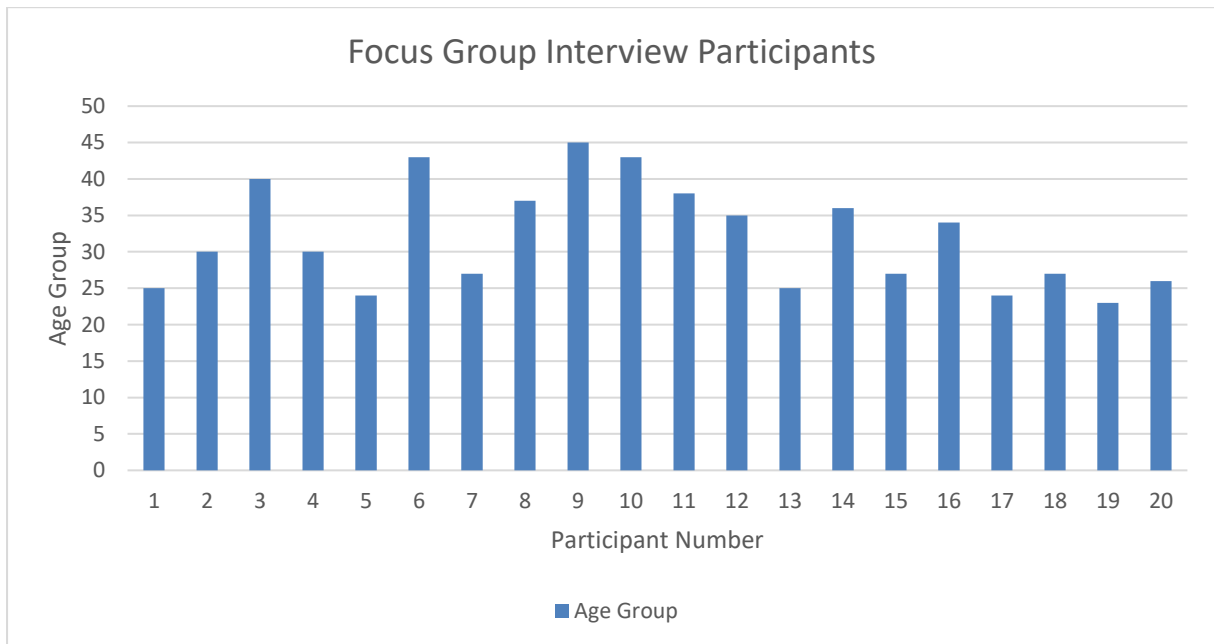
**Figure 4.1: Gender of participants**

Figure 4.2 shows that all four of the participants in the RM category were above the age of 40, had more than 20 years of experience, and were working at these selected regional hospitals for 10 years or more.



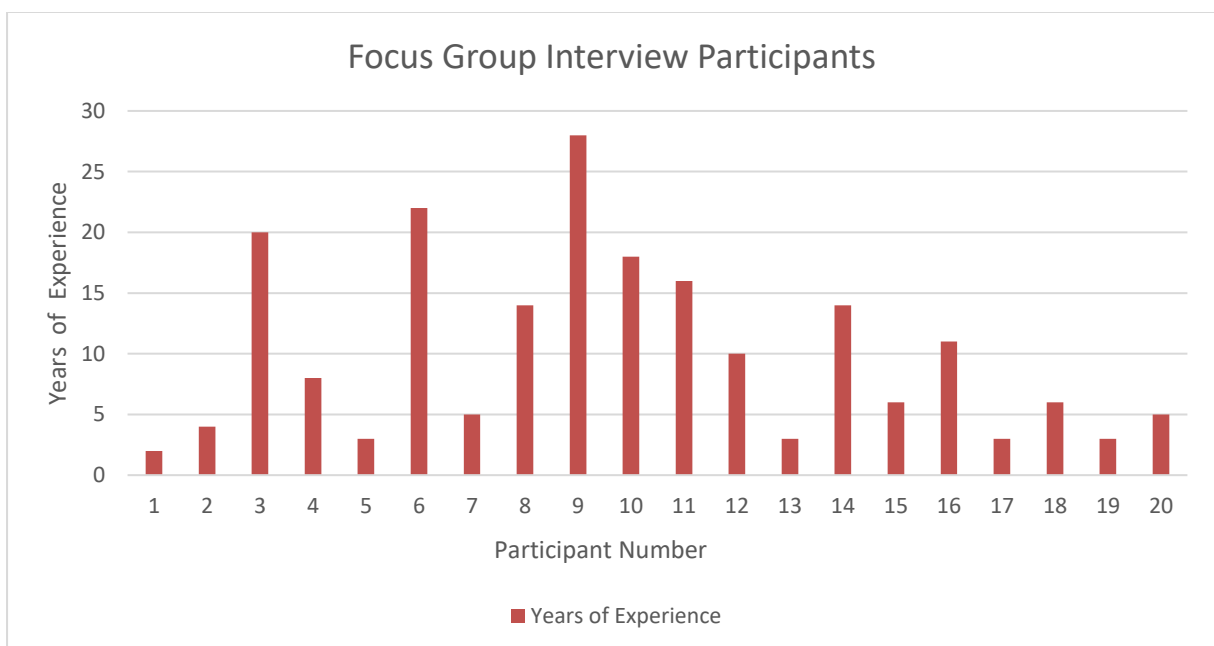
**Figure 4.2: Demographics of participants in the RM category**

The majority of the participants in the DR category were between the ages of 25 and 40 years of age (see Figure 4.3).



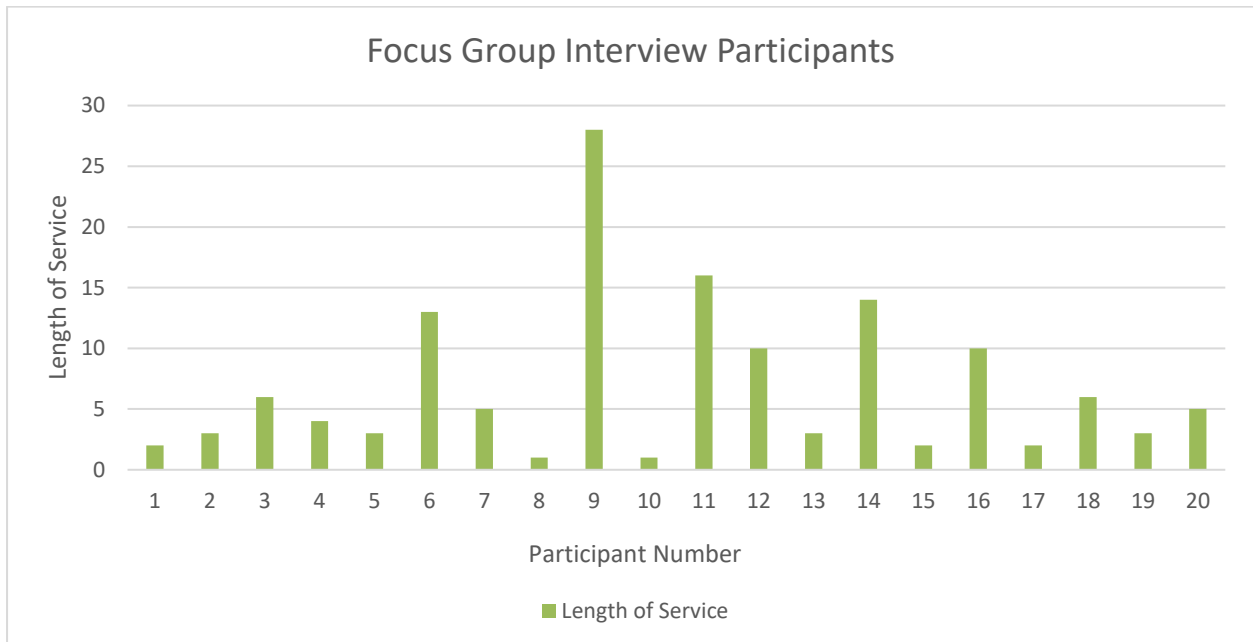
**Figure 4.3: Age groups of the participants in the DR category**

The experiences of the DRs were quite varied with 30% of participants having less than five years of experience whilst 70% had five and more years (see Figure 4.4).



**Figure 4.4: Years of experience of participants in the DR category**

The majority of radiographers within the DRs category were employed in the public health sector for three years or more (see Figure 4.5). This category of participants was able to provide this study with varied accounts of their experiences within the workplace environment.



**Figure 4.5: Length of service of participants in the DR category**

### 4.3 INTRODUCTION TO THEMES

There were four main themes that arose from the analysis of the data collected by means of the SSIs and FGIs. These main themes, considered to be fundamental in describing the workplace experiences of RMs and DRs, include: physical workplace environment, workplace rewards and incentives, managers support, and communication. Figure 4.6 provides a clear depiction of the various categories that made up these themes. The sub-categories that made up each category are described.

## Theme One: Physical Workplace Environment

**Category One: Condition of X-Ray Equipment**

Sub-Categories:

- Limited, old, semi or malfunction x-ray equipment
- Equipment maintenance
- Procurement process for new equipment
- Ergonomic x-ray equipment

**Category Two: Ventilation**

Sub-Categories:

- Ventilation within the x-ray and waiting rooms
- Ventilation within DRs rest rooms
- Ventilation within the darkrooms

**Category Three: Space and Infrastructure**

Sub-Categories:

- Space for patient waiting and change rooms
- Hospital buildings and Infrastructure

**Category Four: Staff Shortages and Workloads**

Sub-Categories:

- Limited DRs to service patients and leads to unmanageable workloads
- Shortage of support radiography staff increases DRs workloads
- Referral systems and limited information on hospitals services

## Theme Two: Workplace Rewards and Incentives

**Category One: OSD Structures and Allowance**

Sub-Categories:

- OSD salaries for managers
- OSD recognition for experience and qualification
- Allowance (uniform/ danger/ rural)

**Category Two: Employee Performance Management and Development Systems (EPMDS)**

Sub-Categories:

- Quality of the employee performance management and development systems (EPMDS)
- Writing of EPMDS motivation.

**Category Three: The Quality of the Employee Assistance Program (EAP)**

Sub-Categories:

- Quality EAP programs
- Information documenting the EAP functions.
- Recommendation for EAP programs to increase its capacity

## Theme Three: Managers Support

### Category One: Participation in decision-making

#### Sub-Categories:

- Centralisation of decision-making at provincial head office (equipment and staffing)
- Consultation with RMs regarding equipment procurement and staffing

### Category Two: Implementation of Standard Operating Procedures (SOPs)

#### Sub-Categories:

- Disciplinary procedures, code of conduct
- Development of protocols for emergency work

### Category Three: Motivation through Rapport, Recognition and Support

#### Sub-Categories:

- Recognition and Reassurance for DRs
- Staff support for proper orientation, professional training and development.
- Feedback and consultation from management/ autocratic management
- Conflict resolution

## Theme Four: Communication

### Category Two: Departmental communication channels

#### Sub-Categories:

- Communication among supervisors
- Communication between DRs and medical physicians

### Category One: Diagnostic Radiographer (DR) communication skills

#### Sub-Categories:

- Empathy and Compassion in Communication
- Communication skills to be incorporated as a training component for DRs

### Category Three: Language

#### Sub-Categories:

- Language barrier
- Recommendation for translators

**Figure 4.6: Themes and categories and subcategories**

#### 4.4 THEME ONE: THE PHYSICAL WORKPLACE ENVIRONMENT

This theme was made up of four categories i.e. conditions of x-ray equipment, ventilation, space and infrastructure and staff shortages and workloads.

##### 4.4.1 Category One: Condition of X-Ray Equipment

The findings showed that the general state of the x-ray equipment in the selected hospitals was suboptimal. The majority of the equipment was outdated, semi-functional and not maintained, which led to limited functional x-ray equipment being available to service patients. The findings also showed that there were poor procurement processes for new x-ray equipment. Several adverse experiences were cited by RMs and DRs and are represented below.

It was reported that the semi-functional and non-maintained x-ray equipment has serious consequences for radiography service quality. Some of the issues relating to the condition of the x-ray equipment include dismantling of x-ray tubes, non-functional x-ray table tops and identity cameras.

*I was the radiographer who the collimator had fallen on whilst I was positioning the patient. I had to tell my patient to leave the room and he did not know whether to leave the room or help me hold up this falling collimator. -DR20*

*Due to faulty equipment patient's services are compromised. -DR2*

*The other challenge is we do not have [functional] identity camera as well so we basically writing patients details on each x-ray film so that can become tedious has well and the images could get mixed up has well. -DR2*

The findings also showed that there was limited availability of functional x-ray equipment with which to x-ray patients which leads to patients having to wait for the functional x-ray rooms in order to be x-rayed, resulting in increased patient waiting times.

*There is limited number of functional x-ray equipment that we have to service patients. -DR17*

*Radiographers have to wait for functional x-ray rooms this increases the waiting times and as a result patient gets frustrated. -DR2*

The findings further showed that malfunctioning x-ray equipment result in sub-optimal image quality and led to DRs frequently having to repeat the x-ray acquisition that resulted in patients receiving increased radiation.

*Faulty equipment means you cannot get perfect x-rays. When you cannot move the table and tube you have to move the patients, which can be a danger to patients who were injured? -DR3*

*... tend to repeat quite often, because of the old/aged equipment. -RM4*

*Due to faulty equipment patient's services are compromised. -DR2*

The findings also demonstrated concerns about the absence of service contracts and maintenance of x-ray equipment, which gave rise to the issues raised above about the condition of the x-ray equipment.

