CONTINUING PROFESSIONAL DEVELOPMENT: OPINIONS, AWARENESS AND COMPLIANCE CHALLENGES EXPERIENCED BY RADIOGRAPHERS IN KWAZULU-NATAL, SOUTH AFRICA

This work is submitted in fulfilment of the requirements for the Master of Health Sciences in Radiography at the Durban University of Technology.

KATHLEEN NAIDOO

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Supervisor : Mrs S. Naidoo - Master of Applied Science (MRT)

Co-Supervisor : Professor T. Puckree - PhD

DECLARATION

I, Kathleen Naidoo, do hereby declare that this dissertation represents my own work and that as far as I know, no other similar dissertation exists.

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Kathleen Naidoo Date

Approved for final submission

…… ……..

Mrs S. Naidoo Date
Master of Applied Science (MRT)

…….. ……

Professor. T. Puckree (PhD) Date

…… ……..

Mrs R. Sunder Date
HOD: Radiography

DEDICATION

I dedicate this dissertation to my amazing parents and my wonderful husband.

To my dad, Mr Munisamy Chetty, thank you for always working hard to support us. Thank you for your constant love, encouragement and support.

To my mum, Mrs Kamalaveni Chetty, thank you for always being by my side, caring for me and sharing in all my happiness. Thank you for your never ending love and support.

To my husband, Sagen Naidoo, no words can explain my gratitude for your endless support, love and encouragement over the years. Thank you for being with me every step of the way.

I love you all dearly.

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ABSTRACT

Introduction

Continuing Professional Development (CPD) has been introduced as a means to ensure that professionals continuously update their knowledge and skills. In addition, CPD has become a mandatory requirement by the Health Professionals Council of South Africa (HPCSA). However despite CPD being mandatory, health professionals nationally and internationally alike have experienced numerous challenges obtaining the required CPD points/hours. Some of these challenges included lack of awareness of the CPD requirements, lack of available activities, lack of employer support, lack of funding and a lack of time to participate. No studies have been conducted amongst radiographers working in the province of KwaZulu-Natal (KZN), to determine if they are affected by similar challenges hence the need for this study.

Purpose

The purpose of this study was to identify the opinions, level of awareness, participation, and challenges related to CPD compliance by radiographers in KwaZulu-Natal, and to ascertain their suggestions for improvement to CPD practices in order to make recommendations to the HPCSA.

Method

A quantitative, descriptive research approach using a questionnaire with both open-ended and closed-ended questions was utilized. Radiographers from all four disciplines in Radiography, working in the province of KwaZulu-Natal were included in this study. A five point Likert scale was used for most of the closed questions. The open ended questions allowed respondents to express their opinions freely. The quantitative data was analyzed using the Statistical Package for Social Sciences (SPSS) version 23.0. The inferential statistics included bivariate correlations and Chi-square testing. Open ended questions were analyzed by means of thematic analysis.

Results

Two hundred and ninety two questionnaires were administered and one hundred and forty six were returned which resulted in a 50% response rate. The mean age of respondents were 31.3 years. The majority of respondents were females (85.6%). Most of the respondents were diagnostic radiographers (80.8%) hence 59.6% were

shift workers. Fifty percent of the respondents were employed in the public health sector.

Respondent's acknowledged the importance of CPD however majority indicated engagement due to the mandatory requirements by the council. The most common challenges identified were lack of funding and time. Suggestions for having formal polices in place and allocation for financial support were recommended. A number of respondents suggested having an online database for the systematic recording of CPD points in order to improve the audit process.

In this study relationships between different variables were tested. It was noted that a progression in rank resulted in a greater level of agreement that CPD does improve professional competence. The infrequency of CPD engagement was directly affected by the difficulties associated with evidence and record keeping of CPD activities. The lack of funding was a greater challenge amongst the public health sector employees as opposed to the private sector. It was also noted that a lack of employer support affected how often respondents engaged in CPD activities hence support from employers was deemed crucial.

Conclusion

Radiographers working in KwaZulu - Natal were experiencing numerous CPD challenges. Suggestions were made to overcome these challenges as well as improving the auditing system by the HPCSA.

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ABBREVIATIONS

CE	:	Continuing Education
CEU	:	Continuing Education Unit
CME	:	Continuing Medical Education
CPD	:	Continuing Professional Development
HPCSA	:	Health Professionals Council of South Africa
KZN	:	KwaZulu - Natal
NZ	:	New Zealand
SORSA	:	Society of Radiographers of South Africa
SAICA	:	South African Institute of Chartered Accountants
SPSS	:	Statistical Package for Social Sciences
UK	:	United Kingdom

CHAPTER 1
INTRODUCTION

1.1. Introduction

Globally, continuing professional development (CPD) is emerging as a crucial method for the re-evaluation of our understanding of how professionals maintain their knowledge and skills over a long career span (Austin 2013:139). Laal, Laal and Aliramaei (2014:4053) define CPD as continuous learning, gaining of knowledge and developing of new skills in any environment. Continuing Education (CE), Continuing Medical Education (CME) and CPD are synonyms that all refer to an educational or training process that occurs after the completion of formal training (Cantillon and Jones 1999:1276; Laal, Laal and Aliramaei 2014:4052). While there are several definitions for CPD, emphasis is placed on improving professional performance through a planned process of education and development (Gibbs 2011:153). According to Brestovacki and Milutinovic (2011: 461) the American Nurses Association (ANA) explains CPD as any post basic education that is aimed at effective engagement in lifelong learning, which eventually improves health care services.

According to the Health Professionals Council of South Africa (2011:5), CPD is a process of maintaining and updating professional competence, knowledge and skills, in order to protect and promote public interest, in addition to ensuring the best possible service to the community. Due to the increased need for quality and accountability there is now a requirement for health care workers to be knowledgeable and well-informed of new techniques and developments within their professions (Ahuja 2011:4).

Mandatory CPD requirements have been adopted by numerous professions worldwide (Castillo and Caruana 2014:37; Dowds and French 2008:1; Knox, Cullen and Dunne 2014:2; van Niekerk 2009:611). There are still ongoing discussions on whether or not CPD should be mandatory and whether mandatory CPD is essentially achieving its desired goals (Sholer et al 2011:22). According to James and Francis (2011:134) there is no link between mandatory CPD and improved practice.

Professionals are encouraged to become independent, lifelong learners in order to be well informed of new techniques and procedures within their respective fields. Lifelong learning is defined as a cognisant, continuous process of learning throughout an individual's lifespan (Laal 2013:937). Gibbs (2011: 156) promotes lifelong learning as a method to encourage independent learning. Gibbs (2011:156) encourages professionals to take responsibility for their own professional development.

Continuing professional development is considered important as it provides job satisfaction by improving knowledge and confidence levels of individuals (Sholer 2011:19). Similarly, Brestovacki and Milutinovic (2011: 461) state that the indirect benefits of CPD include confirmation of personal competence and increased level of job satisfaction. Nsemo et al (2013:328) regard CPD to be important due to the increasing complexity of the clinical environment and older techniques becoming obsolete. Healthcare professionals are therefore expected to be adaptable to any environment.

Cantillon and Jones (1999:1276) report that an increase in patient empowerment has steered the demand for consistency within the medical field. According to Gawugah, Javda-Patel and Jackson (2011:332), CPD promotes patient and professional safety by ensuring that clinical services are delivered in an appropriate manner. Van Vuuren and Nel (2013:46) state that CPD ensures optimal quality of care to all patients. Continuing Professional Development is a vital part of a radiographer's profession and is a key factor in ensuring competence, improving job satisfaction and the quality of patient care.

Continuous professional development has numerous benefits and engagement in some form of CPD is considered important for all healthcare workers. However several professionals have indicated various challenges related to CPD engagement. The most common types of CPD challenges identified were as follows:

- the lack of time
- the lack of funding
- the lack of employer support

- the lack of awareness of the requirements of CPD
- increased family/personal commitments (Castillo and Caruana 2014:37; Gawugah, Javda-Patel and Jackson 2011:332; Knox, Cullen and Dunne 2014:2; Recker-Hughes et al 2010:19; Sholer et al 2011:22; van Niekerk 2009:611).

These challenges may affect CPD participation rates and may result in non-compliance with requirements. Hence it is important to identify the challenges affecting professionals in order to improve overall CPD compliance. Literature provides recommendations for overcoming some of these challenges. Some remedial methods included but are not limited to:

- engaging in online CPD activities
- in-house accredited CPD activities
- conducting roadshows to increase CPD awareness of various accredited activities available

1.2. Background to the problem

Radiography is a constantly evolving profession and over the past decades there has been major technological advancements. In light of these advances, the roles and the responsibilities of a radiographer have increased. This in turn has resulted in a significant need for CPD amongst radiographers as they must be cognizant of the technology progression and new techniques available.

Continuing professional development (CPD) was introduced as a mandatory requirement by the Health Professionals Council of South Africa (HPCSA) in 2002 (Health Professionals Council of South Africa 2011:5). The profession of radiography is one of the many professions that are governed by the HPCSA hence radiographers are obligated to engage in CPD activities. However since the introduction of CPD in South Africa, no research has been conducted to determine radiographer's opinions on the mandatory requirements for registration.

South African radiographers are required to obtain 30 continuing educational units (CEU's) annually, 3 of which must be ethics, human rights and medical law related. The HPCSA has provided healthcare workers with online guidelines of the various accredited CPD activities available. Activities which are not accredited are also included in this document. The purpose and expectations of CPD engagement are well highlighted in the document.

In order to ensure that all healthcare workers are abiding by the mandatory CPD requirements, the HPCSA conducts random audits every two months. Failure to obtain the required CEU's per annum will result in non-compliance by the healthcare professional (Health Professionals Council of South Africa 2011:5). Professionals are given 30 days to submit a full record of evidence indicating compliance with the regulation. Failure to do so will result in further investigation by the HPCSA.

1.3. The research problem

Audit statistics, courtesy of the HPCSA, from July 2009 to January 2013 revealed that over 50% of radiographers and clinical technologists (RCT's) that were audited, are considered non-compliant (Appendix A). Reasons for this non-compliance amongst radiographers is unknown as there is no literature available on any studies that have been conducted. This may suggest that no research has been undertaken even though in South Africa there is evidence that a number of radiographers are non-compliant.This non-compliance may result in radiographers enduring penalties or even suspension from the HPCSA's professional's register. In order for a radiographer or any health professional to be reinstated, a lengthy procedure would have to be adhered to.

These figures obtained from the 2009 to 2013 audits are of great concern and demonstrate that there is a need to identify the possible reasons as well as any challenges experienced by radiographers in terms of CPD compliance. It is anticipated that this study will provide a better understanding of radiographers' opinions about CPD and the challenges they experience in order to reduce this high number of non-compliance.

1.4. Aim and objectives of the study

The aim of this study was to identify the opinions, level of awareness, participation, and challenges related to CPD compliance by radiographers in KwaZulu-Natal, and to ascertain their suggestions for improvement to CPD practices in order to make recommendations to the HPCSA.