*More than 40-year-old [equipment] ... no maintenance or service contracts. -RM1*

*Exposures what you set are not what you get [affects image quality], and this results in a lot of repeat x-rays. -DR9*

*Our concern is mostly equipment why is it taking so long to have new equipment and new technology equipment .... -RM3*

*We ... have a three-year plan where we write to purchase equipment, but it has never been fulfilled so far. -RM1*

Participants raised concerns about procurement processes for the purchase of new x-ray equipment, stating that it was lengthy and tedious.

*Why is it taking so long to have new equipment and new technology equipment? -RM3*

DRs expressed concern over non-ergonomically designed x-ray equipment which they find contributes to occupational strain and discomfort. DRs were of the view that care needs to be taken to ensure that optimal standards are applied in the procurement processes and should not only be centred on the cost of equipment. DRs perceive that

quality x-ray equipment that is ergonomically designed and innovative can contribute to an efficient and effective radiography service delivery and quality.

*The equipment affects our service quality because although you may have new equipment they are not always ergonomic, and we find it heavy to move and end up straining our backs. -DR12*

*The equipment plays a big role although we get new machines but they difficult to move even though they new. They [x-ray equipment] heavy to move around so sometimes your back is paining .... -DR14*

*Cheaper equipment [low-quality equipment] we struggle with the cheaper ones having to break all the time. Also causing strain to us as my colleague has just mentioned that it is hard to manoeuvre around, and most operations are difficult on these units. -DR15*

#### **4.4.2 Category Two: Ventilation**

Good ventilation in hospital settings are critical to prevent cross-infection of airborne diseases. In an x-ray department another area of concern for good ventilation is the darkroom. The findings show that the ventilation in the select hospitals was a concern in the following areas i) x-ray rooms; ii) patient waiting rooms; iii) staff rest rooms; and iv) darkrooms.

Ventilation in the x-ray departments within the select regional hospitals in KZN was dependent on central air-conditioning systems. The findings showed that these central air-conditioning systems were at most times non-functional.

*We have one air conditioning unit working in the department it works on the central air conditioning ... the down side is that ... air conditioning tends not to work. -RM2*

Concerns were raised about the suboptimal ventilation in the x-ray rooms as well as the patient waiting rooms, which could potentially increase the risk for spread of air borne infections such as TB.

*We have single air con units, and this is not adequate air is not being properly circulated that is a hazard for infectious {TB} diseases and most of the times those single units tend to break because doors are left open. -DR10*

*... Air is not being properly circulated ... hazard for infectious diseases. -DR20*

This also posed an occupational health risk to staff working in these areas. Another finding is the concerns raised about the suboptimal ventilation in the staff restrooms which leads to increased fatigue and potential respiratory health issues among staff.

*Regarding the afterhours our call room also becomes an issue, there is no ventilation as well. There is a problem with the ceiling sometimes we get dust coming through. -DR2*

The findings further showed that there is insufficient air supply to the darkrooms, an area where x-ray films are processed using hazardous chemicals. Darkroom staff were reported to have to undergo weekly lung capacity tests as part of the screening for occupational health risk. However, DRs who also spend time in these spaces appear not to undergo these screening tests.

*We have a darkroom where there is no ventilation ... when you walk in all you can smell is chemicals and fumes .... I do not know how people that work there manage with it and they have to go for a lung capacity test every week. -DR20*

#### **4.4.3 Category Three: Space and Infrastructure**

In respect of this category, DRs cite various challenges that they encounter with the infrastructure and workspaces.

The findings showed that there was limited space for patients' waiting areas and this contributes to crowding and a particular concern is the accommodation of highly infectious patients (i.e. multidrug resistant {MDR} and extreme drug resistant {XDR} TB) with the non-infectious patients in the same waiting area. It was highlighted that this poses risk for DOH both as medical legal risk in respect of patients and occupation health risk in relation to staff.

*The design of the building is not adequate since you find that MDR patients would be waiting in the same area as those with trauma. -DR4*

*In terms of space I do not think we have enough space. I think that hospital inpatients should not be seen in conjunction to the hospital outpatients as well. They should have a separate waiting area. They should not be seen with the tuberculosis patients. -DR19*

The findings also showed that there is an absence of or inadequate patient change rooms at select regional radiography departments. This contributes to poor workflow and increases patient waiting times. Moreover, patient dignity and privacy are compromised.

*We do not have space we do not even have change rooms for patients. The basic requirements that we should be having but we do not have here so ultimately it is the patient that suffers. It's their dignity and everything that suffers. -DR6*

Some DRs expressed concerns about the hospital design and infrastructure in accommodating movement of portable x-ray units for mobile radiography, which are used to x-ray patients in the wards and theatres when patients' conditions render them unstable to be sent to the x-ray department. This means that DRs have to move heavy equipment up steep ramps and sometimes in very constrained spaces. This leads to occupational strain and potential injuries for radiography staff.

*The workplace ergonomics or terrain is very bad cause if you have to push a BSU machine up ramps and down ramps because lifts are not functional that is a big hazard. -DR10*

#### **4.4.4 Category Four: Staff Shortages and Workloads**

The findings showed that most radiography departments experienced staff shortages which impacted negatively on staff workloads. Concerns were raised about staff retention, about the length of time for staff to be replaced and the 'freezing' of vacant posts due to budgetary constraints. This posed a challenge in providing quality radiography services as the remaining staff encountered unmanageable workloads. The findings further showed that there was also a shortage encountered with the support staff, for example porters, darkroom assistants, and clerks. This resulted in additional duties for DRs thereby contributing to unmanageable workloads experienced by DRs.

*There is a major problem with staffing. We are currently running on support of the community service radiographers. -RM1*

*Staff shortages .... Contribute to a lot of work for us sometimes we compromise on our patients' services. -DR1*

*The staff shortages and retention of radiographers are major constraints in providing an efficient 24-hour service. -RM4*

*... difficulty with recruiting and retaining radiographers. We not providing specialty in terms of mammography and fluoroscopy areas, so people want to go to private obviously. -RM4*

*We as radiographers feel so stressed physically because there is a shortage of support staff and you are doing three people work. -DR7*

*[Unmanageable workloads] Coping mechanism is not being here you find that four people are sick in one day. -DR15*

The findings showed that staff workloads are also affected by incorrect referral patterns of patients and poor documentation of hospital services. RMs expressed concern over the poor referral systems to regional hospitals and suggested that this led to an unnecessary increase in patient numbers. Concern was also raised about the limited or poor information provided to the public on the type of services offered at various regional hospitals in the public sector which could also be a contributing factor.

*They are not [DOH] categorising properly basically in terms of central, regional or tertiary. We also doing district work because we were told not to chase the patients away .... For example, circumcision is a district thing but now you find patients come with an urgent request and they cannot be chased away. -RM3*

*People come here, they have to [be] done by this hospital regardless of whether they were referred here or not. -RM3*

## 4.5 THEME TWO: THE WORKPLACE REWARDS AND INCENTIVES

The three categories that contribute to this theme are the OSD structures and allowances, the employee performance, management and development systems (EPMDS), and the quality of the employee assistance program (EAP).

### 4.5.1 Category One: The Occupational Specific dispensation (OSD) Structures and Allowances

The OSD was a financial retention strategy adopted by DOH to motivate, recruit and retain radiographers and other health professionals. The RMs reported that the disparity in remuneration post-OSD demotivated many radiography managers as the salaries of the manager and assistant managers were identical.

*The senior people were totally ignored especially the people that are running the departments before they were four level nine and one ten but when OSD came it pushed the nine to ten and one continued to do the work. -RM1*

Further findings of this study show that there are also was poor alignment of OSD structures for DRs in respect of experience and qualification levels.

*Personally, OSD I do not think it is based on the experience level we bring because someone who has just qualified is not very far off from someone with 30 years of experience. -RM2*

*OSD there is no recognition for the additional qualifications. You suppose to earn more with the higher qualification. -DR14*

*OSD has failed us and more incentives should be created for people with longer years of experience. -DR9*

There is a view that the OSD was unsuccessful in retaining experienced and skilled staff.

*We didn't get anything (OSD) which meant that there were senior radiographers that left because they were not recognised, and this led to them leaving. -DR16*

Further to this, the DRs reported that certain allowances were removed, for example, uniform allowances and danger allowances. It was reported that a danger allowance was paid to radiation workers due to the hazardous nature of their services. In addition, the findings show that there was non-alignment of allowances for DRs in urban, semi-rural and rural areas. There were levels of discontent over this disparity especially when DRs perceive to be carrying increased workloads and working within specialised radiography areas.

*We used to get danger allowance and uniform allowance .... We were radiation workers but all of that was taken away. -DR9*

*In the deep rural areas there are mainly general diagnostic x-rays, it's mostly chest and ankle x-rays but because those people are in deep rural areas their rural allowances are better. -DR3*

*Radiographers [urban areas] cover everything, but they do not get anything extra although they cover more work than people who work in the rural areas. -DR4*

#### **4.5.2 Category Two: Employee Performance Management and Development Systems (EPMDS)**

The EPMDS is completed on a quarterly and annual basis and measures the key performance areas for all staff. It is based on a ranking system and is dependent on how staff are ranked according to the set criteria. A ranking score of between 1 and 2 equals a suboptimal performance and no additional remuneration. A ranking score at 3 equals a one percent increase in salary. A score above 3 allows for a progression in salary grade, however, this must be strongly motivated by the respective line manager. This finding showed that the RMs and DRs perceive that the EPMDS that is utilised by the DOH is inadequate. They reported that regardless of how an employee performs, all staff receive a ranking of 3. They further reported that any staff who obtained a ranking score above 3 did not receive the due salary progression. It is perceived that the motivations are not considered. This contributes to low morale among the DRs.

*EPMDS I do not think it is effective .... If a person is working hard enough to get the bonus I do not know of any one that has got that bonus. -RM1*

*We did quality improvement projects [extra duties]. We weren't actually given an incentive for it and this has brought down our motivation -RM2*

*EPMDS there is room for improvement. We receive 1.5 percent of our annual salaries and we hardly see that for what we do. -DR2*

*EPMDS is not adequate although you may be engaged in activities that are over and above the clinical duties. -DR15*

*Nobody received ... bonuses ... motivations had been rejected ... people are passionate ... they go that extra mile but bonuses we are not given. -RM3*

*Excelled in performance however we need to write motivations for this which is extremely tedious and the motivations aren't always reviewed. -DR1*

#### **4.5.3 Category Three: The Quality of Employee Assistance Programmes (EAP)**

The RMs and DRs perceived the EAP programme to be of poor quality as seen by some adverse experiences that were cited. RMs reported that they felt that the DOH did not have the capacity to run the EAP, as there is one EAP officer in each regional hospital who caters for the entire hospital staff. Their duty comprises a referral of staff to the relevant sectors for assistance (e.g. psychology, social worker, etc.). Further to this, RMs reported that they did not see any significant change in the staff that had made use of these programmes.

*... [EAP] not effective, they assist in terms of advising staff ... it is left for the staff to decide .... -RM4*

The DRs were of the view that the purpose and function of the EAP seem to be limited to the recording of attendance registers only. They indicated that they do not receive continuous support and the decision to seek the relevant assistance is left to the discretion of the staff member. They also perceived it to be a disciplinary mechanism.

*EAP programmes I have experienced it going through a personal issue or difficult area and it's documented but in terms of the real help there is not much real help because you are helped by registers. -DR8*

DRs reported that more information should be provided about the service offered from the EAP as this would motivate DRs to utilise these services more. RMs and DRs suggested for the EAP to increase its capacity by offering continuous support to assist diagnostic radiographers experiencing traumatic and social issues more effectively.

*To be honest I know very vaguely about the employee assistance program. I do not know maybe it does not get communicated as much to us to get us motivated to use the program. -DR11*

*In terms of the EAP I thought that it was a reprimanding thing like if some gets off sick a lot then they send them to the EAP. I thought it is a punishment. I had no idea that it was here to assist us with our stress. -DR18*

*[EAP] we need to have more capacity to run it in the government sector. -RM4*

*I think that there should be something in place to ensure the psychological health of healthcare workers. I know that there are like psychologists that paramedics get to see, our patients die in front of us. There are numerous frustrations and there is no way to vent. -DR20*

## **4.6 THEME THREE: MANAGERS SUPPORT**

**In this theme there were three main categories that arose namely: participation in decision-making, implementation of standard operating procedures (SOPs), motivation through rapport, recognition and support.**

### **4.6.1 Category One: Participation in Decision-Making**

RMs reported that they have no control over the procurement of equipment and recruitment of staffing as the final decision-making is centralised at the DOH provincial head office. They indicated that their role in the procurement and recruitment processes is limited to drafting of motivations only. This presents a challenge for RMs as there seems to be inadequate consultation with them. RMs commented that they often felt as though their inputs (motivations) were not valued, and this contributed to low morale among them. RMs perceive that the limited power of authority and decision-making that they are given as managers hinders many of the recruitment and

procurement processes which eventually contributes negatively to the radiography service delivery and quality.

*The management here do not have control over the implementation and replacement of equipment. -RM1*

*... it has to go to head office. I do not know who deliberates at head office and we do not know why it takes so long. -RM3*

*The procurement of equipment and staff ... the process is so difficult ... centralisations of procurement of equipment ... if you give your input it seems like it is disregarded ... consultation ... not being heard by the relevant authorities ... as radiographers we would hold certain expertise to make informed decisions. This does not happen, and I therefore feel very de-motivated as a manager. -RM4*

DRs described that the management adopts an autocratic leadership approach which leaves them feeling intimidated and this prevents their contribution towards the decision-making processes. This lack of participation in the decision-making and or providing suggestions to management leads to decreased motivation for diagnostic radiographers.

*When you come back you say [RMs], this had happened, and they say ... "Will attend to it" and that is it. You do not know what has happened after that, did they attempt to solve that issue .... -DR12*

*Sometimes if you just want to approach management or make a suggestion you would be frightened. -DR9*

*We are imitated ... made to feel like ... they are above you .... -DR17*

#### **4.6.2 Category Two: Implementation of Standard Operating Procedures (SOPS)**

The implementation of standard operating procedures (SOPs) for what x-ray examination request should be considered during the emergency hour duties, code of conduct, discipline, and labour relations were seen to be important to both the RMs and DRs. The findings of this study show that implementation of SOPs was either

absent or inconsistent. RMs reported that they experienced a lack of support from the hospital management and this had a negative consequence on managing staff members within their capacity.

*I do not feel we receive the support from the management in terms of discipline as [hospital] management do not provide support in implementing disciplinary procedure and protocols the way it should be done. -RM2*

DRs expressed concerns about the perceived disparity in disciplinary procedures between them and other support staff who report to the RMs. They felt that there should be standardised approaches in the manner in which all staff (DRs as well as all other support staff) are disciplined.

*The disciplinary procedures are non-existent here and this is sad cause legally and ethically we are supposed to follow a certain way of doing things. Sometimes people were guilty of gross misconduct regarding patients regarding peers and other categories of staff. Nothing has been done. -DR6*

*There is no equity. The managers are very hard on the radiographers. However, when it comes to the other categories of staff they get away with a lot and it's not trivial things its serious misdemeanours. -DR7*

*Management does not take accountability ... responsibility and ... in terms of disciplinary procedures, code of conduct ... on paper but ... not put into practice. -DR9*

There was a particular concern over the radiography protocol for emergency hours and the DRs felt unsupported in this area. This resulted in DRs being inundated by unnecessary x-ray requests during emergency hours by referring clinicians which gave rise to conflict between them. So, there was a call for proper protocol to be developed and implemented for radiography emergency hours and for RMs to be accountable to this.

*You find yourself exposed to whatever they request [after hours] because you do not have proper policies and structures in place to support you. So, you can show the doctor this policy and that my management says this is not allowed. -DR7*

*After hours you encounter problems but then you realise that you do not have any after hour policies in place and you could have just dealt with it on your own instead of taking it to managers because nothing gets done about it. -DR18*

#### **4.6.3 Category Three: Motivation through Rapport, Recognition and Support**

The findings revealed that the recognition, reassurance and support received from management was inadequate and contributed to de-motivation among DRs. DRs raised frustrations regarding staff shortages and the impact this had on their workloads. They perceived there to be poor recognition, reassurance and support from management regarding these experiences.

*It motivates employees for managers to say thank you, that you are doing a good job whatever you have done we recognise you, but you do not feel appreciated and you end up not liking coming to work. -DR12*

DRs also perceived that management lacked the necessary skills to provide orientation when required. They also highlighted a lack of support from management regarding their professional training and development.

*Management does not support us at all and they do not motivate us like when you come to a place you are supposed to be orientated but you do not get that. -DR15*

*... Supervisor to help me with a projection ... asked me [if I do not know]. Instead of teaching ... made me look incompetent in front of everyone. -DR17*

*No motivation or support to those radiographers wanting to pursue their studies in radiography. Example: people doing their BTech are still rostered within the weekends they are meant to have lecturers or write exams and then we get stressed because we now have to try and swap you own shifts. -DR18*

An area raised as a concern was the lack of rapport between the management and the diagnostic radiographers in the workplace. DRs expressed frustrations about not receiving adequate and timeous information in order to undertake their duties effectively and felt that their input was not recognised by management. Poor consultation and feedback were considered to be predisposing factors to decreasing motivation among diagnostic radiographers.

*Its demotivating we kept in the dark about everything like when CT is broken they say it's going to be fixed but we do not know when. We need to be told things. -DR13*

*We receive no consultation from managers. Staff and employees' inputs or a suggestion is not given recognition or feedback. It very demotivating. -DR15*

Another area of concern seems to be the apparent discord between diagnostic radiographers and management and that there are issues of professionalism when handling conflict situations. There was a view that managers seem unapproachable, do not possess appropriate conflict resolving skills and do not uphold staff confidentiality. The findings further show that there is limited or no feedback on grievances experienced by the DRs, which leaves them feeling de-motivated and unsupported by management.

*... Our management ... nothing is kept confidential. Very unprofessional you ... go to your manager with a personal problem and ... discover later that other people know about. -DR7*

*The way [RMs] perceive conflict and manages it that leaves a lot to be desired ... questionable. -DR9*

## **4.7 THEME FOUR: COMMUNICATION**

**Communication between the radiography department and other sectors within the hospital and with management and diagnostic radiographers is critical to the workflow in a radiography department. Communication between staff and patients also contributes to improved radiography services. This theme comprises the following three categories namely: departmental communication channels, communication skills of diagnostic radiographers (DRs), and language and translation.**

### **4.7.1 Category One: Departmental Communication Channels**

RMs reported that the communication among radiography supervisors was generally inadequate as the information regarding x-ray equipment was incorrectly transferred from one radiography supervisor to the next.

*There is a [communication] barrier as only some or all supervisors know what is happening ... generally find that one person would know about certain equipment better than the other supervisor. -RM2*

DRs reported that the communication from referring clinicians was generally poor and that often the information on the x-ray request form was inadequate. The critical concern raised was that this often leads to patients receiving unnecessary radiation due to the incorrect x-rays being performed, or even unnecessary parts being x-rayed.

*Also, communication in terms of the doctors they do not communicate properly so we end up doing incorrect x-rays. -DR2*

*... Doctor would [communicate] on the request for a foot x-ray ... patient will come back and for x-ray of tibia and fibula. Then the patient would start shouting at you saying you have done the wrong x-ray. -DR4*

#### **4.7.2 Category Two: Communication Skills of Diagnostic Radiographers**

RMs reported that radiography service quality is directly proportional to the effective communication skills of diagnostic radiographers. They perceived that the diagnostic radiographers currently entering the profession lack the ability to communicate with empathy and compassion. They stated that these attributes are a fundamental requirement for all health professionals and recommend that these skills (empathy, respect and compassion) be incorporated within the teaching modules at the university.

*Communication is very important because the patient would respond to you or listen to you or speak to you if the communication is done correctly. But if you start behaving in an arrogant manner the patient would respond in the same manner. -RM3*

*Respect the patient ... the client being your patient. We are lacking that I think tertiary needs to improve communication aspect. Maybe add it onto the syllabus. -RM2*

*You are working in an environment where you are serving community and that needs to be drilled into students I think. I think students are lacking that empathy and compassion. -RM4*

### 4.7.3 Category Three: Language and Translation

The findings in this category showed that language barriers pose a challenge for diagnostic radiographers to be able to communicate effectively. This is particularly pertinent when dealing with obtaining informed consent from patients and when positioning patients for x-ray procedures.

*Explaining the complicated procedure ... there is a language barrier. -DR8*

*[Language barrier] Affect image quality you talk to the patient ... think understand English ... when you are positioning a patient and go to expose totally different thing. -DR15*

The findings also highlight a need for radiography departments to support English speaking diagnostic radiographers in communicating with Zulu speaking patients through interpreters and translators. There was a recommendation that the tertiary institutions consider introducing isiZulu as a language course in the radiography programmes and for hospitals to provide in-service training.

*It is very difficult so maybe at the tertiary level they must add on to and incorporate language courses. -RM4*

The study revealed that although several participants were able to converse in basic isiZulu, they often times experienced language barriers, especially when trying to obtain informed consent and explain the procedures to patients.

The study further highlighted that DRs often experience the same language barriers when they encounter foreign international patients.

*Being central we x-ray a lot of people ... different languages. I cannot communicate especially to the foreigners. - DR12*

It was highlighted that an incorrect pronunciation of a patient's name could lead to an incorrect patient being x-rayed, which could result in medico-legal implications for staff, the department/hospital and the DOH.

*... Language problem ... wrong patients are being called the name is not pronounced properly and someone else comes and incorrect x-rays are being taken. - RM2*

## 4.8 SUMMARY

The above chapter presents the research findings and shows the experiences of regional diagnostic radiographers and radiography managers working in the selected regional hospital within the eThekweni district of KZN. What can be seen is that the majority, if not all, of the workplace experiences seem to be negative and therefore are reported as negatively influencing the quality of radiography services.

The key findings of the study include the following:

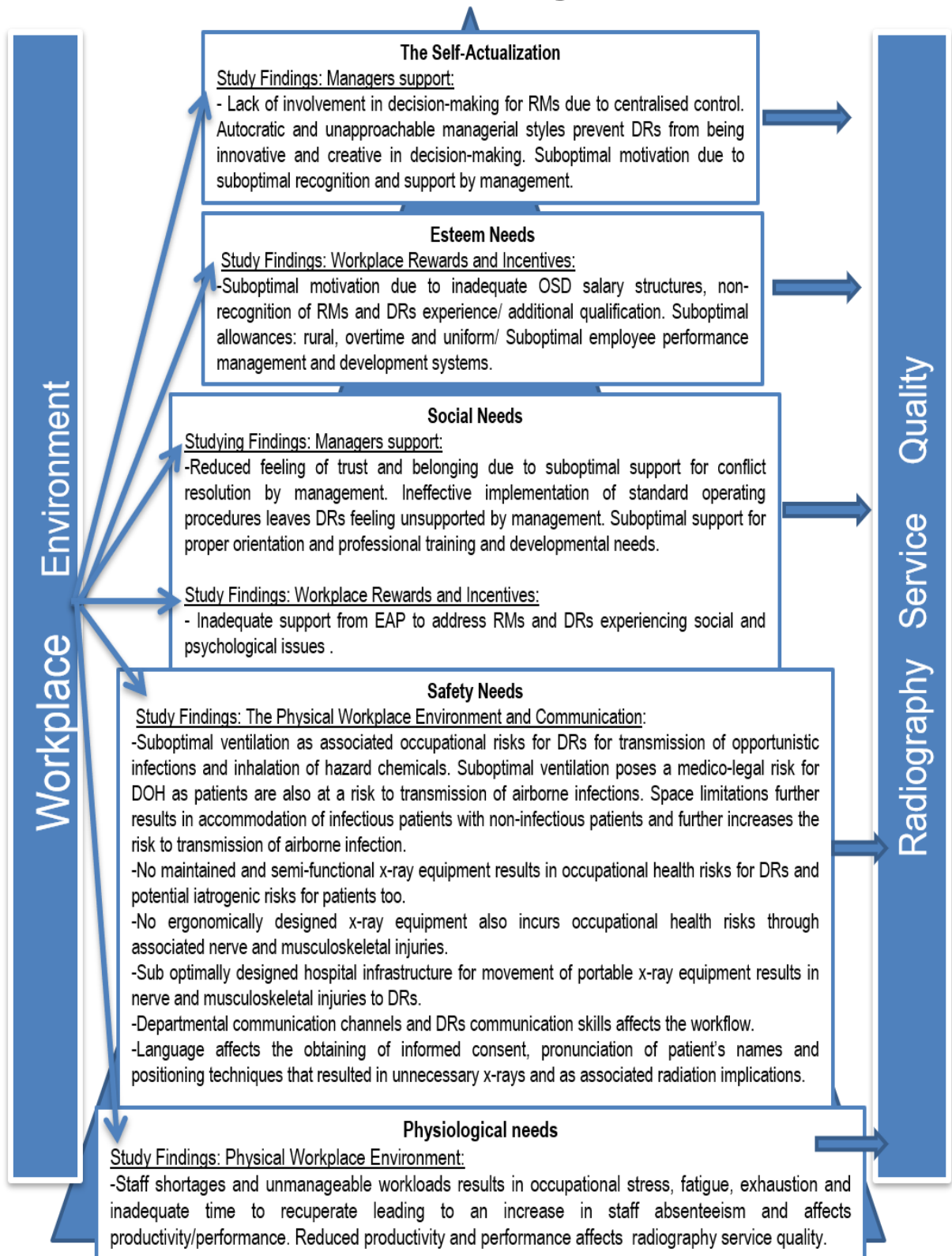
- Limited functional units to service high patient numbers as a consequence of malfunctioning and non-maintained equipment. Working with 'faulty' equipment leads to frequent repeat x-rays which lead to patients receiving unnecessary radiation. These contribute to a poor radiography service and could lead to potential litigations for the DOH and its staff. Working with faulty and non-ergonomic equipment can contribute to occupational health risk for staff.
- Poor ventilation and space limitations lead to easier transmission of air borne infection for staff and patients. It also contributes to issues of fatigue and exhaustion for staff.
- Staff shortages create unmanageable workloads that leave DRs unable to cope due to limited time for rest and recuperation and result in exhaustion. Referral systems and documentation of hospital services further increase the patient numbers that lead to unmanageable workloads.
- In respect of workplace rewards and incentives, it was reported that the newly introduced OSD structures and allowances, EPMDS, EAP seem unfavourable and/or inadequate to motivate RMs and DRs.
- DRs do not experience managerial support in respect of their everyday duties, orientation, and professional development and training. There also seems to be a discordance between DRs and management in respect of communication, conflict resolution and disciplinary matters.
- Communication issues are evident within the radiography department and extend to other sectors within the relevant hospitals.

## **CHAPTER 5: DISCUSSION**

### **5.1 INTRODUCTION**

This chapter discusses the research results according to the theoretical framework proposed for the study, namely, Maslow's hierarchy of needs. Maslow (1968) believed that people move through different stages of the five hierarchical needs that motivate our behaviour, which he called i) physiological, ii) safety, iii) social, iv) esteem, v) self-actualisation (Bushiri 2014: 13). If these needs are satisfied, then an employee is likely to perform effectively which will improve the service quality within an organisation. This theoretical framework was adopted in this study as it provides a meaningful understanding of the experiences encountered by the participants in the study as well as how these experiences affect the radiography service quality in the way that it does and why. The results of the study as illustrated in Figure 5.1 and will be discussed in this chapter.