The **objectives** of the study were:

1. To identify the opinions, level of awareness, participation, and challenges related to CPD compliance by radiographers in KwaZulu-Natal.
2. To ascertain the radiographers' suggestions for improvement to CPD practices.
3. To determine the relationship between KwaZulu-Natal radiographer's level of CPD participation and their demographic data, CPD opinions, level of awareness, challenges experienced and suggestions for improvement.

1.5. Significance of the study

Literature shows that the majority of professionals acknowledge the importance of CPD and its purpose however there were a number of associated challenges that were also identified (Castillo and Caruana 2014:37; Gawugah, Javda-Patel and Jackson 2011:332; Recker-Hughes et al 2010:19; Sholer et al 2011:22 ; van Niekerk 2009:611). There is a paucity of literature available in South Africa to determine if similar CPD challenges exist amongst radiographers.

Continuing Professional Development may be mandatory and compulsory for registration with the council, however there are restricting barriers that impact the level of participation and compliance. It is important to determine if radiographers consider mandatory CPD to be effective and achieving its purpose. In order for CPD to be effective the challenges that may be affecting these radiographers, requires investigation to overcome concerns and implement changes to improve compliance.

This study was conducted as a means to determine if similar opinions and challenges exist amongst radiographers working in the province of KZN and also to ascertain their suggestions for improvement in order to make recommendations to the HPCSA. It is anticipated that the results from this study will provide the HPCSA with a better understanding of radiographer's opinions and challenges experienced with regards to

CPD engagement and hopefully enable possible intervention methods to overcome such challenges. Suggestions from the open ended questions regarding improvement of the CPD auditing process will be provided. These suggestions may generate the possibility of new policies and procedures for the improvement of CPD compliance.

1.6. Definition of terms and clarification of concepts

1.6.1. Continuing Education Unit (CEU) - is the value given to a learning activity for CPD (Health Professionals Council of South Africa 2011:1). A continuing education unit (CEU) is the value given to a learning activity for CPD (Health Professionals Council of South Africa 2011:1).

1.6.2. Non-compliance - is the failure of an individual to annually obtain the required CEU's which includes at least 5 CEU's for Ethics, Human Rights and Medical Law (Health Professionals Council of South Africa 2011:3).

1.6.3. Compliance audit/checks – random selection of health professionals are audited for compliance every two months (Health Professionals Council of South Africa 2011:1).

1.6.4. Challenge – is a difficult situation that requires great effort to overcome (Cambridge Dictionaries Online 2016).

1.6.5. Council – a group of people chosen to give advice and make decisions (Cambridge Dictionaries Online 2016).

1.6.6. Knowledge – the understanding of or having information on a particular subject (Cambridge Dictionaries Online 2016).

1.6.7. Paramedic - a person who is trained to give medical assistance especially in an emergency and ideally to stabilize a patient before escorting them to a hospital , but is not a doctor or nurse (Cambridge Dictionaries Online 2016; Oxford Dictionary 2016).

1.6.8. Personal development – also known as self-development. Involves development of all aspects of the individual such as self- esteem and setting life goals (UK College of personal development 2015).

1.6.9. Profession development – the development of competence in one's field of work (Cambridge Dictionaries Online 2016).

1.6.10. Skills – the ability to do an activity/job (Cambridge Dictionaries Online 2016).

1.7. Assumptions and delimitations underlying this study

The following **assumptions** were made:

- That all radiographers, from all four disciplines of radiography, would be willing to participate in this study in order to obtain combined data.
- That all radiographers would answer the questionnaires honestly and truthfully.

The **delimitations** of the study were as follows:

- This study was limited to radiographers working in the province of KZN as this province has a significant number of radiographers and the likely similarities across the country make the additional costs of a national study not justifiable.
- This study was limited to post community service radiographers as CPD is not a requirement during the community service year of work.

1.8 Overview of chapters

This dissertation has six chapters with appendices at the end.

1.8.1 Chapter 1: Introduction

This chapter provides an overview and background to the study. The significance of the study as well as the aims and objectives are outlined.

1.8.2 Chapter 2: Literature Review

This chapters provides a comprehensive review of literature on and related to CPD. The purpose and benefits of CPD will also be reviewed. Continuing professional development will be critically analysed and linked to the main aim and objectives of the study. That is the CPD opinions, level of awareness, level of participation and challenges experienced by healthcare professionals.

1.8.3 Chapter 3: Methods

This chapter focusses on and describes the research design, sampling technique, inclusion and exclusion criterion, data collection, validity, reliability, data analysis and ethical considerations.

1.8.4 Chapter 4: Results

Chapter four provides a summary of the results obtained. This is presented in the form of narratives, tables and figures. Qualitative data from open ended questions are presented as common themes.

1.8.5 Chapter 5: Discussion

Chapter five provides a discussion of the results from chapter four. Results will be discussed and validated against literature.

1.8.6 Chapter 6: Conclusion, limitations and Recommendations

In this chapter the conclusions and recommendations are made based on the results of the study. Limitations of the study will also be included.

CHAPTER 2
LITERATURE REVIEW

2.1. Introduction

This chapter provides a review of literature related to continuing professional development (CPD) amongst healthcare professionals however more specifically to radiographers. It is important to review radiographers' opinions of CPD in order to understand the reasons for compliance and the reasons for non-compliance. The literature review will provide information on areas that require improvement and consideration. The purpose and benefits of CPD will be explored in addition to the concept of lifelong learning.

Other areas that will also be reviewed will be healthcare professionals' opinions, level of awareness, participation and challenges experienced regarding CPD compliance. International literature will be reviewed in conjunction with national information. The literature will also review the compliance theory in order to determine reasons for compliance and establish a better understanding of the basis for individuals to comply with rules and regulations. It is important to note that, after conducting an extensive review of literature, at the time of undertaking this research project there was a lack of literature on CPD opinions and challenges within the radiography profession in South Africa.

Literature related to this study was selected from various online journal articles, books and policy documents. Electronic databases such as Science Direct, ProQuest health, NEXUS and Google scholar were accessed via the Durban University of Technology's (DUT's) online library database. Reference lists from relevant articles were reviewed in order to obtain the necessary information from other studies which were closely associated with the topic. Key words used in the search for literature included but was not limited to; continuing professional development, continuous professional education, continuous education, life-long learning, CPD challenges experienced and opinions on CPD. The researcher began reviewing literature from 2013 till early 2016. A point to note is that the researcher will reference the authors alphabetically in the text of the literature review when information is from more than one source.

2.2. The introduction of CPD

The progression of technology and new techniques in the health sector occur quite rapidly hence the majority of professionals know that in order to maintain high standards of professional practice throughout their careers, knowledge obtained during undergraduate training may not be current (Khan 2010:37; Sims, 1994:3). According to Ryan (2003:498) CPD is not a new concept to the health profession, it has been acknowledged by many professionals since the 1980's. Similarly, Aparicio (2015: 55) reports that the Code of Medical Ethics, which is a well-known concept in the medical profession, has endorsed continuing professional education and learning for doctors over the years.

The need for CPD is universally accepted by patients, various organisations and professional councils. Continuing professional development became prominent in the 1990's as health organisations started demanding the need for more adaptable healthcare workers (Gopee 2001:607; Ryan 2003:498; Sims 1994:3). Van Niekerk (2009:611) reports that CPD became more formal with the intention of reducing litigations as professionals would now be obligated to ensure that their professional knowledge was well maintained and updated regularly. However according to Sims (1994:3) there is a lack of evidence that maintenance of CPD produces a change in the professional behaviour of individuals.

The Health Professionals Council of South Africa (HPCSA) has established an all-encompassing CPD committee with representatives from 12 professional boards (Van Vuuren and Nel 2013:41). In 2002, CPD became a mandatory requirement by the HPCSA for all healthcare workers. The Health Professions Amendment Bill of 2006, Section 26, allowed the council to develop rules in terms of registration requirements, therefore the CPD framework was developed in 2007. According to the Health Professions Act, 1974 (Act No. 56 of 1974) (as amended), any practitioner who is on the council register is obligated to comply with CPD requirements in order to maintain their registration (The Republic of South Africa 2002). The HPCSA considers CPD to be vital in the maintenance and acquisition of professional knowledge (Health Professionals Council of South Africa 2011:5; Van Vuuren and Nel 2013:41). However, since the introduction of CPD in South Africa, no studies have been conducted to investigate radiographers' opinions and their level of awareness of the

mandatory requirements of CPD. Hence this study was aimed at obtaining this information from radiographers in KZN.

2.3. The purpose of CPD

The primary purpose of CPD is to ensure that practitioners maintain or improve their clinical skills, associated knowledge, and keep abreast of developments in the field thereby improving overall clinical performance (Cantillon and Jones 1999:1276; Van Vuuren and Nel 2013:41). In South Africa, the Health Professionals Council of South Africa (2011:5) explains that the purpose of CPD is to ensure that healthcare professionals become lifelong learners by regularly revising and renewing their knowledge, skills and ethical approaches to enhance and promote professional integrity. Austin (2013:138), describes CPD as a reassurance mechanism of workplace competence to both the patient and the employer. According to literature CPD should have a purpose and ideally it should be patient-centred (Gibbs 2011:153; Hegney et al 2009:142; Mizuno–Lewis et al 2014:200; Nsemo et al 2013:332). The acknowledgement and awareness of the purpose of CPD amongst KZN radiographers is an area that lacks research.

Baxter et al (2013:355) affirm that CPD is essential in the health profession due to the complexity and evolution of patient care which may result in errors in the decision-making process if knowledge is not updated. Hence it is important to have a mechanism for updating knowledge and skills that can ensure the ability and competence of healthcare workers over a career span that may last 30-40 years (Austin 2013:138). However Schafheutle, Hassell and Noyce (2013:205) argue that while CPD may ensure workplace competence, it does not necessarily guarantee satisfactory clinical performance. This study was aimed at determining if radiographers are of the opinion that CPD does improve professional competence and clinical performance.

Mathers, Mitchell and Hunn (2012:17) reported that some doctors in Europe displayed a “tick box” mentality towards CPD. A tick box mentality, as described by respondents, is an attitude of simply achieving the required CPD points rather than acknowledging the importance of the engaged CPD activity (Mathers, Mitchell and Hunn 2012:17). Nsemo et al (2013:328) concur by stating that nurses in Nigeria participated in CPD

due to it being a mandatory requirement and in order to retain their jobs. It is feared that this type of attitude defeats the purpose of CPD and does not achieve its intended outcome. Hence it has been recommended that CPD be based on outcomes rather than the number of hours or points attained (Schafheutle, Hassell and Noyce 2013:199). There is no known research that has been conducted in KZN, amongst the radiographers that have been audited by the HPCSA, on their opinions of the point system for CPD or to determine if they display a similar "tick box" attitude.