# Maslow Hierarchy of Needs



**Figure 5.1: Diagrammatic depiction of main study findings as it relates to the conceptual and theoretical framework**

Source: Tanner (2017)

## **5.2 PHYSIOLOGICAL NEEDS**

Maslow's hierarchy of needs starts with the first level of needs termed physiological needs, which include the most basic needs that have to be satisfied (Maslow 1968). For employees in an organisation this need is satisfied when employers provide leave incentives, ample breaks for recuperation, and proper shift allocation for employees. It is posited that employee motivation improves when these needs are met. This in turn contributes to increased employee performance and productivity and invariably improves service quality within an organisation (Maslow 1968; Kaur 2013: 1026). In the analysis of the data, the physical workplace environment emerged as a theme and can be identified as being important for the RMs and DRs physiological needs. Within this theme, the categories that emerged are staff shortages and staff workloads.

### **5.2.1 Physical Workplace Environment as Related to Physiological Needs**

The WHO (2006) performance indicators emphasise the need for availability of ample health professionals as an important determinant in increasing performance among health professionals. This assertion is supported by studies (Gumede 2017: 63; Segnon 2014: 73) which show that adequate staffing and workloads are considered to be vital determinants in providing employees with assurance of a conducive workplace environment. When looking at staffing and workloads in an organisation, issues of recruitment and retention should be considered.

#### **5.2.1.1 Staff Shortages and Staff Workloads**

The global health workforce shortage is estimated to reach 12.9 million by 2035 and is of grave concern as there are a limited number of skilled health professionals to service the growing world population (WHO 2018c). The KZN annual performance health plan 2017/2018 – 2019/2020 indicates vacancy rates for medical specialists standing at 27.7%, followed by radiographers at 12.5% and pharmacists and professional nurses at 10.5% and 10.4% respectively (South Africa. Department of Health KwaZulu-Natal 2017). The findings of this study confirm the staff shortages within the allied health sector, namely diagnostic radiographers and related support staff. The shortage of diagnostic radiographers and other health professionals are

both a global and a local concern. High vacancy rates and staff shortages lead to unmanageable staff workloads and considerable patient congestion in public health facilities. This has serious consequences, as it impacts negatively on service delivery and quality, as shown in several studies (Thambura, 2016: 74; Nkosi 2014: 63-64; Vawda and Variawa, 2012: 489).

Further to this, the results of this study show that high patient numbers attributed to incorrect referral patterns and limited information regarding services offered at regional hospitals, also contribute to increased and unmanageable staff workloads.

Several studies in South Africa (Gam 2015: 80; Gumede 2017: 44-45), in Japan (Tohmiya, Tadaka and Arimoto 2018: 1-3), and in Rio de Janeiro, (Pais *et al.* 2012: 1822), have reported occupational stress as the main reason for frequent absenteeism among radiographers, which impairs productivity. This, they argue, is a consequence of unmanageable workloads, which have negative consequences for organisations. The findings in this study reiterate that unmanageable workloads lead to frequent absenteeism as a consequence of increased fatigue among DRs. This further exacerbates the issues around staff shortages and negatively affects radiography service quality.

It is essential that the KZN Department of Health (DOH) pay heed to these findings in this study and others; and addresses the high vacancy rates within the KZN radiography sector. The process of replacing vacant posts within the public health sector, as reported by Nkosi (2014: 65), is lengthy and tedious. This, therefore, leads to a significantly high number of vacant or 'frozen' posts in the public health sector. The results of this study confirm this finding and suggest that the main reason for the delays in appointments are budgetary constraints. The Gumede (2017: 76) study further alluded to the increasing number of radiographers that are employed across the country to help alleviate occupational stress that emanates from the diagnostic radiography staff shortages. It is recommended that the KZN and National DOH consider effective recruitment strategies to ensure that all vacant posts are occupied timeously to prevent the rising concerns over unmanageable workloads for radiography staff.

Once staff shortages are addressed, the next important issue to consider is fatigue experienced by diagnostic radiographers. Several studies show that fatigue and exhaustion can be overcome by adequate break intervals to allow for rest (Pais *et al.* 2012: 1822; Okeji *et al.* 2015a: 387). The findings in this study confirm that unmanageable workloads restrict adequate intervals for rest and recuperation. Aside from the concerns raised about adequate staffing, a possible reason could be the structuring of shift rosters. Several studies that considered radiographers' experiences locally and internationally (Gumede 2017: 63; Okeji *et al.* 2015a: 387) show that developing structured shift rosters can help avert strain caused from unmanageable workloads. A recommendation would be for radiography managers to consider effective strategies when planning shift rosters, considering staff shortages.

This study also shows that an inadequate referral system and limited or no information documenting services provided by the regional hospitals is an important contributing factor to increased patient numbers within this sector. These increased numbers contribute to increased workloads which could lead to a decline in radiography service quality, as alluded to above. A possible reason for this could be that the intake policy, which is about how patients are accepted at the different hospitals, is not consistently adhered to. Studies undertaken by Nkosi (2014: 61) and Gam (2015: 80) suggest that having a strict patient or intake referral system within hospitals and proper documentation of hospital services could potentially reduce the patient numbers within the relevant hospitals. It is recommended that hospital management, across the public health sector, implement the intake policy consistently and develop strategies to educate both the public and hospital staff about the services offered across the various sectors.

A study undertaken by Thambura (2016: 3-4) shows that there are concerns over the retention of diagnostic radiographers within the public sector in KZN. Although retention was not the focus of the study, the findings do show possible causes for diagnostic radiographers exiting the public health sector. One reason cited was that diagnostic radiographers felt unable to practise adequately within areas of specialisation, for example fluoroscopy and mammography, due to the condition of equipment. The Thambura (2016: 98-101) study highlights important strategies for the DOH to consider for improving retention of diagnostic radiographers within the

public health sector of KZN. These include opportunities for learning and development, flexible working schedules, and role expansion; these can be seen as important strategies to motivate diagnostic radiographers and ensure employee satisfaction.

### **5.3 SAFETY NEEDS**

The second stage in Maslow's hierarchy of needs is safety needs (Maslow 1968 and Bushiri 2014: 13). This stage asserts that an employee's job satisfaction and sense of security improves, when organisations provide them with a safe and conducive workplace, which in turn contributes to their increased performance and productivity (Maslow 1968; Jerome 2013: 42). For this stage in Maslow's hierarchy of needs, the findings show that a safe environment within an organisation applies to all its stakeholders. The following themes, the physical workplace environment and communication, were important to the safety needs of the participants as well as the patients that they provide a service to. Relating to the physical workplace environment, the categories that emerged were the following: i) condition of x-ray equipment, ii) ventilation and space. Under communication, the categories that emerged were i) departmental communication channels, ii) communication skills of diagnostic radiographers, iii) language and translation

#### **5.3.1 Physical Workplace Environment as Related to Safety Needs**

The physical workplace environment is an important determinant in ensuring improved employee health and safety that consequently improves the employee performance and service quality, as alluded to by Sarode and Shirsath (2014: 2735-2737). In South Africa, the Occupational Health and Safety Act (OHSACT) and the Constitutional Act enforces that every person has a right to an environment that is not harmful to their health and well-being (South Africa 1993; South Africa 1996: 1251). Furthermore, every patient has a right to a safe, clean and comfortable physical environment (Abujudeh, Danielson, and Bruno 2016: 943; South Africa 1996: 1251). The two categories that emerged from the data will be discussed below.

### **5.3.1.1 Conditions of X-Ray Equipment**

The condition of equipment in radiography departments has implications for both staff and its patients. The OHSACT enforces the need for maintenance of all machinery and equipment because it must be safe to utilise and be without health risk to employees (South Africa 1993). The National Patients' Rights Charter (South Africa. Department of Health 1999) attests that a patient has a right to a healthy and safe environment. The HPCSA (2008: 5-8) also highlights the importance of health professionals ensuring a safe environment for their patients, fellow staff and visitors. The findings of this study show that both diagnostic radiographers and patients experience safety issues relating to the condition of x-ray equipment in the selected regional hospitals within the public health sector within the eThekweni district of KZN.

The DRs reported that they operate outdated, semi-functional and often non-maintained x-ray and accessory equipment, which is of grave concern as there are adverse effects associated with ionising radiation. This has serious implications for both the health and safety of the diagnostic radiographers using the x-ray equipment and the patients who are serviced by them. Equipment breakages (dismantling x-ray tubes, non-functioning x-ray table-tops and identity cameras) have implications for occupational health risks for radiography staff, as injuries on-duty can occur. Additionally, these situations can result in potential iatrogenic injuries for patients, incorrect patient identification on x-rays, etc. that can lead to potential medico-legal implications for KZN and National DOH. It is fundamental that x-ray equipment is maintained within high quality standards to ensure minimising or eliminating these risks and ensure effective radiography service quality (Ebisawa, Magon and Mascarenhas 2009: 252).

It is fundamental and a regulatory requirement that x-ray equipment be maintained within high quality standards due to the adverse effects that are associated with ionising radiation (Ebisawa, Magon and Mascarenhas 2009: 252). As alluded to in Chapter 2, quality assurance (QA) is a maintenance programme that is utilised by radiography management to maintain safety of x-ray equipment through preserving optimal diagnostic image quality and limiting the effects associated with ionising radiation as enshrined by the ALARA principle. Gawugah (2016: 59) posits that an effective QA programme is an assurance to diagnostic radiographers and patients

that radiography departments operate within minimum quality standards and are compliant with the accreditation standards as set out by the regulatory bodies, which consists of periodic QC tests.

Quality assurance programmes adopt preventive maintenance procedures to ensure routine annual service, and maintenance is conducted by the designated x-ray manufacturer and includes developing daily checklists for checking physical parameters of x-ray equipment (Hoe 2007: 643; Gawugah 2016: 57; Korir *et al.* 2013: 84). The study findings show that maintenance of radiography equipment is absent and diagnostic radiographers operate semi-functional and outdated x-ray equipment. Some of the challenges cited including breakages and non-functioning pieces of x-ray equipment (for example, the x-ray table top). The main reasons provided were poor procurement processes and the timeline for equipment repairs and maintenance being unnecessarily drawn out which negates an effective QA programme within any radiography department. Hospital management and the KZN DOH must revisit its procurement processes to ensure that radiography service quality is not compromised as a result.

The availability of resources is another important determinant that affects the provisions of health service quality (Oswald 2012: 49; Akacho 2014: 14-18). Studies (Nkosi 2014: 65-66 and Gawugah 2016: 198-199) show that limited hospital equipment negatively affects the delivery of health service. Findings from this study confirm that limited x-ray equipment (as a consequence of breakages and poor procurement processes) results in poor radiography services which results in longer patient waiting times and comprises radiography service quality. This was also highlighted in media reports (Attwood 2015; Ndaliso 2016) that showed an increase in patient mortality rates as a result of limited functional CT scanners in KZN in the period 2015-2016. It was argued that patient waiting times were significantly increased which led to delayed diagnoses and premature demise. These findings emphasise the need for a profound overhaul of the KZN DOH procurement and maintenance processes and an upgrading of the equipment and related infrastructure to improve radiography service quality in the public health sector within the eThekweni district of KZN.

The NHI initiative in the South Africa. Department of Health (2011a) seeks to implement universal health coverage (WHO 2018b) so as to ensure that every citizen of South Africa has reasonable access to quality and affordable healthcare services. In attaining the successful implementation of this initiative, it is critical for the National DOH to ensure that there is ample functional x-ray equipment that will enhance the radiography service delivery and improve radiography service quality.

High service quality is directly proportional to high-quality equipment since working with low-quality equipment reduces employee productivity (Oswald 2012: 49; Akacho 2014: 14-18). A local nursing study undertaken by Segnon (2014: 95) concurs with the need for the National DOH to invest in high quality equipment as they perceived high-quality equipment to be more reliable. In this study, DRs suggest that high-quality x-ray equipment incurs fewer failures and are more operator friendly and recommend that the National DOH invest in purchasing high-quality x-ray equipment.

This study confirms the findings of several studies (Brusin 2011: 141; Naharuddin and Sadegi 2013: 69-70; Ofori-Manteaw, Antwi and Arthur 2015: 97-98) that show that occupational health risks for musculoskeletal disorders arise from non-ergonomic and poorly-maintained x-ray equipment. A further review of literature shows that to avoid the injury and fatigue that are associated with radiographers' duties, investing in ergonomic equipment may be beneficial (Garcia-Lallana *et al.* 2011: 510-515; Ofori-Manteaw, Antwi and Arthur 2015: 97-98). It is recommended that the National DOH and in particular the NHI Task Team, consider investing in ergonomic x-ray equipment and new maintenance contracts for all x-ray equipment. Further to this, it is important for the NHI initiative, which is still in the planning phases, to timeously identify those areas within public health services that require improvements.

### **5.3.1.2 Ventilation and Space**

In SA, smear microscopy is the preferred method for TB diagnosis, which is performed by the National Health Laboratory Service. This results in many patients with suspected TB being referred to district and regional hospitals (Makanjee 2004: 28). Patients also undergo a screening chest x-ray (Makanjee 2004: 28), which

results in an increase in the number of TB patients being referred to radiography/radiology departments in regional public sector hospitals. As a consequence, there is an increased risk of TB exposure for diagnostic radiographers working within regional/district hospitals (Ackah 2015: 4). As alluded to earlier, it is essential that radiography waiting, and examination rooms are designed with proper in-house ventilation systems (extractors and proper air-conditioning systems) or natural ventilation (open windows) to prevent transmission of TB and other infectious airborne diseases (Makanjee 2004: 28; Ackah 2015: 109).

The findings in this study show that participants experience poor ventilation within designated work and rest spaces. Domain Two of the national core standards enforces safety of patients along with using a structured approach to deal with and contain the spread of infection (South Africa. Department of Health 2011b; Whittaker *et al.* 2011: 63). Poor ventilation in the patient waiting areas also adversely affect patients, as infectious patients can spread airborne infections to non-infectious patients. Findings also showed space limitation within radiography departments which results in infectious patients being contained in the same waiting area as non-infectious patients which mean that airborne infections can easily be transmitted from infectious to non-infectious patients. To overcome the TB pandemic within the KZN province, it is imperative that the KZN and National DOH reviews and prioritises the ventilation spaces and ensures the creation of ample space to isolate infectious patients in the public sector hospitals and especially in radiography departments.

Another area in a radiology department that requires proper ventilation is the darkroom, where radiographs (x-ray films) are processed. It is well known that the chemicals used for conventional processing emit fumes that may pose occupational health risks for radiographers and darkroom technicians (Chingarande *et al.* 2013: 116). The findings in this study report that staff working in these spaces undergo repeated lung function testing to monitor occupational risk. In some hospitals, diagnostic radiographers assist with darkroom duties, when required to. Studies conducted in Zimbabwe (Nhivativa, Mukwasi and Chingarande 2014: 286) and Nigeria (Okeji *et al.* 2015b: 28-29) report a high incidence of respiratory diseases among technicians working within poorly ventilated darkrooms. To circumvent similar situations in public sector radiology departments in KZN, it is important that all operating darkrooms are adequately ventilated and equipped with fully functional

extractor fans to extract hazardous chemical fumes. As Maslow's (1968) attests, employees working in these spaces should be reassured that their safety and health and well-being is of paramount importance to the employer. Satisfied employees are more likely to perform optimally and thereby contribute to a more productive and positive service. A quick way of addressing this challenge is for all radiology departments in the public sector to switch to digital imaging systems, which removes the darkroom and its related occupational hazards completely (Mangano *et al.* 2015: 95; Abbas 2017: 2).

The WHO (2006) performance indicator reviews the need for the health sector to be able to provide or facilitate basic amenities such space to allow privacy for consultation, as part of its responsiveness to quality health service delivery. A Ghanaian study alludes to this notion that work space and room layout of radiography departments contributes to improved radiography service quality (Ofori-Manteaw, Antwi and Arthur 2015: 97-98). Similarly, Vawda and Variawa (2012: 489) highlight that lack of space and privacy in SA public hospitals contribute to poor service quality. The participants in this study reiterate these findings and argue that the limited space for patient change rooms contravenes patient privacy and also contributes to increased patient waiting times. The DRs alluded to the WHO performance indicators regarding the responsibility of the radiography department in providing these basic amenities. The KZN DOH and the NHI Task Team need to consider space in their planning and in designing revisions within the health sector.

### **5.3.2 Communication as Related to the Safety Needs**

Maslow's safety needs attest to good verbal and interpersonal communication that forms the basis of a firm relationship between radiographers, referring clinicians' and other health professionals, as well as patients (Maslow 1968; Beyer and Diedericks 2010: 22-23). Proper communication is critical to the effective management of patients and leads to a positive and healthy workplace environment for diagnostic radiographers. It also ensures that all relevant information pertaining to radiography procedures are adequately communicated within all sectors of the hospital to prevent potential examination errors (Maslow 1968; Jerome 2013: 42). The communications from referring clinicians, in particular those that impact the radiography service to patients is the x-ray request form. This is an important

regulatory requirement, as all x-ray imaging must only be undertaken through proper referral by the relevant health professionals. The following categories emerged in this theme: i) departmental communication channels, ii) communication skills of diagnostic radiographers and iii) language and translation.

### **5.3.2.1 Departmental Communication Channels**

Proper communication between radiographers is an important determinant for creating a positive workplace environment in a team of radiographers (Kubik-Huch *et al.* 2010: 348). A study undertaken by Sharma, Webster and Bhattacharyya (2014: 6) found that many tasks/duties became redundant as a result of the limited information sharing between healthcare supervisors, which ultimately impacts negatively on service quality. Wang *et al.* (2018: 81-82) further attest to the need for good interpersonal skills among healthcare professionals to prevent communication errors. The data in this study shows that communication among the radiography supervisors is suboptimal and results in inadequate information sharing, which causes confusion, affects the workflow and productivity. It may be beneficial for radiography supervisors to adopt the use of communication tools, as suggested by Wang *et al.* (2018: 87-86), to improve their communication and subsequently improve radiography service quality. This can be achieved through using daily goal sheets or white boards and/or door communication cards to convey written information (*ibid*).

Domain Four of the national core standards reports that public health facilities should work in close conjunction with other health professionals in promoting quality health care services (South Africa. Department of Health 2011b). As suggested earlier, an x-ray request is an important and critical communication tool between referring clinician and diagnostic radiographer. Therefore, the regulatory requirements of this request form must be met, in order to effectively manage the patient within the radiography department and contribute to a correct diagnosis. This in turn, impacts on the correct patient treatment process (Akacho 2014: 22-25). In this study the participants perceived there to be suboptimal communication between themselves and referring clinicians. According to Wanjau, Muiruri and Ayodo (2012: 118-119), sub-optimal communication leads to increased use of expensive diagnostic tests, as was shown in the current study's data. X-ray request forms did

not contain the correct information, which resulted in unnecessary or incorrect x-rays being performed. This has grave consequences as patients who receive unnecessary radiation could potentially experience adverse effects associated with radiation. Aside from the burden of unnecessary costs, this also incurs unnecessary medico-legal implications for the KZN and National DOH. To counter this, proper implementation of SOPs regarding completion of x-ray request forms needs critical attention, to ensure that practices by referring clinicians adhere to the mandatory and regulatory standards (HPCSA 2008: 6-8).

Wang *et al.* (2018: 86-87) proposes a 'multidisciplinary structured work shift evaluation system', as indicated in Chapter 2, in order to improve the communication channels between the various members of the health sectors. This, they argue, allows for open communication between health professionals across the various health sectors and clarifies the roles and responsibilities of each health professional within a specific discipline (*ibid*). To mitigate the issues raised about communication between the referring clinicians and members of the radiography department, it is recommended that this proposed system be adopted. The NHI should consider this model to improve the communication within the radiography departments across hospitals in the public health sector.

### **5.3.2.2 Communication Skills of Diagnostic Radiographers**

Communication skills are imperative in the health sector as they form the basis of a firm relationship between the health provider and patients and they affect the success and the quality of health service (Zivanovic and Ciric 2017: 1-2; Lang *et al.* 2013: 9). Several regulatory frameworks (South Africa. Department of Health 1999; WHO 2006; HPCSA 2008: 10) draw attention to how patients are to be treated by health professionals and raise the importance of a patient's right to respect, dignity, confidentiality and privacy. This relates to health professionals displaying appropriate attitudes, values and ethics when delivering services.

In this study, the participants raised concerns about the poor communication skills of diagnostic radiographers as they perceived them to lack compassion and empathy when communicating with patients. Studies highlight that patients' concerns and anxiety are reduced when hospital staff communicate with them in a

friendly manner (Wanjau, Muiruri and Ayodo 2012: 118; Chang, Chen and Lan 2013: 7-8). A review of the literature suggests several strategies to improve communication between health professional and their patients, as alluded to in Chapter 2. A 'patient-centred care', as proposed by Einstein *et al.* (2014: 1482) and Abujudeh, Danielson and Bruno (2016: 945), is a suitable approach that can be adopted by diagnostic radiographers to improve communication, interpersonal skills and empathy towards their patients. Diagnostic radiographers can also adopt another strategy called 'therapeutic communication' (Popa-Velea and Purcărea 2014: 39; Sherko, Sotiri and Lika 2013: 458), which assists patients to better understand information through verbal and nonverbal communication. This framework is said to also have immense benefits as it reduces the negative emotional state of patients (Zivanovic and Ciric 2017: 1-2). Therefore, the recommendation from the study participants to incorporate communication skills within training platforms and university programmes for radiographers should include these proposed frameworks.

### **5.3.2.3 Language and Translation**

It is vital that information regarding diagnostic procedures and treatment be properly communicated to patients (Beyer and Diedericks 2010: 22-23). In fact, the Constitution states that a patient has a right to decision-making with respect to their health and they have a right to be treated in a language of their choice (South Africa 1996: 1245). This is problematic, as SA is a multi-cultural country with 44 languages of which only 11 are considered to be official languages (Levin 2011: 11). South Africa is also home to a large number of African refugees who are versed in other African languages (*ibid*). Language and cultural barriers, as attested by Hussey (2013: 190-193), remains a critical challenge for many South African health institutions to honour the rights for every patient to receive an equitable health service, as English remains the dominant language. Studies by Segnon (2014: 74-75) and Akacho (2014: 22-25) show that these barriers pose challenges to effectively communicate with patients and contributes negatively to service quality.

It is vital also that diagnostic radiographers use proper communication in explaining instructions regarding radiography procedures and obtain informed consent from patients. According to Peer (2003: 5-6) and Beyer and Diedericks (2010: 22-23),

this instils trust and confidence in patients. The findings of this study show that poor communication between participants and patients arises from language barriers, as many radiographers are limited to communicating with their patients in their own home language. These experiences create obstacles in accomplishing their duties efficiently and effectively carrying out their daily duties and have the potential to negatively affect patient care and radiography service quality.

Levin (2011: 11-13) argues that if the health professionals in SA were versed in various languages communication errors would be reduced. He further recommends that SA health institutions are equipped with trained language interpreters so as to assist in the delivery of quality health services (Levin 2011: 11-13). The participants in this study affirm that the use of translators would assist them in explaining radiography procedures as well as obtaining informed consent and thereby improve radiography service quality to patients. Although the use of body gesture, sign language and tone of voice can assist with communication to non-English speaking patients, as identified in a radiography study in Ghana (Antwi, Kyei and Quarcoopome 2014: 29), this can also contribute to interpretation errors. It is recommended that language courses, and especially isiZulu, be incorporated in radiography education programmes, so that future radiographers would have the required competencies to communicate with their patients. Another recommendation is to provide in-house training and refresher courses to support diagnostic radiographers within hospital settings.

#### **5.4 SOCIAL NEEDS**

Social needs, which refer to a sense of identity and belonging, are referred to in the third stage of Maslow's hierarchy of needs (Maslow 1968). Maslow's framework posits that organisations can accomplish this by generating a feeling of trust, acceptance and belonging of employees. Managers can also provide support by ensuring that there are adequate opportunities for staff training and development, promoting team dynamics and encouraging community involvement (Maslow 1968; Bushiri 2014: 14). The themes of manager support and workplace rewards and incentives were seen important to the social needs of the participants. Relating to manager support, the categories related to implementation of standard operating procedures (SOPs) and motivation through rapport, recognition and support were

identified. Under the category relating to motivation through rapport, recognition and support emerged and contained the following essential subcategories, namely: i) support of staff for proper orientation, professional training and development, ii) workplace conflict and managerial approachability.

#### **5.4.1 Managers Support as Related to Social Needs**

A manager is seen as an individual who provides support to employees, by gathering and distributing resources needed by the employees in order to enable them to perform their duties adequately (Chandrasekar 2011). As alluded to earlier, Maslow's (1968) social needs encourage managers to provide employees with support by ensuring that there are adequate opportunities for staff training and development, promoting team dynamics, developing a sense of trust and belonging of employees (Bushiri 2014: 14). As discussed above the two main categories relating to the managers support include: implementation of standard operating procedures (SOPs) and motivation through rapport, recognition and support. In this study there were many subcategories that were related to the main category termed motivation through rapport, recognition, and support. However only select sub-categories as alluded to above were considered by participants as essential to address diagnostic radiographers' social needs and these are further discussed below.

##### **5.4.1.1 Support of staff for Proper Orientation, Professional Training and Development**

Maslow's (1968) social need reaffirms active training and development of employees to increase their motivation. The success of achieving employee performance is dependent upon development of employees' knowledge, skills and attitudes (Stup and Maloney 2003; Naharuddin and Sadegi 2013: 68). The study findings show that DRs do not receive adequate work orientation or support for skills training and opportunities to further their studies. The WHO (2006) performance indicator for training and development incorporates a component for competency that emphasises the need for health workers to receive support or supervision to perfect, improve and/or enhance their knowledge, skills, and technical abilities. A manager must be able to gather and distribute resources which could enhance the

social needs of DRs through work orientation, standard operating procedures, in-service training and refresher courses as a form of continuous professional development, as needed by employees to perform their services effectively (Chandrasekar 2011).

In this study, DRs reported that they did not feel supported by management in respect of work orientation and their training and developmental needs. The findings show that it is essential for management to provide support for training and development for all diagnostic radiographers. It also shows that proper orientation is required to support newly employed staff, to improve practices and techniques, and when new equipment is installed. A recommendation would be that radiography management, together with the relevant human resources departments, consider staff development plans and develop suitable programmes according to the training and development needs of staff. Continuous professional development is mandatory for all health professionals and perhaps in-house strategies can be developed to support staff in this regard. This would mean that the focus of development is specific to the immediate and long-term needs of each individual but also to each radiography department as an organisational unit. Radiography management also needs to consider their approaches in interacting with their subordinates and make an effort to motivate them through positive reassurance and approachability.