The effectiveness of CPD has undergone investigation since the implementation of quality assurance programs and re-certification regulations (Cantillon and Jones 1999:1276). According to Hegney et al (2009:143) there is a lack of evidence on the effectiveness of CPD to improve clinical practice even though that was the intended purpose. The author's further state that mandatory CPD is a form of licensure however there is uncertainty about its effectiveness in terms of achieving its purpose of maintaining standards and competence. Hence there are still apprehensions on whether or not an acceptable and effective CPD strategy is in place to support healthcare professionals (Weglicki, Reynolds and Rivers 2015:227). Literature supports the intention behind CPD and acknowledges its benefits however there are still many unresolved challenges and barriers that need to be overcome in order to ensure effective CPD (Gawugah, Javda-Patel and Jackson 2011:332; Govranos and Newton 2014:655; Knox, Cullen and Dunne 2014:2; Recker-Hughes et al 2010:19; Schafheutle, Hassell and Noyce 2013:205; Weglicki, Reynolds and Rivers 2015:227). This study was intended to establish if radiographers in KZN are experiencing any challenges with the current CPD process in South Africa and to determine their suggestions for overall improvement.

2.4. Benefits of CPD

The benefits of CPD include benefits to the patient, the organisation and the professional. In order to have a good understanding of the importance of CPD, individuals need to have a sound knowledge of its benefits (Opfer and Pedder 2010:413). Participation in CPD is understood to have the benefit of improving an individual's expectation of their employability and promotion as engagement improves knowledge and skills (Brestovacki and Milutinovic 2011:461; Dowds and French 2008:2; Gibbs 2011:153; Opfer and Pedder 2010:413). Radiographers' opinions on

the perceived benefits of CPD is unknown in South Africa as there is a lack of literature on this topic.

Additional benefits acknowledged by Gibbs (2011:153) are as follows:

- Improved cost effectiveness of staff management by increasing the flexibility of staff.
- Reduced waiting times by having skilful employees.
- Improved strategic planning for staff.
- Knowledgeable and motivated staff.
- Compliance with the health councils CPD requirements.

Even though CPD activities are intended to benefit both the individual and the organisation, this dual role causes tension. Professionals may base their choice of CPD engagement on personal preference rather than organisational goals (Recker-Hughes et al 2010:19). Despite the responsibility of CPD lying with a variety of partners and occasionally the intentions are not synonymous, several authors agree that the outcome should always be that the patient benefits (Gibbs 2011:153; Hegney et al 2009:142; Mizuno–Lewis et al 2014:200; Nsemo et al 2013:328). There is currently no literature available in South Africa to indicate if KZN radiographers experience similar tension towards CPD engagement or are aware of what the benefits are.

2.5. The concept of lifelong learning

Lifelong learning is encouraged as a key component to improving clinical effectiveness (Gopee 2001:608). According to Kilian, Binder and Marsden (2007:1003) there is a lack of consensus on the definition of CPD. Gibbs (2011:156) reports that the definition of CPD needs to be rebranded in order to incorporate the terms lifelong learning and personal professional development with the aim of developing self-directed learners. The concept of lifelong learning is encouraged by Gibbs (2011:156) as this promotes individual responsibility.

Lifelong learning is understood as a concept involving all possibilities to create opportunities for individuals to learn continuously throughout their career and life span

(Laal 2013:937; Laal, Laal and Aliramaei 2014:4052; Talati 2014:86). Talati (2014:86) reports that lifelong learning supports acquiring knowledge and it necessitates an awareness of the environment and the structures of society. Govranos and Newton (2014:655) maintain that the promotion of lifelong learning and educational opportunities within the clinical environment is important in order to have adaptable and critical thinking healthcare professionals. South Africa lacks evidence of research on the support and encouragement provided by employers in developing radiographers to become independent, lifelong learners.

2.6. Healthcare professionals' opinions on mandatory CPD

Internationally, CPD is enforced to ensure that healthcare professionals are competent to practice (Gawugah, Javda-Patel and Jackson 2011:332). Doctors, paramedics, nurses and physiotherapists are some of the healthcare professionals that are required to maintain competence through CPD engagement. Clinical instructors have also recently acknowledged the importance of CPD to improve their clinical competence and teaching skills (Recker-Hughes et al 2010:19). This study was conducted to determine the KZN radiographers' opinions on the importance of CPD.

Numerous professions such as nurses, physiotherapists, paramedics and medical doctors, both national and international have adopted mandatory CPD requirements (Castillo and Caruana 2014:37, Dowds and French 2008:1, Knox, Cullen and Dunne 2014:2; van Niekerk 2009:611). However there has been ongoing debates as to whether CPD should be a voluntary or mandatory practice (Sholer et al 2011:22). Despite the implementation of mandatory CPD, various studies have reported a low percentage of respondent's in agreement with it (Castillo and Caruana 2014:37; Sholer et al 2011:22, van Niekerk 2009:611). In Malta, the radiographers displayed a positive attitude towards CPD however they were still concerned about the mandatory requirements (Castillo and Caruana 2014:37). Similarly, van Niekerk (2009:611) acknowledged the introduction of CPD in South Africa however the author reported that mandatory CPD was unnecessary. In contrast to Castillo and Caruana (20014:37) and van Niekerk (2009:611), Knox, Cullen and Dunne (2014:2) reported that the majority of paramedics in Ireland (77%) support mandatory CPD as a condition for registration with the council and agreed that evidence keeping of engaged CPD activities is essential. This research study will determine the level of CPD participation

amongst KZN radiographers and their opinion on the mandatory requirements set by the HPCSA.

Literature shows that in some states of Australia there has been an increase in participation rates since the introduction of mandatory CPD however there has been no decrease in the number of disciplinary actions related to suboptimal patient care (James and Francis 2011:133). In Malaysia, despite the introduction of mandatory CPD for nurses, 29% were still not participating in any form of professional development (Henwood and Flinton 2012:179). According to James and Francis (2011:134) there is no link between improved practice and mandatory CPD. A task team that was established in Mississippi had recommended that CPD be made voluntary instead of a mandatory requirement and this has since been implemented by the Mississippi Nurses' Association (James and Francis 2011:133).

2.7. Continuing Professional Development participation

New Zealand and Australia experienced challenges with low participation rates (70%) amongst physicians despite CPD being a requirement by the council (Taylor 2008:28). Castillo and Caruana (2014:39) reported a similar challenge amongst Maltese radiographers, as participation rates were as low as 63%. In addition the authors identified less CPD engagement amongst radiographers working shifts (Castillo and Caruana 2014:39). It was noted in Western Australia that radiographers working in the private practice had a higher regard for CPD participation as compared to the public health sector employees (Sholer et al 2011:22). This study will determine the level of participation amongst KZN radiographers as there is no known literature available.

James and Francis (2011:134) state that Australian nurses and midwives found unsuitable course dates, personal commitment and the lack of time to attend CPD activities as some of the barriers that affected their CPD participation rates. Pool, Poell, and ten Cate (2012:35) reported that in Netherlands it is feared that a lack of CPD participation may affect a nurse's decision to change their profession or even consider early retirement. A study conducted by Govranos and Newton (2014:656) revealed presentation style and delivery of CPD as additional factors that influenced

the level of CPD participation amongst Australian nurses. This study will determine the factors that affect CPD participation amongst KZN radiographers.

According to Recker-Hughes et al (2010:19) attending conferences and workshops tend to be the most common forms of CPD participation. Despite attendance based CPD being the most common type of engagement, Cantillon and Jones (1999:1277) report that this is the least effective method of learning. Henwood, Yielder and Flinton (2004:251) state that due to professional's having a restricted knowledge of CPD, there is a lack of participation in the less formal activities. In order to apply the knowledge acquired from participating in CPD activities, professionals need to have a sense of identification with the activity (Nsemo et al 2013:329). There is a lack of literature on the most common methods of CPD engagement amongst radiographers working in KZN.

According to Cantillon and Jones (1999:1277) the most effective type of CPD engagement is learning related to clinical practice, interactive educational meetings and activities involving multiple educational interventions. In South Africa, the HPCSA has accredited various CPD activities which include but are not limited to; departmental meetings, case study discussions, author or reviewer of articles, research presentations and post graduate studies or short courses (Health Professionals Council Of South Africa 2011:11-14). Online learning has become another popular learning method used as a means for CPD engagement however Gould, Papadopoulos and Kelly (2014:613) argue that online learning is not always appropriate for all as some individuals may not be self-directed, independent learners. The authors add that in order for online CPD to be successful there has to be a combination of contact teaching and online learning. Baxter et al (2013:353) state that despite online CPD being well recognised, it must be relevant and readily accessible to be undertaken by the desired individuals. This research study will determine the preferred CPD engagement method for radiographers working in the KZN province.

Cantillon and Jones (1999:1276) advise that the theoretical understanding of CPD has changed in recent years with regard to the procedures undertaken and the prospective outcomes. In addition, CPD is now recognised as having a more student centred approach to learning as compared to the traditional learning that was recognised as

teacher based learning (Cantillon and Jones 1999:1276; Nsemo et al 2013:332). In order to implement the paradigm shift from the traditional model of training to a more evidence-based practice, individuals need to have a good knowledge and attitude towards research (Ooi, Lee and Soh 2012:264). South Africa however lacks literature on radiographer's level of CPD participation.

2.7.1. Reasons for participation

Aiga (2006:290) reported that the extent to which healthcare workers implement the knowledge gained from CPD engagement was linked to their reasons for participation. According to Rothes, Lemos and Goncalves (2014: 940) there are a multitude of reasons for adults engaging in learning in their later stage of life. Professional improvement was the principal rationale for engaging in continuing education although other reasons now include individual learning goals, assistance to the community, desire to embrace valuable innovations and diversion from routine activities (Laal, Laal and Aliramaei 2014:4052**;** Talati 2014:87; Watson 2004:69). In contrast to these authors, Mathers, Mitchell and Hunn (2012:18) reported that personal preference was the reason for engaging in a specific CPD activity. Reasons for CPD engagement amongst KZN radiographers is unknown.

Aiga (2006:290) identified maintenance and improvement of professional knowledge and skills, interaction in addition to exchanging of views with colleagues and obtaining a higher job status, as some of the reasons for participation in CPD activities. Extrinsic motives include professional development, improved status and economic enhancement. Intrinsic motives include the desire to learn and social engagement with new individuals (Rothes, Lemos and Goncalves 2014: 940). Despite the numerous reasons for CPD engagement, some individuals still undertake CPD merely as it is a regulation with the council (Watson 2004:70). In South Africa there is a lack of literature on the motives for CPD participation amongst radiographers.

2.7.2. The compliance theory

Compliance is defined as abiding by or meeting certain standards and rules (Macmillan Dictionary 2014). The compliance theory reviews reasons pertaining to an individual's compliance (International network for environmental compliance and enforcement 2005:53). Grossman and Zaelke (nd: 73) state that the compliance

theory offers reasons why individuals comply with laws. Grossman and Zaelke (nd: 73) add that these theories are useful for understanding individuals compliance-related behaviours. However, according to the OECD (2000:11) compliance with a rule does not mean that regulatory systems are effective in achieving their designed outcome.