#### **5.4.1.2 Implementation of Standard Operating Procedures (SOPs)**

The aim of SOPs is to achieve uniformity of performance, quality output and efficiency. At the same time its purpose is to reduce miscommunication among staff and minimise failure to comply with industry regulations (HPCSA 2008: 6-8). The success of achieving employee performance is dependent upon the ability of the organisation to ensure consistency in the maintenance of SOPs (Stup and Maloney 2003; Naharuddin and Sadegi 2013: 68). In this study, it was shown that there is an absence of adequate SOPs for radiography staff working during emergency hours, which leaves the diagnostic radiographers feeling unsupported during this time. The findings also show that there is disparity in disciplinary procedures and practices when SOPs are contravened. This results in employees experiencing issues of mistrust and lack of belonging. The consistent adoption of SOPs may provide staff

with a set of instructions to help carry out their day-to-day functions effectively, as alluded to in the previous section. Management should develop fair practices when implementing SOPs as this will instil a sense of trust in their subordinates. Therefore, organisations should inculcate a culture of trust and managers should display a sense of consistency and accountability in supporting employees, in the day-to-day practices. Perhaps this also highlights the need for managers to receive training and support in undertaking their duties. It is well known that employees who feel valued and supported are likely perform their duties efficiently and effectively (Maslow 1968; Naharuddin and Sadegi 2013: 68; Gam 2015: 71). Satisfied staff lead to a productive workforce.

#### **5.4.1.3 Workplace Conflict and Managerial Approachability**

Workplace conflict that is not adequately managed has serious consequences for organisations as it causes a reduction in productivity, disinterest in work tasks and in extreme cases results in a breakdown within the organisation (Onyejiaku, Ghasi and Okwor 2018: 38). The findings of this study are that management lacks the skills to effectively cope with conflict resolution in the workplace, and that DRs experienced unprofessionalism on the part of their managers when dealing with grievances. This gave rise to increased feelings of mistrust and de-motivation, which has the potential to negatively influence radiography service quality. A study undertaken on health professionals in Iran and India highlight similar findings, which suggests that this could be a global concern (Sharma, Webster and Bhattacharyya 2014: 6-7; Kieft *et al.* 2014: 6-7). According to Maslow (1968), an employee who does not feel a sense of trust and belonging towards an organisation is less likely to perform (Bushiri 2014: 14). To build a culture of trust and belonging within the organisation, it is essential that management, both at hospital level and radiography department level, develop strategies to effectively deal with conflict in the workplace. Conflict resolution strategies, as proposed by Rahim (2002 as cited in Onyejiaku, Ghasi and Okwor 2018: 42-43), include collective bargaining, conciliation, negotiation, mediation or arbitration. What is evident in the study findings is that radiography managers may also need support to effectively perform their duties and promote staff satisfaction.

## **5.4.2 Workplace Rewards and Incentives as Related to Social Needs**

Workplace rewards and incentives can be monetary or non-monetary in value. Non-monetary rewards and incentives include EAPs as an incentive to assist employees deal with their social or personal issues that may impact upon their work performance (Scott 2018). Employee performance is proportional to an organisation's ability to provide support to their social and psychological well-being (Rajin 2012: 13-14). This section considers how an organisation supports its diagnostic radiographers' social needs and psychological health through non-monetary incentives. As alluded to earlier, Maslow's (1968) hierarchy encourages organisations to address employees' social needs as this will contribute positively to high employee performance. In this study there were many categories that made up the theme workplace rewards and incentives. However, the category of quality of employee assistance programmes (EAP) appeared to relate to diagnostic radiographers' social needs and is further discussed in this section.

### **5.4.2.1 The quality of Employee Assistance Programmes (EAP)**

Employee assistance programmes are another form of incentive an organisation can offer to their employees (Rajin 2012: 13-14). These programmes provide support to diagnostic radiographers to help them effectively deal with social issues and personal health issues that influence their work performance (Gam 2015: 56-58). The findings of this study show that the EAPs are not effective in assisting DRs manage their social issues and psychological health. The reasons cited for the poor quality EAPs include a lack of capacity to offer continuous support to DRs experiencing social issues and that there is limited information documenting the function of the EAPs. Concerns were also raised about the process involved, which seemed to be limited to only documenting attendance; and that any tangible support was absent. This lack in effectively assisting radiography staff to address their psycho-social issues may compromise their work performance and thereby impact the radiography services provided. Studies by Rajin (2012: 41-42) and Segnon (2014: 86) highlight that a central reason that the EAPs adopted by the DOH in SA are ineffective, is that employees lack clarity about their function.

A study undertaken by Gam (2015: 56-58) shows that diagnostic radiographers are aware of EAPs within the workplace and indicate that it assists them. In contrast the findings in this study suggest that diagnostic radiographers seem vaguely aware of the function of the EAPs and are reluctant to use these services as it is perceived as a disciplinary mechanism. Studies undertaken by Segnon (2014: 86) and Rajin (2012: 41-42) show that this challenge is not unique to diagnostic radiographers and extends to professionals like nurses and police officers. Firstly, it is recommended that the National DOH clarifies the role of the EAPs in the public sector. Secondly, that management at all levels within the workplace make explicit the function of EAPs to employees. Thirdly, it is recommended that EAPs be coupled with occupational health and social workers to assist employees to deal with social issues more effectively, as alluded to by both Rajin (2012: 61) and Segnon (2014: 95). This would also address the challenges of limited staff capacity in the EAPs.

## **5.5 ESTEEM NEEDS**

The fourth stage in Maslow's hierarchy of needs is esteem needs and relates to the need for self-worth and acceptance by others (Maslow 1968 and Kaur 2013: 1062). He argues that employees feel valued and motivated when employers provide incentives to recognise their achievements, which in turn leads to an enhancement in their performance and productivity (Maslow 1968; Kaur 2013: 1062). Workplace rewards and incentives were seen as important to the esteem needs of the participants. Two categories under this theme are discussed: i) the OSD structures and allowances, ii) EPMDS.

### **5.5.1 Workplace Rewards and Incentives as Related to Esteem Needs**

The WHO (2006) performance indicator emphasises the need for increased productivity through devising good rewards and incentives for health workers. Kinyili, Karanja and Namusonge (2015: 254-260) argue that an organisation that implements good workplace rewards and incentives gains the ability to offer effectiveness, efficiency and quality in their services. As discussed earlier, workplace rewards and incentives can be monetary or non-monetary in value (Scott 2018). In this section the monetary rewards and incentives appeared to surface as the main areas of concern as is further discussed. In this study there were many

categories that made up the theme workplace rewards and incentives. However, select categories, namely, OSD structure and allowance, and EPMDs, were considered as being important to the esteem needs of the diagnostic radiographers.

#### **5.5.1.1 OSD Structures and Allowances**

Salary structures have a significant impact on the motivation of health professionals and in turn influence their performance, productivity and the overall service quality within an organisation (Mbaruku *et al.* 2014: 6). In SA, the DOH devised a financial retention strategy termed the OSD to attract, motivate and retain health professionals (South Africa. Department of Public Service and Administration 2011). Studies have shown that OSD is unsuccessful, as it does not adequately reward employee performance for various health professionals, nor does it recognise individuals who have obtained an additional qualification (Doodhnath 2013; Kunene 2014; Theunissen, Butler and Akleker 2015). A study undertaken in Gauteng province by Britton, Pieterse and Lawrence (2017: 29-31) confirmed the poor compensation packages and the lack of recognition for expertise and experience for radiographers, which leaves them feeling very demotivated. Similarly, the findings of this study confirm that the OSD structures for diagnostic radiographers in the sector within the eThekweni district of KZN are also unsatisfactory, and many of the RMs and DRs are demotivated and reluctant to take on additional work tasks. Demotivated staff compromise the services provided by radiography departments.

In addition to adequate salary structures, introducing rewards and incentives has the potential to enhance recognition of employees and promote a sense of value as it caters to their esteem needs. In this study, it was found that rewards and incentives that were previously offered to diagnostic radiographers have been revoked, for example, uniform and danger allowances. This seems to have significantly demotivated them. Further to this, there was disgruntlement among participants regarding the disparity in what is called a 'rural allowance'. Firstly, it seems that there is a disparity in the allowances allocated to diagnostic radiographers working in hospitals in the rural and semi-rural areas, where the latter receive a lower percentage. Secondly, it was reported that diagnostic radiographers working in hospitals in the urban areas did not receive a similar incentive. There was an argument raised by the DRs in the study that diagnostic radiographers working in

the urban areas should also be recognised for their specialisations and the increased workloads that they encounter and so should also be considered for incentives. Several studies show that when employees receive adequate rewards and incentives, this significantly improves their performance and contributes positively towards service quality (Dargahi, Changizi and Gharabagh 2012: 253; Gawugah 2016: 229-230). Although the original intent for the OSD implementation was to improve employee satisfaction and retention, the findings in this study and others suggests that this needs revisiting so that it truly can enhance motivation which can then positively affect performance and productivity.

#### **5.5.1.2 Employee Performance Management and Development Systems**

The success of achieving employee performance is dependent upon performance expectation, feedback on performance and rewards for good performance (Stup and Maloney 2003). The findings of this study show that the EPMDS that is utilised to reward diagnostic radiographers based on key performance areas is ineffective, as the DRs reported that they were not adequately recognised for their performances. This, they argue, is due to the non-acceptance of motivations issued by their managers, which compromised grade progression. RMs also reported that they did not receive adequate recognition for any tasks that were completed outside their core functions. The findings show that there is low morale among diagnostic radiographers working in the sector within the eThekweni district of KZN. Again, it is clear that these findings are not unique to this study, as other studies (Awases, Bezuidenhout and Roos 2013: 4-7; Khoza, Pieterse and Motto 2018: 29) have shown similar results, including a decline in staff performance and service quality as a result of de-motivation among health professionals. Maslow's (1968) stage of esteem needs recognises that employee's achievements be acknowledged and rewarded as this motivates employees to improve performance and productivity. Therefore, there is a need to revisit the EPMDS in terms of how it is implemented at department, hospital and provincial levels.

### **5.6 SELF-ACTUALISATION NEEDS**

Self-actualisation is the final stage of Maslow's hierarchy of needs and refers to the need to develop to one's fullest potential (Bushiri 2014: 13). When a human being

ascends through the various stages of the hierarchy of needs, an individual is said to have become self-actualised. Managers must make employees feel valued by motivating, providing challenging and meaningful work assignments that enable innovation and creativity. Adopting these measures would improve employee motivation and satisfaction hence improving their performance and productivity (Jerome 2013: 42; Bushiri 2014: 13-14). The main theme that emerged from the data is 'manager support'. Under this theme, two categories are discussed, namely participation in decision-making and motivation through recognition and support.

### **5.6.1 Manager Support as Related to the Self-Actualisation Needs**

Managers are individuals with advanced experience and knowledge and as such are the leaders of the workforce. They need to be committed to employees and provide them with positive assurance and support (Naharuddin and Sadegi 2013: 69). The NHI initiative requires improvements in management structures as a way of improving service quality at public hospitals (South Africa. Department of Health 2011a). Domain Five of the national core standards emphasises the relevant supervisory and support structures that should be in place to offer strategic direction, proactive leadership, planning and risk management (Whittaker *et al.* 2011: 63). In this study there were many categories (as stated above) that made up the theme 'manager support'. However only the select categories emerged as being essential to diagnostic radiographers' self-actualisation needs and are further discussed in this section.

#### **5.6.1.1 Participation in Decision-Making**

Participation of employees within organisational decision-making processes increases their motivation and commitment and improves their performance (Irawanto 2015: 159; Burhanudin 2013: 6). Participative managerial styles allow employees to make active contributions and allow for innovation and creativity in decision-making (Irawanto 2015: 159). There seems to be compelling evidence to suggest that when employees are not included in organisational decision-making, this negatively affects their motivation and impacts their performance (Dargahi, Changizi and Gharabagh 2012: 253; Mubyazi and Njunwa 2013: 50; Mosadeghrad 2014: 84). In this study, radiography managers expressed concerns about being

excluded in important decision-making relating to procurement processes and staffing matters, which left them feeling unrecognised and demotivated. They perceived that they had the relevant skills and expertise to contribute to effective decision-making in these two vital areas in radiography. The findings in respect to this category appear to be indicative of the poorly co-ordinated SADHS that results in a lack of role clarity, poor decision-making, lack of trust and tension among members within the government spheres (Rispel 2016: 20). The KZN and National DOH should adopt participative managerial styles as a means to actively involve middle managers in decision-making, which, in the context of this study, will include radiography managers. It is likely that these middle managers may bring a sense of innovation and creativity to the decision-making processes, as they would also consider input from their subordinates.

In the quest to achieve universal health care the NHI requires all managers to possess certain skills and attributes to lead the workforce (South Africa. Department of Health 2011a). However, unapproachable managers, who are generally classified as being autocratic, negatively influence input from their subordinates which reduces staff motivation, as shown by several studies (Akor 2014: 148; Kieft *et al.* 2014: 6-7; Gam 2015: 70). This study confirms this finding as DRs expressed that autocratic management styles lead to fear of intimidation and a reluctance to contribute and participate in decision-making. The need for diagnostic radiographers to be involved in decision-making processes is paramount to ensure a high radiography service quality, as they are key players in providing radiography services. Therefore, it is evident that radiography managers need to change their approach in dealing with their subordinates and also adopt a participative managerial style (Irawanto 2015: 159).

#### **5.6.1.2 Motivation through Recognition and Support**

Several studies show that the success of achieving employee performance is influenced by the level of support, reassurance and motivation provided by management; as well as meaningful work for employees (Stup and Maloney 2003; Naharuddin and Sadegi 2013: 68; Kubik-Huch *et al.* 2010: 383; Chandrasekar 2011). In this study, there was a perception that management did not provide adequate recognition, reassurance and support, which was seen as important to the

DRs. A self-actualised diagnostic radiographer is one who feels valued and is allowed to bring innovation and creativity. To address self-actualisation needs, management at both department and hospital levels need to develop and implement strategies for promoting staff recognition and support. This could include creating opportunities for meaningful work tasks that promote independence through work autonomy, increased responsibility and spaces for innovation and creativity in the workplace. The findings of this study may be used as an initiative by the NHI to improve managerial structures in radiography departments in the public health sector.