The OECD (2000:11) states that full compliance may be present merely to fulfil mandates. In contrast, Levi, Tyler and Sack (2008:1) state that irrespective of how well a regulation is designed, if there is no compliance, then there is no rule of law. Levi, Tyler and Sack (2008:1) proposed that people are influenced by the legitimacy of the law and how the state operates according to the law. The state, with regards to this study, will be the HPCSA as they are the body responsible for establishing the rules for CPD compliance. Individuals are less likely to abide by a regulation if they lack motivation and validity for undertaking a task (Levi, Tyler and Sack 2008:1).

There are several factors that affect compliance and participation amongst healthcare workers. According to Watson (2004:70) the need to engage in CPD is directly related to an individual's desire to want to improve their qualifications. These factors include the need to attain an advanced professional skill, professional recognition and the cost that will be encountered (Munro 2008:954). According to Opfer and Pedder (2010:414) the "value for money judgement", that is whether the benefit of CPD is worth the time, money and effort, is often considered before engaging in CPD. Compliance to CPD requirements may be seen as having a "survival role" as opposed to having a "maintenance role" due to the mandatory obligations. The OCED (2000:12) highlight the three factors that impact on non-compliance:

- The degree of awareness of the rules
- The degree of willingness to comply
- The degree of ability to comply

These factors may exist amongst radiographers in South Africa however there is no evidence to confirm/refute this.

2.7.3. Motivation

According to Hegney et al (2009:143) motivation is one of the most significant factors influencing CPD participation. In addition, Hegney et al (2009:143) affirm that CPD is

ineffective in the absence of motivation. James and Francis (2011: 133) state that motivation has a significant effect on CPD participation and it plays an important role in the learning process. Motivation emerged as the main theme for CPD participation amongst midwives in Australia (Gray, Rowe and Barnes 2014:862). There is no evidence of research in South Africa to indicate if radiographers are motivated to participate in CPD activities.

According to James and Francis (2011:133) individuals have different motivational factors for CPD engagement. The motivation for physiotherapists to develop professionally included professional obligation and a desire to deliver an effective service to their patients (Gunn and Goding 2009:209). In Australia the nurses reported that they have grown bonds with their patients and this gives them motivation to continue and further their knowledge (Gray, Rowe and Barnes 2014:862). Additionally, a display of appreciation from patients increased Australian midwives confidence in their ability to make a difference and this in turn motivated them to further invest in their professional development (Gray, Rowe and Barnes 2014:864). Motivational factors that affect a South African radiographer's level of CPD participation is unknown.

While motivation has been identified as the reason for willingness to participate in CPD activities amongst some professionals (Ahuja, 2011:6), there are still others who lack this. Despite CPD being an essential part of the medical profession, there was evidence of a lack of motivation to engage in CPD activities amongst senior radiographers in Europe and medical consultants in the UK (Ikenwilo and Skatun 2014:199; Marshall, Punys and Sykes 2006:336). A lack of motivation to engage in CPD activities in their personal time was noted amongst nurses in Australia (Govranos and Newton 2014:659). The reasons for CPD participation amongst radiographers in KZN have not been previously identified.

2.7.4. Age

Numerous studies have reported that individuals who have been working in a profession for longer periods of time have a lower regard for CPD (Ikenwilo and Skatun 2014:199; Marshall, Punys and Sykes 2006:336). In Ghana age was identified as a factor which affects CPD participation as Gawugah, Javda-Patel and Jackson

(2011:332) established that the majority of Ghanaian radiographers participating in CPD were in the age group of 31-40 years and there were minimal radiographers above the age of 60 years engaging in any form of professional development. According to Richardson (2013:74) the application of learning using a deeper approach increased with an increase in age. However Rothes, Lemos and Goncalves (2014: 940) reported that as age increases there is a decreased desire to want to study and learn. Escuder-Mollon et al (2014:510) disagrees with Rothes, Lemos and Goncalves (2014: 940) by stating that learning in the later life is becoming more common. Radiographers' opinions about CPD in relation to their age is unknown in South Africa.

Learning in the adult life is a necessity for professionals (Gray, Rowe and Barnes 2013:860) hence CPD encourages the use of different learning modes to provide adequate opportunities for all age groups (Laal, Laal and Aliramaei 2014:4056). The findings of Recker-Hughes et al (2010:23) suggested that younger respondents in their study displayed a higher regard towards mentoring as compared to older respondents. According to Laal, Laal and Aliramaei (2014: 4053) individuals 60 years and older learn through more creative tasks like art and music whereas younger individual's preferred technology and media. However according to Recker-Hughes et al (2010:23) there were no significant differences noted for learning preference in relation to age. This study will determine if age affected the preference of the engaged CPD activity.

2.7.5. Professional Societies

Some countries have professional societies who assist with the promotion and motivation of CPD engagement within their professions. According to Mizuno – Lewis et al (2014:199) the majority of Japanese nurses were members of a professional society. The majority of radiographers working in Malta reported that they mostly attended CPD activities organised by their societies (Castillo and Caruana 2014:40). The Society of Radiographers of South Africa (SORSA) is aimed at maintaining and improving services, in addition to ensuring radiographers are readily adaptable to changes that affect the training as well as the development of health care both nationally along with internationally (Society of Radiographers of South Africa 2015). This study will determine radiographers' opinions of the SORSA involvement in KZN.

In Nigeria the various societies and organisations organise CPD activities such as conferences and seminars however it was reported that some of these activities are not well structured (Nsemo 2013:329). Update courses are also arranged by these societies but are not available online hence nurses have to be physically present, which is a challenge (Nsemo 2013:329). The SORSA organises CPD courses in the various provinces of South Africa. However in order to be a member professionals need to pay an annual membership fee, along with separate fees to attend conferences organised by the society (Society of Radiographers of South Africa 2016). According to Van Niekerk (2009:611) the introduction of mandatory CPD in South Africa has made it a profitable industry for organisations that arrange these accredited activities. Currently there is no research available on radiographers' challenges experienced in association with their professional society.

2.8. Continuing professional development challenges experienced by healthcare professionals

Studies have been conducted in various countries such as; the United Kingdom (UK), Australia, Ghana, and New Zealand (NZ), to evaluate healthcare professionals' attitudes towards mandatory CPD and furthermore to the challenges they have encountered since its introduction (Castle, Hollaway and Rage 1998:27;; Gawugah, Javda-Patel and Jackson 2011:332; Gibbs 2011:152; Henwood 2000:7; Henwood and Flinton 2012:179; Ikenwilo and Skatun 2014:195; Mizuno-Lewis et al 2014:200; Summers 2015:337-338). Gibbs (2011:152) states that if CPD needs are not adequately addressed it could lead to potential risk to the patient, other staff members and to the organisation. In order to have effective educational and training programmes that support professional development, one needs to understand the perceived challenges experienced amongst healthcare professionals (Ikenwilo and Skatun 2014:195). Benefits of CPD are intangible (Mizuno-Lewis et al 2014:200) therefore overcoming the challenges experienced amongst radiographers is imperative. The most common barriers that have been identified in literature included but are not limited to: lack of CPD awareness, funding, time, employer support and increased family commitments (Castle, Hollaway and Rage 1998:27; Gawugah, Javda-Patel and Jackson 2011:332; Gibbs 2011:152; Henwood 2000:7; Henwood and Flinton 2012:179; Ikenwilo and Skatun 2014:195; Mizuno-Lewis et al 2014:200; Summers 2015:337-338).

2.8.1. Lack of CPD Awareness

The key to successful CPD engagement is to be fully aware of its requirements and expectations (Gibbs 2011:156). In Ghana, healthcare workers have not been made aware of CPD requirements and how to engage in effective activities (Gawugah, Javda-Patel and Jackson, 2011:332). Henwood (2000:7) reports that individuals focus most of their attention on attendance based activities thereby limiting themselves to other available opportunities. Hence the lack of CPD awareness can be considered as being two-fold, one being that radiographers are unaware of the process of professional development along with how it works, and the other is the lack of awareness of the availability of the various opportunities (Henwood and Flinton 2012:181). According to Henwood and Flinton (2012:181) many radiographers conduct CPD activities in a random fashion due to this lack of understanding and awareness. South Africa lacks research on the level of CPD awareness amongst radiographers.

Numerous roadshows were held by the health council in the UK to highlight the various CPD activities individuals can undertake (Gibbs 2011:152). Emphasis was placed on the many cost effective methods of CPD such as reading of journal articles and shadowing of colleagues (Gibbs 2011:152). Sholer et al (2011:23) reported that better promotion and advertising of CPD activities is perceived to improve CPD participation. A follow up study in the UK, after the roadshows were conducted, indicated a positive change in attitude and viewpoint towards CPD requirements (Henwood and Flinton 2012:179). Radiographers had become more insightful of the outcomes (Henwood and Flinton 2012:179). The HPCSA has compiled CPD guidelines explaining the numerous activities and the different levels for engagement (Health Professionals Council of South Africa 2011) however there is no evidence available to indicate level of awareness or access of these guidelines amongst professionals.

2.8.2. Lack of funding for CPD activities

According to Castle, Hollaway and Rage (1998:27) and Watson (2004:71) the most widespread challenge to engaging in CPD activities was the lack of funding provided. A study conducted by Watson (2004:71) revealed that funding was a greater challenge amongst the less experienced nurses. Gibbs (2011:155) reports that in this current financially challenging times there is an increased need for the promotion of more cost

effective CPD methods. Funding is required for the undertaking of CPD courses, registration fees for conferences/seminars/courses, accommodation, meals and travelling (Summers 2015:337-338). Traditionally there are no funds provided for CPD activities. Currently there are no studies indicating whether radiographers in South Africa experience similar challenges with funding.

According to Summers (2015:337-338) funding and travel costs could be the reason for the low participation rates observed amongst professionals working in rural venues. This was noted amongst Nigerian nurses working in rural areas who found transport and accommodation fees to be a challenge to CPD participation (Nsemo et al 2013:329). Therefore, irrespective of the significance of CPD, nurses were reluctant to participate unless it was within their work area or if it was free to attend (Nsemo et al 2013:329). Gibbs (2011:154) emphasizes, "The financial constraints that the public sector will find itself operating in, for the foreseeable future, means that the current system of post-registration workforce development is no longer sustainable and will need to be reviewed." Gibbs (2011: 155) suggests incorporating more creative methods for CPD engagement which will reduce the need for formal classroom training which requires professionals to spend hours away from work. The province of KZN has a number of rural hospitals (Pauw et al, 2005:4) however there is a lack of research on whether rural radiographers are affected by funding and travel costs associated with CPD engagement.

Marshall, Punys and Sykes (2006:332), noted that internet accessibility of CPD activities addressed some issues of funding and travelling. In-house training and teaching is another method that is also highly recommended to reduce travel costs (Gibbs 2011:154). In a follow-up study conducted by Henwood and Flinton (2012:179), it was confirmed that financial implications were still a recurring problem; however suggestions of web based learning has been encouraged to alleviate challenges of cost and funding. There is currently no research on radiographers' suggestions for overcoming CPD challenges with funding.

In a study conducted in Queensland Australia, amongst nurses, 85% of the respondents had access to CPD activities however it was evident that the majority of these activities were self-funded (Hegney et al 2009:142). Data from a 2004 and a

2007 survey show evidence of decreased financial contribution by the employer over the years (Hegney et al 2009:142). However it is positive to note that since the introduction of mandatory CPD in Australia, the government has incorporated methods of assistance in terms of funding and leave (Summers 2015:337). This however is only available to the public sector employees (Summers 2015:337). This indicates an assumption that the employer is responsible for providing funding for CPD engagement. No studies have been conducted in South Africa to indicate if funding is a similar challenge in this country or if provision of funds to undertake CPD is available.

2.8.3. Lack of time to engage in CPD

Lack of time to engage in CPD activities and to implement change was noted as a major challenge in various studies conducted amongst numerous professionals (Henwood and Flinton 2012:179; Marshall, Punys and Sykes 2006:338; Mathers, Mitchell and Hunn 2012:14; Sholer et al 2011:22; Summers 2015:337). In the Queensland nursing profession there is detailed evidence that lack of time to engage in CPD is due to work commitments (Hegney et al 2009:143). Sholer et al (2011:22) reported that 39 % of radiographer's from Western Australia felt that support should be provided by their employers with regards to allocating and allowing time to participate in CPD activities. Professionals found themselves in a conflict between service delivery and finding time for professional development as attending CPD activities could be perceived as compromising patient care for learning (Mathers, Mitchell and Hunn 2012:14). South Africa lacks literature on whether KZN radiographers experience a similar lack of time to engage in CPD activities.

Since many individuals considered lack of time as a challenge when required to participate in CPD activities, engaging in reflective practice is highly recommended (Gibbs 2011:156). Education is regarded as ongoing and cannot be a once off experience therefore individuals need to have a deep, meaningful approach to learning and this can be achieved through reflective practice (Govranos and Newton 2014:658). Reflective practice is defined as a conscious act with intentional engagement in acquiring more about one's learning processes and encourages reflective learning from past experiences in addition to taking responsibility for own choices (Lucas 2012:579). Reflection is part of the learning process (Lucas 2012:579) hence there is a need for professional's to become independent learners (Gibbs

2011:156). Maintaining a reflective portfolio reduces the time professionals spend away from work. Evidence of South African radiographers engaging in this type of CPD is not known.

Staff are unable to attend CPD activities due to the shortage of staff members and many professionals are required to use their annual leave to attend activities whenever possible (Gibbs 2011:155; Gawugah, Javda-Patel and Jackson 2011:333; Henwood and Flinton 2012:181). Work-based learning (WBL) is encouraged and was noted as very beneficial as it provided more flexibility for the professional (Gibbs 2011:155). This reduces the need to take time off from work to attend various CPD activities (Gibbs 2011:155). There is an evident shortage of healthcare workers in KZN (Labuschagne 2012) therefore lack of time to engage in CPD would be a valid challenge, however there is no research available to indicate if this is the situation in KZN.

Literature also shows that there is a lack of time for the recording and evidence keeping of CPD activities (Henwood and Flinton, 2012:179). This challenge has been overcome by many professional councils and institutes by the implementation of an online CPD recording system for their members (General Pharmaceuticals Council 2016; South African Institute of Chartered Accountants 2012; Pharmaceutical Society Northern Ireland 2013). The South African Institute of Chartered Accountants (SAICA) along with the Pharmaceutical Society of Northern Ireland, provide their members with two options for the recording of CPD engagement, paper-based and online, however both societies clearly state that their preferred method is the online facility (Pharmaceutical Society Northern Ireland 2013; South African Institute of Chartered Accountants 2012). This online data base provides members with convenient and easy safe keeping of all CPD activities hence reducing the time required for manual recording. Currently there are no studies available in South Africa to determine if a similar system would be beneficial to healthcare workers.

2.8.4. Effect of family commitments on CPD engagement

In the 21st century people have demanding lifestyles ranging from maintaining full time jobs to sustaining marriages and parenting. Finding a balance between work and family commitments is a major challenge for most people. This was noted amongst

nurses, as the lack of balance between work and family has led to inhibited flexibility of available time (Hegney 2009:144). Adding CPD to this busy schedule can be very challenging.

Numerous healthcare professionals, such as radiographers and nurses, identified family or personal commitments as a common barrier which restricted them from participating in CPD activities (Gawugah, Javda-Patel and Jackson 2011:333; Marshall, Punys and Sykes 2006:332; Sholer et al 2011:221; Summers 2015:337). Often professionals found themselves deciding to perform a task and implement change however personal commitments and social obligations were perceived as their limitation (Henwood and Flinton 2012:181; Mathers, Mitchell and Hunn 2012:15). According to Summers (2015:337) family commitments pose a huge challenge especially if there are young children or other family members that require care. Family and personal commitments undoubtedly have an impact on CPD engagement (Summers 2015:337; Henwood and Flinton 2012:181; Hegney 2009:144; Sholer et al 2011:221) therefore it is necessary to investigate whether KZN radiographers experience similar challenges as described by other professionals in previous research.

2.8.5. Lack of employer support for CPD participation

Support from management is crucial in the implementation of changes and innovation to service delivery hence a lack of support from employers can be a deterrent to learning (Henwood 2000:6; Mathers, Mitchell and Hunn 2012:15). Similarly, Munro (2008:954) states that the employer plays a vital role in the professional development of individuals and a lack of support can prevent the growth of the professional. Despite literature encouraging employer support, the findings of a study conducted by Mizuno-Lewis et al (2014:198) and Munro (2008:953) revealed that the majority of nurses in Japan and the UK perceived that they were working for companies that do not support CPD. In addition nurses working in Japan believed that some employers still do not acknowledge the necessity for occupational health nurses to engage in CPD activities (Mizuno-Lewis et al 2014:199). There is a lack of research in the area of employer support and encouragement towards CPD participation amongst KZN radiographers.

Nsemo et al (2013:333) reported that a lack of employer support included reluctance in allocating time off to attend CPD activities and inadequate notification of activities to allow for reshuffling of work schedules. Gawugah, Javda-Patel and Jackson (2011:334) state that employers need to be more proactive and they should provide encouragement for staff to be well informed of new skills and techniques. Continuing Professional Development activities should be arranged within the organisation and the outputs should be aimed at improving competence (Gawugah, Javda-Patel and Jackson 2011:334). Although professionals have expressed negative feelings towards support from employers, Gibbs (2011:156) advises that professionals need to take individual responsibility for their own learning and not solely depend on their employers. In addition Gibbs (2011:156) states that while employer support is necessary for staff development focus should be on developing employees' ability to engage in lifelong learning. Literature in South Africa is lacking in terms of employer support, towards KZN radiographers, for allowing them time off to engage in CPD activities.

According to Cantollin and Jones (1999:1277) important factors that affect behavioural changes towards CPD are organisational and management support. Munro (2008:953) states that the conflict between personal ambitions and employer directives can negatively affect CPD participation. Mathers, Mitchell and Hunn (2012:15) in agreement with Munro (2008:953) reports that employer resistance to new ideas is a major challenge to implementing learning through CPD participation. Gawugah, Javda-Patel and Jackson (2011:334) affirm that CPD effectiveness is enhanced when there is alignment between individual needs and the goals of the institution. Munro (2008:954) explains that it is vital to have both employee and employer viewpoints on learning within the organisation. This is an area that requires investigation in South Africa as there is a gap in literature in terms of alignment of employee and employer goals for CPD participation.

Gibbs (2011:155) advises that work based learning (WBL) should become a major part of continuous development. However Munro (2008:954) argues that some organisations adopt in-house training to ensure competence of employees within their current work environment only and this can be viewed as a limiting factor as there is a lack of personal improvement and growth. Hegney et al (2009:144) state that this

could be due to the employers being unaware of their staff's CPD needs and they tend to support programs that only benefit the organisation. Munro (2008:953) recommends having a collaborative approach to a more structured process in order to combine both individual and organisational needs. Suggestions that management should have proper infrastructure in place to support radiographers in achieving their desired CPD goals and that the department provide better access to literature for professional development have also been recommended (Castillo and Caruana 2014:41). Sholer et al (2011:22) reported that radiographers working in private practice in Western Australia displayed a higher level of employer support than that of the public service radiographers. This study was conducted to determine if there is a similar difference between public and private sector radiographers in KZN.

According to Munro (2008:953) "the employer acts as an extrinsic motivational factor that potentially encourages personal intrinsic motivation, but can also inhibit the growth of the practitioner through a lack of support for external education. Individuals who are funded by employers for accredited courses or who have a facilitator to help them learn through the context of work may have increased motivation". The United States department of labour (2013) states that on average an individual spends 8.9 hours of their time on a daily basis working or doing work related tasks. This makes up approximately 36.7% of their day being utilized at work, therefore employer support is crucial in keeping staff motivated and driven. This will in turn directly affect staff motivation to participate in CPD. There is no known evidence of literature available on any studies conducted in SA to investigate the level of employer support in terms of motivation to engage in CPD activities.

Continuing professional development compliance is affected by numerous factors for example the health professionals' opinions about CPD, their level of awareness of the requirements and any challenges experienced. There are evident challenges associated with healthcare professionals engaging in CPD activities. The aim of this study was to identify the opinions, level of awareness, participation, and challenges related to CPD compliance by radiographers in KwaZulu-Natal, and to ascertain their suggestions for improvement to CPD practices in order to make recommendations to the HPCSA.

2.9. Conclusion

Continuing professional development is important to ensure workplace competence and that knowledge is kept updated however there are still many challenges that restrict participation in CPD. It is apparent that there are numerous factors that affect non-compliance. However, South Africa lacks research on radiographers' opinions and challenges experienced in terms of CPD compliance. According to international literature there is an acknowledgement of the importance of CPD (Castillo and Caruana 2014:37, Dowds and French 2008:1, Knox, Cullen and Dunne 2014:2). Continuing Professional Development non-compliance could be a result of lack of awareness of CPD requirements, the lack of funding, time and employer support, in addition to family commitments. There are strategies that can be implemented to overcome such challenges in order to improve CPD compliance.

Some countries have allocated incentives such as allocation of funding and time off from work to allow for adequate CPD engagement. However evidence of this is only noted in the public sector. Use of online activities allows the professional to engage in CPD activities at their own convenience due to family and work related commitments. In-house training reduces costs of travel and accommodation. This in turn also allows more flexibility to both the employer and employee. Roadshows have been conducted in the UK to promote CPD awareness. Employer involvement and support is encouraged to have a balance between organisational and personal goals.

Literature shows that researchers used both quantitative and qualitative approaches to identify healthcare professionals' CPD opinions, level of participation and challenges experienced. In the current study a quantitative approach was used with a few open–ended questions. It is anticipated that this study will be of benefit to the HPCSA, fellow radiographers and their employers. Continuing professional development is vital in the health profession which is constantly evolving therefore it is important to identify and overcome any challenges experienced to improve compliance.