## **5.7 SUMMARY**

Maslow's (1968) hierarchy of needs was used to provide a meaningful interpretation of the results. Diagnostic radiographers require the realisation of the following workplace needs:

- Physiological needs: to have adequate staffing and manageable workloads.
- Safety needs: to work with and provide patients with a safe environment in respect to x-ray equipment, ventilation and space. The ability to have effective communication channels within the radiography department and the ability to interact adequately and effectively with clinicians and other health professionals. To instil proper communication techniques when obtaining informed consent and positioning patients during radiography examinations.
- Social needs: staff require support for proper orientation, professional training and development, adequate implementation of standard operating procedures (SOPs), the need for workplace conflict to be addressed, and for an effective and adequate support from EAPs.
- Esteem needs: to have adequate compensation packages, allowances and effective systems so as to be able to reward employee performance and development.

- Self-actualisation needs: to be included in decision-making and be provided with adequate managerial motivation, recognition and support. This need is also attained when diagnostic radiographers are given the ability to bring innovation and creativity in the workplace and have a sense of job autonomy and increased responsibility. If these workplace needs are adequately addressed, then it may be possible to achieve high performance and thus contribute towards radiography service quality.

## CHAPTER 6: CONCLUSION AND RECOMMENDATIONS

The purpose of this case study was to explore the workplace experiences of diagnostic radiographers and to examine the effect/s of their experiences on radiography service quality in the regional public health sector. The study has examined some of the critical issues that diagnostic radiographers encounter and which affect them in conducting their daily duties. These experiences also affect their morale and levels of satisfaction, and their performance and productivity which invariably affects the radiography service quality. Some of the most critical issues cited by diagnostic radiographers were:

- Diagnostic radiographers expressed concern for the physiological needs that stem from staff shortages that create unmanageable workloads and leave diagnostic radiographers unable to cope due to limited time for rest and recuperation. Intake referral systems and limited information documenting the hospital services further increases patient numbers leading to unmanageable workloads. They also experience frequent absenteeism as a consequence of exhaustion which stems from these unmanageable workloads. This affects their productivity and invariably affects radiography service quality.
- The safety needs of diagnostic radiographers are compromised due to the following: The condition of the x-ray equipment (semi-functional, non-maintained and non-ergonomic) incurs occupational health risks for staff. Such risks include: i) DRs incurring injuries from dismantling parts of x-ray equipment; ii) difficulty in moving of x-ray equipment results in musculoskeletal injuries for DRs. These occupational injuries also contribute to high absenteeism resulting in limited staff to service patients thus resulting in a decline in productivity which then compromises radiography service quality. Furthermore, diagnostic radiographers also raised concerns for patient safety arising from semi-functional and non-maintained x-ray and accessory equipment. Such equipment can incur iatrogenic injuries for patients which can have medico-legal implications for the DOH as well.

These risks include: i) repeat x-ray acquisition that result in increased and unnecessary radiation to patients; ii) parts of x-ray equipment dismantling and colliding with the patient during the imaging process; iii) unnecessary movement of injured patients due to malfunctioning x-ray tables; iv) vital patient information not being correctly recorded on the patients' images.

- The safety needs of radiography staff and patients are further contravened due to suboptimal ventilation and space limitations that increase the risk for spread of air borne infection to both radiography staff and patients.
- From a safety needs point of view, it is essential that all relevant information pertaining to radiography procedures be adequately communicated within all sectors of the hospital to prevent potential examination errors. The departmental communication channels affect the way information is conveyed between the health professionals. The suboptimal communication skills of diagnostic radiographers add to patient anxiety and prevent patients from adequately assimilating information that is communicated. The language barrier adversely affects obtaining of informed consent and positioning of patients during radiography examinations, which could lead to medico-legal implications for staff and the DOH.
- Diagnostic radiographers esteem needs appeared to also be affected as a result of suboptimal workplace rewards and incentives stemming from the revised OSD salaries, allowances and EPMS to reward performance.
- The social needs appear to be a compromise as it is perceived that support for orientation, professional training and development is inadequate. There also appears to be a need for effective implementation of SOPs. Social needs are further compromised when workplace conflict is not adequately addressed and when the EAPs are ineffective in helping diagnostic radiographers deal with social issues and psychological health.
- This study findings suggest that the self-esteem needs of diagnostic radiographers are not adequately addressed as there is a lack of participation in decision-making as a result of unapproachable managerial styles. There also seems to be a lack of managerial motivation, recognition and support.

Fulfilment of self-actualisation needs requires opportunities to bring innovation and creativity to work tasks, to engage in meaningful work tasks, and to experience job autonomy and increased responsibility. This seems to be absent in the workplace environment.

As the main researcher employed at DOH my initial perception was that the OSD salaries were the central reason for de-motivation and dissatisfaction among diagnostic radiographers. However, the data collected from the SSIs and FGIs reveal that the main reason for this de-motivation and frustration center's around conditions in the workplace, followed by the lack of manager support and communication. Interestingly, workplace rewards and incentives did not seem to be the central reason for a decline in morale among diagnostic radiographers.

The study findings therefore suggest that diagnostic radiographers working in the regional public health sector of the eThekweni district of KZN require the fulfilment of certain workplace needs. It suggests that if these workplace needs are addressed this may have the potential to positively affect their performance and productivity which then contribute to the quality of the radiography service. In the context of this study it is evident that there is need for a radical approach to improve the workplace for diagnostic radiographers which in turn will improve organisational efficiency and the radiography service quality.

The theoretical framework of this study is guided by Maslow's hierarchy of needs which shows that it is important to satisfy an employee's needs to ensure improved employee performance and productivity. An increase in productivity and performance will invariably affect the quality of the radiography service. The National Health Insurance (NHI) scheme intends to ensure that every citizen of South Africa has reasonable access to quality and affordable health services. For the public hospital radiography departments in the eThekweni district of KZN this can be only achieved if there are significant improvements in the radiography service quality offered there. A few probable solutions have been recognised and suggested to decrease or eliminate these adverse experiences for both diagnostic radiographers and their patients.

## **6.1 RECOMMENDATIONS AND STUDY LIMITATIONS**

This section presents recommendations to the KZN DOH, National DOH, hospital and radiography department management, diagnostic radiographers (non-managerial) and tertiary institutions, arising from the study. The study limitations are also discussed.

### **6.1.1 Recommendations for KZN DOH and National DOH**

The following recommendations to the DOH at both national and provincial levels are proposed:

- i. The KZN DOH should review the current state of all x-ray equipment and consider upgrading of x-ray equipment and related infrastructure in the eThekweni district of KZN. They also need to review and revise their procurement processes to enable timeous replacements and or maintenance. These critical changes need to be undertaken in consultation with the radiography managers of these respective institutions as they are significant in providing expert knowledge and experiences at service levels.
- ii. The KZN DOH prioritise its service and or maintenance contracts for x-ray equipment and adhere to the planned maintenance schedules. This will minimise breakdowns and speedily replace non-functional equipment.
- iii. It is recommended that National DOH and in particular the NHI Task Team, consider investing in ergonomic and high-quality x-ray equipment to address occupational related injuries.
- iv. Hospital acquired infections are a huge challenge in the public sector and infection control must be given urgent attention. KZN and National DOH should review and prioritise the ventilation spaces and ensure the creation of ample space to isolate infectious patients in the public sector hospitals, and especially in the radiography departments.
- v. KZN and National DOH should consider switching to digital imaging systems that then removes the darkroom and its related occupational health hazards.

- vi. The National DOH needs to significantly revise its recruitment strategies thereby ensuring that all vacant posts are occupied timeously to prevent the rising concerns over unmanageable workloads for radiography staff.
- vii. The National DOH needs to clarify the role of EAPs in the public sector and consider coupling EAPs with occupational health and social workers to assist employees to deal with social issues more effectively.
- viii. The National DOH should consider revisiting the OSD for diagnostic radiographers and should consider creating additional incentives as means to enhance motivation and improve diagnostic radiographers' performance and productivity.
- ix. The National DOH should also consider revising the EPMDS in terms of how it is implemented, at department, hospital and provincial levels.
- x. The KZN and National DOH should adopt participative managerial styles which actively involve middle managers in decision-making, which will include radiography managers as well. It is likely that these middle managers can bring a sense of innovation and creativity to the decision-making processes, as they would also consider input from their subordinates.
- xi. The KZN DOH and the NHI task team should consider the 'multidisciplinary structured work shift evaluation system' as discussed in section 2.9.4.1, as a means to improve the communication between the various clinicians and health professionals. This may prevent the adverse effects caused to patients due to miss-communication between professionals.

### **6.1.2 Recommendation for Hospital and Radiography Management**

The following recommendations are proposed to both hospital and radiography management at regional hospitals in the eThekweni health district and the SAPHS at large:

- xii. Hospital management across the public health sector implements the intake policy consistently and develops strategies to educate both the public and hospital staff about the services offered across the various sectors.

- xiii. Hospital management should control their patient numbers by strictly adhering to their intake policy and the prescribed referral patterns. They also need to devise and improve documentation strategies that make explicit to all stakeholders the types of services that are rendered. This will impact on workloads at all levels with the hospital setting.
- xiv. Hospital and radiography department management should develop fair practices when implementing standard operating procedures as this will instil a sense of trust in their subordinates.
- xv. Radiography management should develop and implement effective SOPs regarding completion of x-ray request forms that require critical attention, to ensure that practices by referring clinicians adhere to the mandatory and regulatory standards.
- xvi. Management at all levels within the workplace should make explicit the function of the EAP to the employees.
- xvii. Radiography management should consider effective strategies when planning shift rosters, bearing in mind the existing staff shortages.
- xviii. Radiography management should consider including opportunities for learning and development, flexible working schedules and role expansion as these are important strategies to motivate diagnostic radiographers and ensure employee satisfaction.
- xix. Radiography management should improve the communication channels between radiography supervisors through using daily goal sheets or white boards and/or door communication cards to convey written information.
- xx. A recommendation for radiography management, together with the relevant human resources departments, is that they should consider staff development plans and develop programmes according to the training and development needs of staff.

- xxi. Radiography management should devise strategies to better assist and support their staff in handling and dealing with conflict. Hospital management may also need to provide radiography management with the support they may require in conducting their duties in this regard.
- xxii. Radiography management should consider changing their approach in dealing with their subordinates and should adopt a participative managerial style and provide employees with positive motivation and reassurance.
- xxiii. Both radiography and hospital management should develop and implement strategies for promoting staff recognition and support. This could include creating opportunities for meaningful work tasks that promote independence through work autonomy, increased responsibility, and spaces for innovation and creativity in the workplace.
- xxiv. Another recommendation to hospital management is to provide language courses through in-house training and refresher courses to support diagnostic radiographers within hospital settings.
- xxv. Radiography management should encourage a more patient-centred approach when delivering radiography services. All radiography service quality improvement initiatives should be directed to the satisfaction and expectations of the professional body and the patient.

### **6.1.3 Recommendation to Diagnostic Radiographers (Non-Managerial) and Tertiary Institutions**

- xxvi. Diagnostic radiographers should increase their awareness of their role and function in patient care through engaging in regular continuous professional development activities. As suggested earlier, diagnostic radiographers should consider a 'patient-centred care' approach when conducting their daily duties.
- xxvii. Communication skills as suggested by the various forms of 'therapeutic communication' should be incorporated within training platforms and university programmes for radiographers. If radiographers are versed with

such communication skills, then they may be able to reduce potential communication errors that arise from patient's anxiety.

- xxviii. It is recommended that language courses, and especially isiZulu, be incorporated into radiography education programmes, so that future radiographers have the required competencies to communicate with their patients.

## **6.2 RECOMMENDATIONS FOR FUTURE STUDIES**

The findings of this study recommend that a larger sample size to include a quantitative component and include regional diagnostic radiographers employed in different provinces. The critical issues uncovered in this study may provide a platform for this quantitative study. It may be beneficial to the National DOH, and particular to the NHI task team, to discover if there is a consensus regarding the above experiences and/or critical issues as identified in this study.

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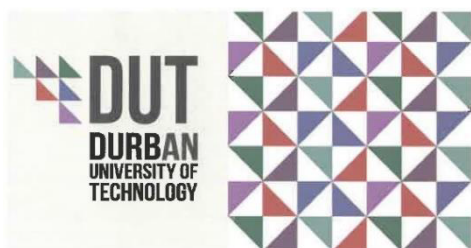
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# APPENDICES

## Appendix A- Ethics Approval



Institutional Research Ethics Committee  
Research and Postgraduate Support Directorate  
2nd Floor, Berwyn Court  
Gate 1, Steve Biko Campus  
Durban University of Technology  
P O Box 1334, Durban, South Africa, 4001  
Tel: 031 373 2375  
Email: lavishad@dut.ac.za  
[http://www.dut.ac.za/research/institutional\\_research\\_ethics](http://www.dut.ac.za/research/institutional_research_ethics)  
[www.dut.ac.za](http://www.dut.ac.za)

2 June 2017

IREC Reference Number: **REC 49/17**

Ms K Govindasami  
13 Lofthill Place  
Hillgrove  
Newlands West  
Durban  
4037

Dear Ms Govindasami

**Experiences of diagnostic radiographers in the workplace and its effect on service quality: A case study in the eThekweni health district of KwaZulu-Natal**

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

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

Yours Sincerely,

Professor J K Adam  
Chairperson: IREC



## Appendix B- Permission Letter



To: The Department of Health eThekweni Health District of KwaZulu-Natal/ The hospital and x-ray managers within the Regional Public Sector of the eThekweni Health District of KwaZulu-Natal.