CHAPTER THREE
METHODS

3.1. Introduction

The purpose of this chapter is to describe the research methods and techniques used to conduct this study. Included in this section is the research design, location of the study, sample selection, inclusion and exclusion criteria as well as the data collection tool utilized.

3.2. The research design

A research design describes the actions taken by the researcher to answer the research questions. It provides a plan of the study and describes the methodology used (Brink, van der Walt and van Rensburg 2012:96). This study was positioned in a positivist paradigm. The study design was cross sectional and the methodology was quantitative. The measuring instrument used was a questionnaire administered as an online survey.According to Brink, van der Walt and van Rensburg (2012: 112) descriptive research can be utilized to identify challenges within current practice and/or to ascertain what other professionals, in similar situations, are doing or have done to overcome such challenges.

3.3. Study location

This study was conducted in the province of KwaZulu-Natal (KZN), South Africa. Qualified radiographers working in radiography/radiology departments throughout KZN were the research participants of this study.

3.4. Selection of the research population

The population is defined as a group of people or objects that are relevant to the study and that meet the inclusion and exclusion criteria of the study (Brink, van der Walt and van Rensburg 2012: 112). Qualified radiographers in all four categories/disciplines of radiography, registered with the HPCSA and working in the province of KZN, South Africa participated in the study. Community service radiographers were excluded from this study as they are not obligated to meet the CPD requirements stipulated by the HPCSA.

3.5. Sample selection

The HPCSA online register, which is available to the public, was used to identify the participants. Only radiographers who worked in KZN were invited to participate in the study. At the time of the study there were approximately 1200 KZN radiographers registered with the HPCSA. However on reviewing the names on the register it was evident that there are numerous radiographers that have left the province or country, have retired, and are deceased. The exact number of these individuals could not be determined before commencing the study therefore the population was calculated based on the 1200 radiographers registered. The entire population was sampled using the total population sampling technique to ensure a maximum return rate. The statistically acceptable sample size as calculated by the statistician was 292 radiographers.

A participant information sheet explaining the online questionnaire, how it will be conducted and its purpose together with ethical requirements was included in the email to the participants (Appendix B). If the recipients were willing to participate, they were requested to follow the online web link provided, which deemed as consent for participation. The participant was able to withdraw from the study at any stage.

3.6. Inclusion criteria

- All qualified radiographers registered with the HPCSA and working in the province of KZN
- Post community service radiographers

3.7. Exclusion criteria

- Student radiographers

3.8. Data collection Instrument

According to Brink, van der Walt and van Rensburg (2012:154) self-report techniques are the most effective way to gather factual information about participant's perceptions, knowledge levels and experiences. Self-report techniques include questionnaires, scales and interviews. Due to the researcher being interested in the opinions and challenges experienced by radiographers, a questionnaire was deemed

acceptable. Online questionnaires were used as these were convenient for radiographers working in busy departments. This allowed them to answer the questionnaire in their own time and at their own pace. The privacy policy of the online survey website indicates that all data and email addresses will be kept secure (Survey Monkey 2013).

The self-administrated online questionnaire (Appendix C) had six sections as follows: Section A was based on the participant's opinions and perceptions of CPD , section B comprised of questions regarding their level of CPD awareness, section C was based on the participant's level of CPD participation, section D had questions relating to challenges and barriers experienced by participants while engaging in CPD activities, section E had questions on suggestions for improving CPD compliance and lastly section F had questions pertaining to the participants' demographics. A five point Likert scale was used for most of the closed ended questions. A Likert scale is a summated rating scale as the item scores are added to achieve the final result (Brink, van der Walt and van Rensburg 2012:159). The values acquired are regarded as interval data (Brink, van der Walt and van Rensburg 2012:160).

3.9. Validity

Validity is defined as a method to determine if an instrument is correctly measuring what it is meant to measure (Goddard and Melville 2001:41). Brink, van der Walt and van Rensburg (2012:165), assert that a researcher must be confident that the instrument is effective, in order to fully understand the results. Content Validity is an evaluation of the appropriateness of the instrument in terms of variables to be measured (Brink, van der Walt and van Rensburg 2012:166). The researcher based the questionnaire design and structure on an extensive literature review of previous studies (Brink, van der Walt and van Rensburg 2012:166).

During the design process each objective was considered parallel to the aim of the study and questions were formulated. This ensured a rational relationship between each question and the objections of the study. Thereafter the questionnaire was presented to experts in the field as a pre-test also known as a pilot study.

As defined by Brink, van der Walt and van Rensburg (2012:174-175) “A pilot study is a small scale study conducted prior to the main study on a limited number of participants from the population at hand.” The purpose of a pilot study is to identify any errors in the data collection instrument. For example ambiguous questions, vague instructions and the layout/structure of the questionnaire (Brink, van der Walt and van Rensburg (2012:165). This ensures that the correct data is provided and to ensure validity of the questions (Brink, van der Walt and van Rensburg 2012:174-175). The questionnaire (Appendix D) was distributed to 14 radiographers who met the inclusion criteria of the research study. Due to their participation in the pilot study, these participants were excluded from the main study. Recommendations were considered and minor amendments were made to the main survey before final distribution commenced. Changes made included numbering each sub-question, changing wording to provide better clarity and the addition of more specific options for respondents. Refer to Appendix E for the summary of the feedback provided from some of the respondents of the pilot study.

3.10. Reliability

Reliability is defined as a means for measuring consistency (Goddard and Melville 2001:41). The purpose of reliability is to determine if the exact same study were performed under the same circumstances, the same measurements would be achieved (Goddard and Melville 2001:41). Reliability of an instrument is specified by a correlation measure that varies between 0 and 1. Closer to 1 indicates higher correlation questions (Brink, van der Walt and van Rensburg 2012:169).

Internal consistency is a type of reliability testing used to examine one construct at a time (Brink, van der Walt and van Rensburg 2012:170). According to Brink, van der Walt and van Rensburg (2012:174-175), internal consistency also known as “homogeneity”, focusses on the degree to which all objectives on an instrument measure the same variable. The most frequently used test is the Cronbach’s alpha coefficient (Cross Tabulations 2011). Cronbach alpha coefficient test is useful for testing reliability in structured quantitative data-collection instruments. The results from the pilot study as well the main study were analysed using the Cronbach Alpha test. The results from the main study are as follows:

Table 3.1: Cronbach's Alpha results

Section	Number of Items	Cronbach's Alpha
A1	18 of 18	.943
A2	5 of 9	.618
B3	11 of 11	.857
D16	12 of 12	.835
E17	3 of 3	.724

Table 3.1 above demonstrates that the reliability score exceeds the recommended Cronbach's alpha value of 0.600, for a newly developed construct. This indicates a high degree of acceptable, consistent scoring for the various relevant sections of the research.

3.11. Distribution of online questionnaire

The Society of Radiographers of South Africa (SORSA) were contacted via email to assist in the distribution of the online questionnaire web link to all KZN radiographers on their data base. Similarly, the HPCSA was contacted via email to distribute the online questionnaire web link to their database of KZN radiographers. However there was no response received from the HPCSA. The SORSA was unable to assist with distribution of the survey due to the Consumer Protection and POPI Act. Therefore radiographers were contacted directly via email and requested to participate in the study.

Participation was voluntary and was based on the individual's willingness. Cross posting was predicted however this was controlled by having the online questionnaire programmed to ensure that only one response was obtained from each respondent. The data collected was sent anonymously to the researcher's online account. Reminders were sent to participants to ensure an adequate response rate. Data collection was conducted over a period of two months and two weeks.

3.12. Ethical considerations

Ethical approval for this study was obtained from the Institutional Research Ethics Committee (IREC) at the Durban University of Technology (DUT) (Appendix F). Participation in the study was entirely voluntary and participants could withdraw from

the study at any time. Consent for the study was obtained electronically by the participant following the web link to complete the questionnaire. All questionnaires were anonymous and confidential as personal information of the participants were not required. Data will be kept securely for 5 years and then discarded - shredded and/or deleted. All the data was analyzed and reported on objectively by the researcher. The participants did not receive any form of remuneration. Participants in the pilot study were excluded from the main study.

3.13. Data analysis

Quantitative data was analysed by means of descriptive statistics in order to determine the frequency and means of data (Appendix G). The data collected from the responses were analysed using the Statistical Package for Social Sciences (SPSS) version 23.0. Data is described and summarised accordingly to provide meaningful understanding of the information collected. Inferential techniques include the use of bivariate correlations and chi square tests. Chi square tests were used to compare sets of data that are in the form of frequencies (Brink, van der Walt and van Rensburg 2012:191). Coefficients were used to determine the correlations between the variables and the confidence level was set at 95%. Data is displayed and represented graphically by the use of tables, bar charts and diagrams.

Factor analysis is a process that is used to reduce the data provided. Factor analysis is typically used in hypothesis testing for survey studies (Torres-Reyna n.d). Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Bartlett's Test of Sphericity were used to determine if the data was satisfactory for factor analysis. The requirement is that Kaiser-Meyer-Olkin Measure of Sampling Adequacy should be greater than 0.50 and Bartlett's Test of Sphericity less than 0.05.

Table 3.2: Kaiser-Meyer-Olkin Measure of Sampling Adequacy and Bartlett's Test of Sphericity results

Section	Kaiser-Meyer-Olkin Measure of Sampling Adequacy	Bartlett's Test of Sphericity		
		Approx. Chi-Square	df	P value
A1	.930	2143.138	153	.000
A2	.630	172.166	15	.000
B3	.844	565.876	55	.000
D16	.803	627.666	66	.000
E17	.645	112.652	3	.000

Table 3.2 above demonstrates that all conditions were satisfactory which allowed for the factor analysis procedure.

There were a few questions in the survey that provided qualitative data. The answers of the respondents have been read and the issues/meanings/understandings coded thematically according to the information provided in the answers (Brink, van der Walt and van Rensburg 2012:193). The codes allowed the investigator to identify the range of issues raised in the data and understand the meanings that are attached to these issues. Code development was stopped when saturation was reached, in other words, when no new information was identified in the data. The many codes have been categorized into 2-4 themes, which will then be discussed.

CHAPTER 4
RESULTS

4.1. Introduction

This chapter presents the data in the form of narratives, tables and figures. The qualitative information is presented as themes. A section on the demographic profile of the participants is presented. Thereafter the sections to follow will be aligned to the objectives of the study in terms of the respondent's opinions about CPD, level of awareness, participation, challenges and suggestions for improvement to CPD practices. The significant correlations between variables is also presented in the form of tables and narratives.

4.2. Response rate

One hundred and forty six (146) questionnaires of the two hundred and ninety two (292) were returned. This provided a response rate of 50%.

4.3. Participant demographics

Participant demographics in respect of age, gender, marital status, current position held, radiography discipline, health sector employed, shift worker, highest qualifications obtained and years of experience are displayed in Table 4.1.