Date:

**RE: REQUEST FOR PERMISSION TO CONDUCT RESEARCH IN DIAGNOSTIC RADIOGRAPHY DEPARTMENTS AT SELECTED REGIONAL HOSPITALS IN THE ETHEKWINI DISTRICT OF KZN**

Dear Sir/Madam

This letter is a request for written permission to be granted to undertake interviews with diagnostic radiographers and radiography managers at selected regional hospitals in the eThekweni district of KZN. I am a student in the Department of Radiography at the Durban University of Technology undertaking research for a Masters qualification. Ethical approval (49/17) has been granted by the Institutional Ethics Committee of the Durban University of Technology.

This research project will be conducted under the supervision of Mrs. R Sunder the HOD/Lecturer at the Department of Radiography at Durban University of Technology and co-supervised Dr. Penny Orton a lecturer at the Department of Nursing at Durban University of Technology.

**Research Title:**

Experiences of diagnostic radiographers in the workplace and its effect on service quality: A case study in the eThekweni health district of KwaZulu-Natal.

**Research Purpose:**

The purpose of this case study was to explore the workplace experience of diagnostic radiographers and to examine the effect/s of their experience on radiography service quality in the regional public health sector

**Critical Questions:**

1. What are the workplace experiences for diagnostic radiographers working at selected regional hospitals in the public sector?
2. How do the workplace experiences of diagnostic radiographers in selected regional hospitals in the public-sector affect radiography service quality and why?

The South African public health system is constantly criticized for poor service quality and unfair treatment of patients. However, little attention is given to the working environment within which a health professional is to work whilst rendering their service. It is posited that the working environment can affect employee morale and productivity positively or negatively; which in turn can affect service quality.

The findings of the study may assist the National and or Provincial Department of Health to identify issues in the workplace environment that may need to be improved for diagnostic radiographers, which could, in turn, ensure quality radiography services and reduce the currently perceived negativity around the South African public health sector.

Once permission has been granted, participants would be purposively selected and those who meet the inclusion criteria would be approached to participate in the semi-structured interviews. The purposively sampled participants will be asked to provide referrals of other potential participants to include within the focus group interviews. Those who are willing to participate would have to complete the consent form. Participation is purely voluntary. The semi-structured interview would commence first followed by the focus group interviews.

To assist in reaching a decision I have attached to this letter:

- a) A Copy of the information letter this briefly explains and outlines the research process.
- b) A Copy of the ethical clearance certificate issued by the Durban University of Technology.
- c) A Copy of the research interview schedules

Upon completion of the study, a bound copy of the full research report can be made available to the Department of Health.

Your **written permission** to conduct this will be greatly appreciated. And I would like to thank you for your time and consideration in this matter. If you require any further information, please do not hesitate to contact my supervisors or me:

Kind Regards

Miss Keshini Govindasami

**Principal Researcher:**

031-2426000 ext 1755 (Work)

0765082427 (Cell)

[20000596@dut4life.ac.za](mailto:20000596@dut4life.ac.za)(email)

**Supervisor:**

Name: Mrs Roshnee Sunder

031-3732450 (Work)

[rosht@dut.ac.za](mailto:rosht@dut.ac.za)

**Co-Supervisor**

Name: Dr Penny Orton

031-3732537 (work)

[pennyo@dut.ac.za](mailto:pennyo@dut.ac.za) (email)

## Appendix C- DOH Approval



**health**

Department:  
Health  
PROVINCE OF KWAZULU-NATAL

DIRECTORATE:

Physical Address: 330 Langalibalele Street, Pietermaritzburg  
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[www.kznhealth.gov.za](http://www.kznhealth.gov.za)

Health Research & Knowledge  
Management

HRKM Ref: 189/17  
NHRD Ref: KZ\_2016RP29\_855

Date: 26 May 2017  
Dear Ms K. Govindasami  
Durban University of Technology

### Approval of research

1. The research proposal titled '**Experiences of diagnostic radiographers in the workplace and its effect on service quality: A case study in the eThekweni health district of KwaZulu-Natal**' was reviewed by the KwaZulu-Natal Department of Health.

The proposal is hereby **approved** for research to be undertaken at Addington, King Edward VIII, Prince Mshiyeni Memorial and RK Khan Hospital.

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](mailto:hrkm@kznhealth.gov.za)

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

Yours Sincerely

**Dr E Lutge**

Chairperson, Health Research Committee

Date: 31/07/17

## Appendix D- eThekweni District Approval



health

Department:  
Health  
PROVINCE OF KWAZULU-NATAL

DIRECTORATE: CORPORATE SERVICES

ETHEKWENI HEALTH DISTRICT OFFICE

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

24 May 2017

Dear Miss K Govindasami

**Re: Permission To Conduct Research at eThekweni District Facilities.**

This letter serves to confirm that your application to conduct the research study titled, "Experiences of diagnostic radiographers in the workplace and its effect on service quality: A case study in the eThekweni health district of KwaZulu-Natal.", in the eThekweni District at the following health care facilities has been recommended:

1. King Edward VIII hospital
2. Addington hospital
3. Prince Mshiyeni hospital
4. RK Khan Hospital

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

Please also note the following:

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

Yours sincerely

**Dr. A. Harrichandparsad**

**PP: Ms. T. P. Msimango**  
**Chief Director (Acting)**  
**eThekweni Health District**

Fighting Disease. Fighting Poverty. Giving Hope

## Appendix E- Letter of Information and Consent



### LETTER OF INFORMATION

#### **Title of the Research Study:**

Experiences of diagnostic radiographers in the workplace and its effect on service quality: A case study in the eThekweni health district of KwaZulu-Natal.

**Principal Investigator/researcher:** Ms. Keshini Govindasami

**Supervisors:** Mrs. R. Sunder MTech: Radiography

**Co-Supervisors:** Dr. Penny Orton PhD: Nursing

#### **Introduction and Purpose of the Study:**

The South African public health system is constantly criticized for poor service quality and unfair treatment of patients. However, little attention is given to the workplace environment within which a health professional is to work whilst rendering their service. It is posited that the workplace environment can affect employee morale and productivity positively or negatively; which in turn can affect service quality.

*The purpose of this case study was to explore the workplace experience of diagnostic radiographers and to examine the effect/s of their experience on radiography service quality in the regional public health sector*

The findings of the study might assist the National Department of Health to identify issues in the workplace environment that may need to be improved for diagnostic radiographers, which could, in turn, ensure quality radiography services and reduce the currently perceived negativity around the South African public health sector. Your participation in the study will contribute to achieving the study objectives. Your participation is voluntary and refusal to participate in this study will not disadvantage you in any way. If you would like to participate, please continue to read and complete the attached consent form.

#### **Outline of the Procedures:**

As this is a qualitative study, you will be interviewed, either individually or in a focus group. The interview will last for approximately 30 - 45 minutes. You may withdraw from the interview at any time and you may also refuse to answer any question that may make you feel uncomfortable. With your permission, the interview will be voice-recorded. Thereafter, the voice-recordings will be transcribed and analysed by the researcher. The voice-recordings and interview schedules would be kept for five years following any publications. No one, other than the supervisors and I, will have access to

these voice-recordings. Please be assured that your name and personal details would be kept confidential and no identifying information would be included in the final research report.

**Risks or Discomforts to the Participant:**

There are no risks associated with this research

**Benefits:**

There would be no direct benefit to you for participating in this research however the information will be available at the DUT.

**Reason/s why the Participant May Be Withdrawn from the Study:**

Only participants who do not meet the inclusion criteria will be withdrawn from the study.

**Remuneration:**

Participation is purely on a voluntary basis and there will be no remuneration.

**Costs of the Study:**

There are no costs incurred to participants in the study.

**Confidentiality:**

Anonymity is ensured as you are not required to provide any personal details.

The data received will be located away on a secure computer which would be accessed by a password and all raw data will be deleted after five years.

**Research-related Injury:**

This study is not a treatment-based research and therefore there would be no research-related injury.

**Persons to Contact in the Event of Any Problems or Queries:**

Please contact Ms K Govindasami on 0765082427 or [20000596@dut4life.ac.za](mailto:20000596@dut4life.ac.za); or Mrs R Sunder on 031 3732450 or [roshe@dut.ac.za](mailto:roshe@dut.ac.za); or Dr P Orton on 031 3732537 or [penny@dut.ac.za](mailto:penny@dut.ac.za); or the Institutional Research Ethics Administrator on 031 373 2900.

**Complaints may be reported to the Director: Research and Postgraduate Support, Prof S Moyon 0313732577 or [moyos@dut.ac.za](mailto:moyos@dut.ac.za).**



**CONSENT LETTER**

**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.
- I hereby consent to voice-recording of the interview and understand that my confidentiality will be maintained at all times and that the voice-recording is voluntarily.

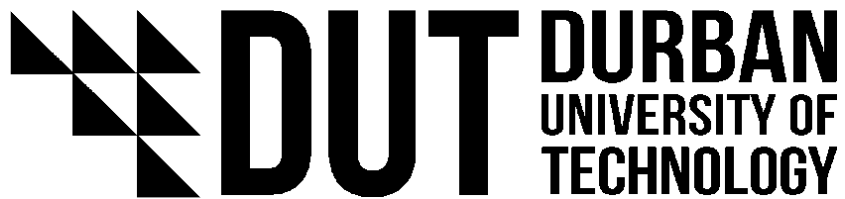
_____	_____	_____
<b>Full Name of Participant</b>	<b>Date</b>	<b>Signature</b>

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

_____	_____	_____
<b>Full Name of Researcher</b>	<b>Date</b>	<b>Signature</b>

_____	_____	_____
<b>Full Name of Witness (If applicable)</b>	<b>Date</b>	<b>Signature</b>

## Appendix F- Semi-Structured Interview Schedule with Radiography Managers



### Semi-Structured Interview Schedule

Title:

Experiences of diagnostic radiographers in the workplace and its effect on service quality: A case study in the eThekweni health district of KwaZulu-Natal.

Section: A

CODE NAME

AGE

GENDER

YEARS OF EXPERIENCE

LENGTH OF SERVICE AT HOSPITAL

**Section: B**

**Grand Tour Question:**

**Please could you talk to me about how the workplace environment in this hospital affects radiography service quality?**

**Probes:**

1) How does the physical working environment affect radiological service quality?

*(Office layout, temperature, noise levels, ventilation, lighting and equipment)*

2) How do workplace rewards and incentives affect radiological service quality?

*(Cash rewards/bonuses for performance, working hour's flexibility, employee assistance programs, training opportunities)*

3) How do the inputs from the higher body officials affect radiological service quality in your department?

*(Support/control over the budgeting, procurement, discipline, staffing levels staff structures, decision making processes)*

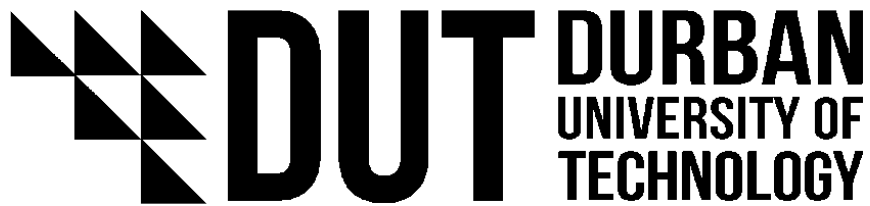
4) How does communication affect radiological service quality?

*(Conversing with patients/junior staff precisely and accurately, language barriers, taking informed consent, maintaining confidentiality)*

5) Why do these experiences have an effect on service quality/productivity?

6) Would you like to make other comments?

**Appendix G: Focus Group Interview Schedule with Diagnostic Radiographers (non-managerial/operational)**



**Focus Group Interview Schedule**

**Title:**

Experiences of diagnostic radiographers in the workplace and its effect on service quality: A case study in the eThekweni health district of KwaZulu-Natal.

Section: A

CODE NAME

AGE

GENDER

YEARS OF EXPERIENCE

LENGTH OF SERVICE AT HOSPITAL

**Section: B**

**Grand Tour Question**

**Please can you talk to me about your experience as a diagnostic radiographer at this hospital?**

**Probes**

1) How do you experience your physical workplace environment?

*(Office layout, temperature, noise levels, ventilation, lighting and equipment)*

2) How do you experience your workplace rewards and incentives?

*(Cash rewards/bonuses for performance, working hour's flexibility, employee assistance programs, training opportunities)*

3) How do you experience your manager's support?

*(Accountability, mentorship, and sensitivity to your culture, religion, support, motivation and encouragement)*

4) How do you experience the communication in your workplace?

*(Conversing with patients/managers precisely and accurately, language barriers, taking informed consent, maintaining confidentiality)*

5) Why do these experiences have an effect on your service quality?

6) Would you like to make any other comments?

## Appendix H- Editorial Certificate

### **DR RICHARD STEELE**

BA, HDE, MTech(Hom)

**HOMEOPATH**

Registration No. A07309 HM

Practice No. 0807524

**Freelance academic editor**

**Associate member: Professional Editors'**

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Fax 031-201-4989

Postal: P.O. Box 30043, Mayville 4058

Email: rstele@telkomsa.net

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### **EDITING CERTIFICATE**

**Re: Keshini Govindasami**

**Master's dissertation: Experiences of diagnostic radiographers in the workplace and its effect on service quality: a case study in the eThekweni health district of KwaZulu-Natal**

I confirm that I have edited this dissertation and for clarity, language and layout. I edited the references for layout but not for accuracy. I am a freelance editor specialising in proofreading and editing academic documents. I returned the document to the author with track changes so correct implementation of the changes in the text and references is the responsibility of the author. My original tertiary degree which I obtained at the University of Cape Town was a B.A. with English as a major and I went on to complete an H.D.E. (P.G.) Sec. with English as my teaching subject. I obtained a distinction for my M.Tech. dissertation in the Department of Homeopathy at Technikon Natal in 1999 (now the Durban University of Technology). During my 13 years as a part-time lecturer in the Department of Homeopathy at the Durban University of Technology I supervised numerous Master's degree dissertations.

Dr Richard Steele

**01 October 2018**

*per email*