Table 4.1: Frequency and (%) of participant's demographics

CATEGORY	FREQUENCY	(%)
Age	**N=146**	
20-29	82	56.2
30-39	39	26.7
40-49	21	14.4
50 and above	4	2.7
Mean and SD (31.3, 8.1 years)		
Gender	**N=146**	
Female	125	85.6
Marital Status	**N=146**	
Single	74	50.7
Married	67	45.9
Divorced	5	3.4
Position held	**N=146**	
Radiographer	87	59.6
Chief Radiographer Clinical	10	6.8
Chief Radiographer Supervisory	18	12.3
Assistant Manager/Manager	14	9.6
Other	14	9.6
Missing	3	2.1
Discipline	**N=146**	
Nuclear Medicine	5	3.4
Diagnostic	118	80.8
Dual	6	4.1
Ultrasound	7	4.8
Radiation therapy	7	4.8
Missing	3	2.1
Health sector employed	**N=146**	
Public Hospital	73	50
Own practice	9	6.2
Private Practice	55	37.7
Higher education	5	3.4
Missing	4	2.7
Shift worker	**N=146**	
Yes	87	59.6
Highest qualifications obtained	**N=146**	
National Diploma in Radiography	82	56.2
Higher Diploma in Radiography	2	1.4
Bachelor of technology in Radiography	54	37.0
Master of Technology in Radiography	2	1.4
Other	3	2.1
Missing	3	2.1

The majority of respondents (59.6%) were clinically active radiographers with a smaller percentage (12.3%) in supervisory positions. The “Other” option included employment at an academic institution, self-employment, acting medical manager, locum radiographer, director and quality management consultant. Most of the respondents (80.8%) were diagnostic radiographers with the majority (50%) being employed in the public sector. More than half the respondents were shift workers. The average age and standard deviation for years of experience was 10.14 years and 8.30 years respectively.

The majority of the respondents held a National Diploma in Radiography (56.2%). The “Other” category included; Bachelor of Radiography, current Bachelor of Technology in Radiography students, Mammography, CT and MRI short course certified students. Ninety eight percent of the respondents had indicated a valid registration with the HPCSA. Confirmation of registration was through payment of annual fees, receipt of the HPCSA registration card and checking their status on the HPCSA e-register. However a few did not know their current status. Only 36.3% of respondents were members of the Society of Radiographers of South Africa. Some of the non-members reasons for not joining the society were:

“I don't feel it's necessary. People say it's a waste of money. Unsure of the purpose” – Respondent 9

“I feel that SORSA does not help us. We have to pay a lot to go far for seminars. Our salaries are low. No attempt made by SORSA to get radiography recognised” – Respondent 22

“I was a member, I did not find the organization beneficial to me at all.” - Respondent 24

“All CPD points cannot be earned with them for the year.” – Respondent 40

“I believe that the SORSA group does not advocate the profession of radiography adequately” – Respondent 120

“Another cost implications and you still have to pay for the seminars” – Respondent 139

4.4. Objective 1: To identify the opinions, level of awareness, participation, and challenges related to CPD compliance by radiographers in KwaZulu-Natal.

4.4.1. Opinions of CPD

A questionnaire was employed to measure the construct, 'radiographers' opinion's on CPD', which consisted of two sections with twenty seven questions in total. Since both these sections had questions based on a Likert scale, the Cronbach's Alpha was performed as this is the most frequently used consistency test. The first section had a high Cronbach's alpha score of 0.943 and the second section had an acceptable score of 0.618. This indicates a high level of consistency for each question. The Kaiser-Meyer-Olkin measure of sampling adequacy was performed on both sections and the value obtained was 0.930 and 0.630 respectively and the Bartlett's Test of Sphericity was performed on both sections and the significant value obtained was 0.000 and 0.000 respectively which indicates acceptable conditions for factor analysis. The responses of the respondents with regard to their general opinions of CPD is captured as percentages in Figure 4.1.

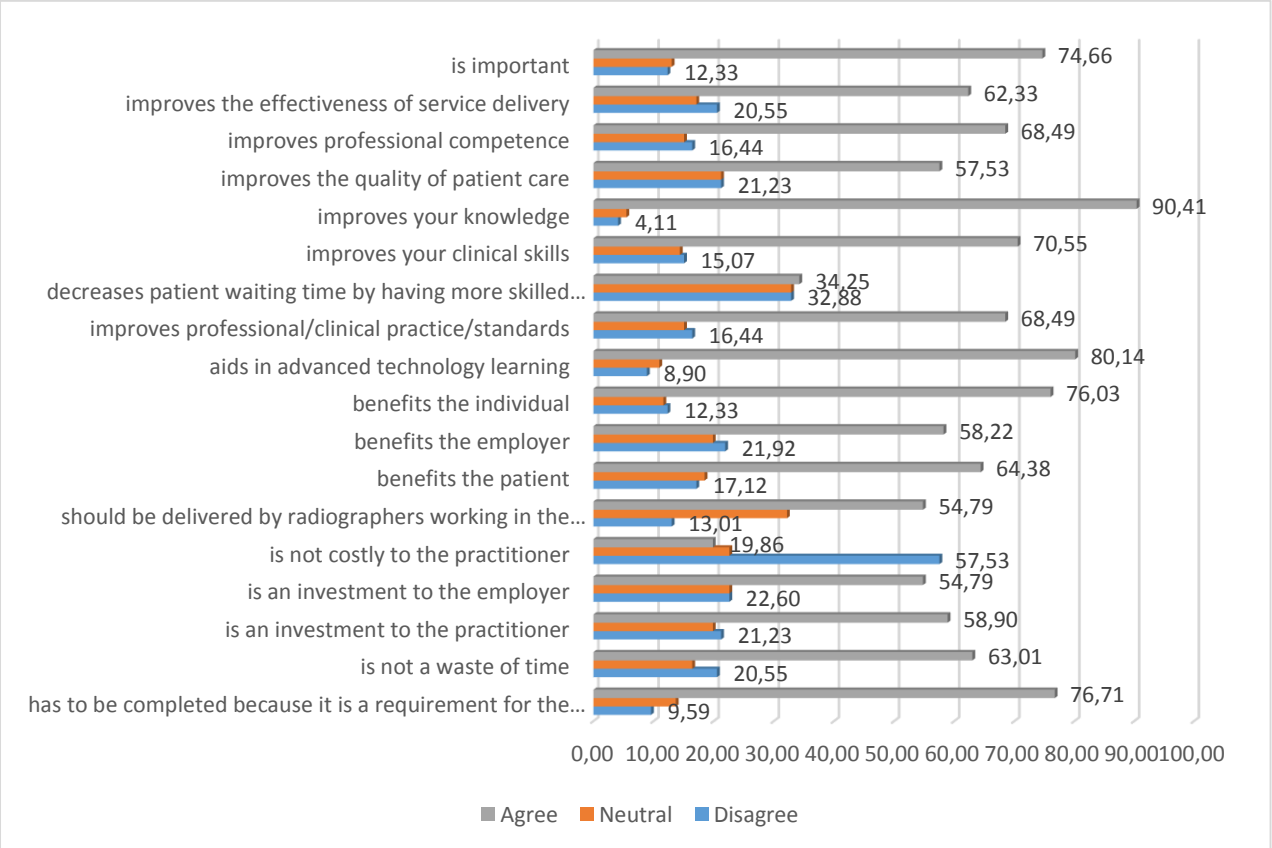

Figure 4.1: Responses (%) on opinions about CPD

The majority of respondent's agree that CPD is important (p=0.000) and improves knowledge (p=0.000). However more than half the respondent's percieve CPD to be a costly exercise to the practitioner (p=0.000). More than half the respondents engage in CPD merely as it is a requirement by the HPCSA (p=0.000).

Responses on specific opinions on the implementation of CPD is illustrated as percentages in figure 4.2.

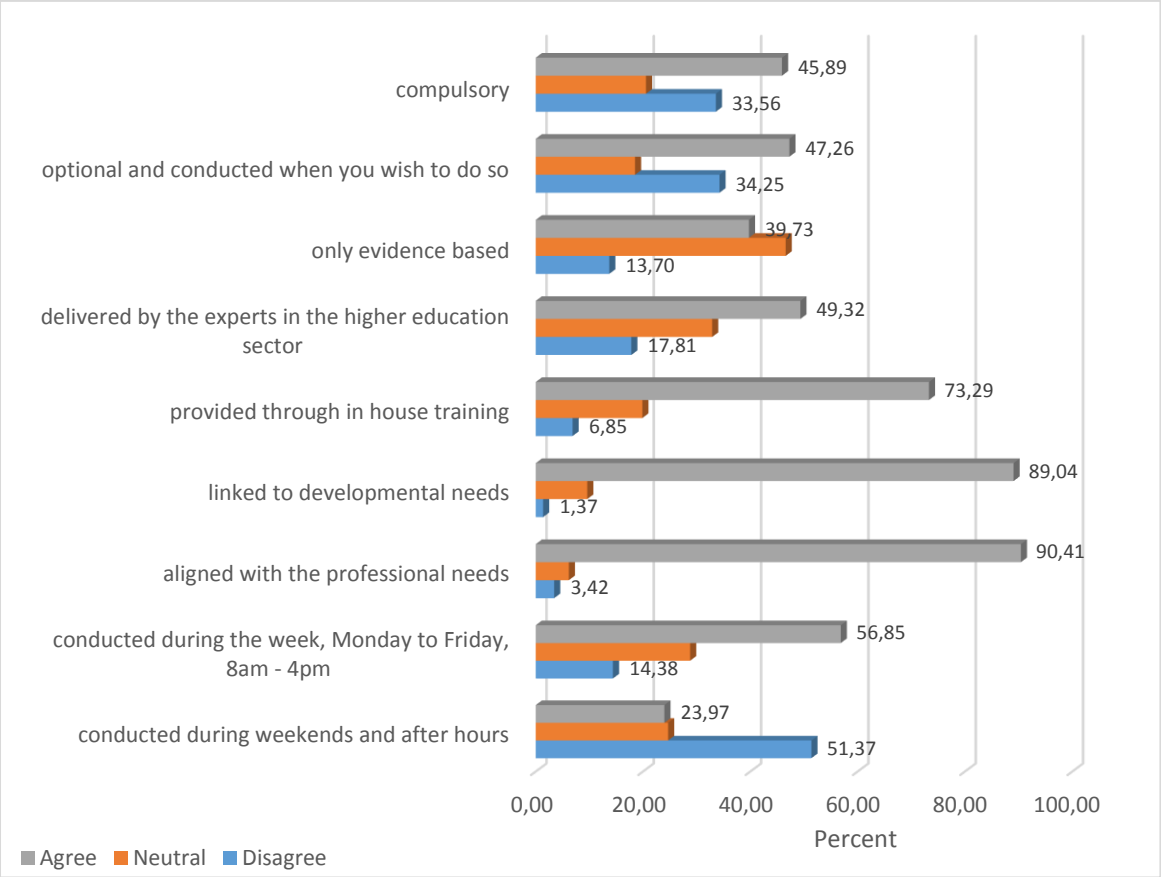

Figure 4.2: Responses (%) on opinions on CPD implementation

It is important to note that the majority of respondents agreed that CPD should be linked to both developmental and professional needs (p=0.000). Most respondents agreed that CPD should be provided through in house training (p=0.000) and that it should be conducted during working hours (p=0.000). Respondents were hesitant towards compulsory CPD, with only 45.8% of respondents agreeing to this (p=0.001).

4.4.2. Level of awareness of CPD

A questionnaire was employed to measure the construct, 'radiographer's level of awareness of CPD', which consisted of eleven questions in total. This section had an internal consistency (Cronbach's alpha score) higher than 0.857. This indicates a high level of consistency for each question. The Kaiser-Meyer-Olkin measure of sampling adequacy test was performed and the value obtained was 0.844 and the Bartlett's Test of Sphericity value obtained was 0.000 which indicates acceptable conditions for factor analysis.

The respondent's level of awareness of CPD is illustrated as percentages in Figure 4.3

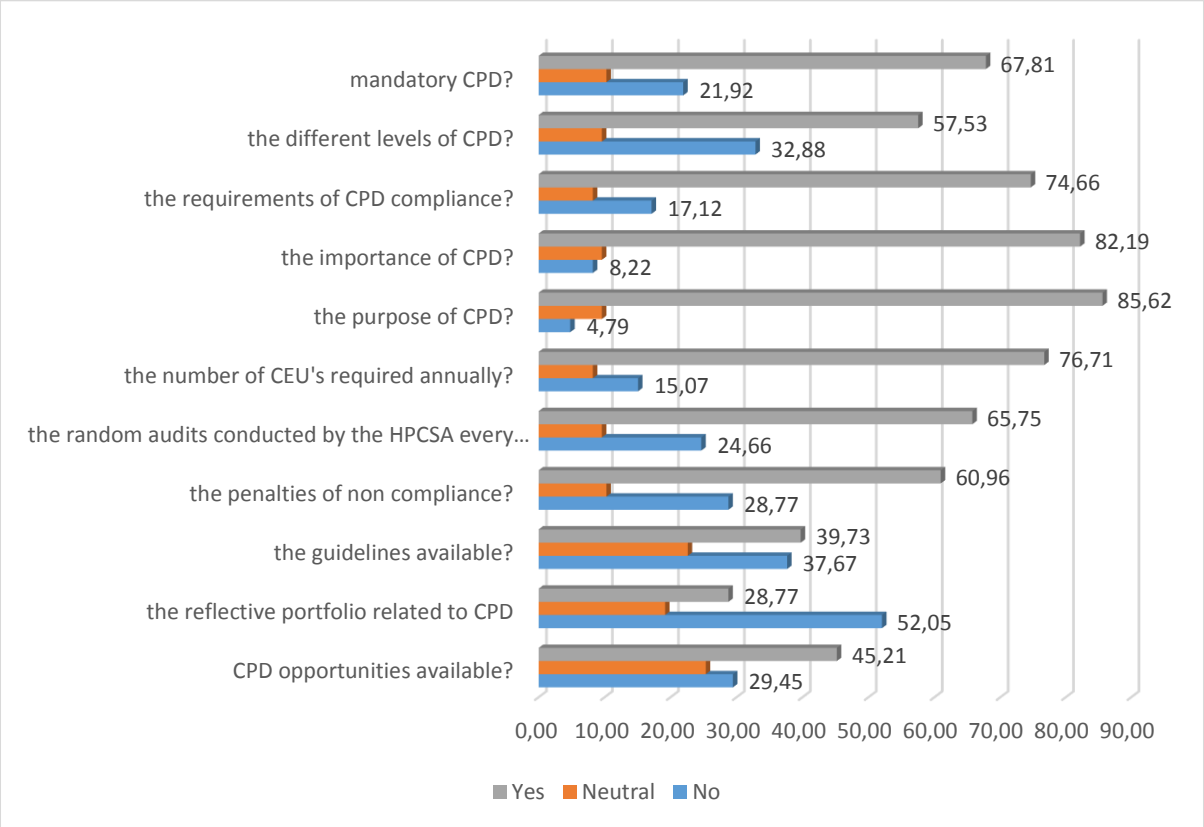

Figure 4.3: Responses (%) for the level of awareness of CPD

The importance and purpose of CPD is recognised by the majority of respondents (p=0.000). Most respondents are aware of mandatory CPD (67.8%) and the necessary requirements for CPD compliance (74.6%) (p=0.000). Awareness amongst respondents were lacking with regards to available CPD opportunities and the CPD guidelines available. It is important to note that only a small percentage of respondents

(45.2%) were aware of CPD opportunities available (p=0.008) and an even smaller percentage of the respondents (39.7%) were aware of the CPD guidelines that are available (p=0.022). There was no difference noted between the numbers of respondents who visit the HPCSA website versus those that do not (p=0.917). Majority of respondents (54.8%) do not have a notice board in their departments for CPD notifications (p = 0.123).

The level of awareness of the different CPD activities is illustrated as percentages in Figure 4.4.

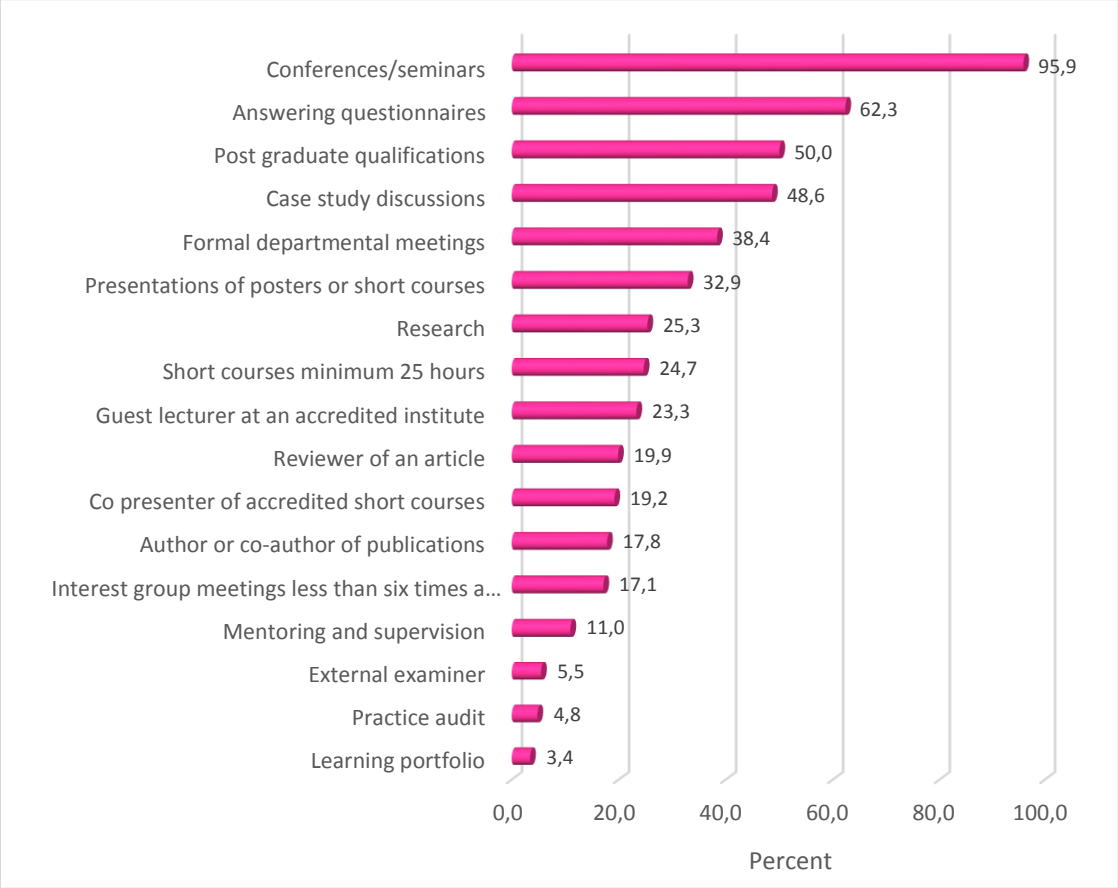

Figure 4.4: Responses (%) for the level of awareness of the different CPD activities

The majority of respondents are aware of CPD engagement through conferences/seminars (95.9%) and answering of questionnaires (62.3%) whereas a limited number of the respondents are aware of the learning portfolios (3.4%).

4.4.3. Continuing Professional Development participation

Majority of respondents (89.7%) participate in CPD however there is a small percentage (10.3%) that do not participate. Respondents were requested to indicate how they ensure that they are compliant with CPD requirements. Respondents were not limited by the number of different methods used for CPD engagement and more than one answer was acceptable. The following themes emerged:

- ***Attendance based CPD activities (seminars, congresses, in house meetings, talks and presentations)***
- ***Answering journal questionnaires both online and hardcopies***
- ***Post graduate studies (BTech, MRI, CT and mammography short courses)***

The two most common means of CPD engagement were attendance based learning and answering of journal questionnaires. The three most common time periods/intervals for CPD engagement was monthly (24.7%), quarterly (26%) or when interested (26%). Record and evidence keeping of engaged CPD activities was undertaken systematically by 52.1% of respondents (p=0.620). Some respondents were members of Focus on Health which has its own online database for recording the number of CPD points obtained. When asked to explain how evidence was kept, the most common means was a personal filing system. The following were additional responses obtained:

- ***"I keep a file of hard copy certificates, another file stored on my computer hard drive with digital/scanned copies, a file on my email account & a few with the various online CPD providers. These online CPD companies also allow you to manually enter records of other CPD activities, so you can keep a complete record. Some even then allow you to generate your individual CPD record in the Form required by the HPCSA, for the period that you can specify." – Respondent 16***
- ***"Excel spreadsheet" – Respondent 39***
- ***"Answer is NO as I wouldn't say systematically, but CPD certificates are kept for record purposes." – Respondent 66***
- ***"ECPD logbook"- Respondent 80***

- ***"Focus on health records everything online" – Respondent 114***
- ***"All certificates in my personal file" – Respondent 136***

The majority of respondents (60.8%) indicated that their institution encourages them to participate in CPD activities ($p<0.001$). It is important to note that more than half the respondents (56.8%) have not been audited by the HPCSA with regards to CPD compliance. Additional questions were posed to respondents who were audited by the HPCSA. The most common means of notification by the HPCSA regarding CPD audits were either email or postal letter. There was a general opinion that the audit process was quite stressful. Majority of respondents considered the number of CPD points required as being too high and the time to meet the audit requirements were too short. Many respondents had not received any notification from the HPCSA after submission of the required CPD points for the audit.

Respondents preferred learning styles are shown in Table 4.2

TABLE 4.2: Respondents rankings of preferred learning styles

Learning Style	Rank
Online activities	1
Work-based learning	2
Attendance based learning	3
Journal articles	4
In service training	5
Academic studies	6
Reflective learning	7
Team assignment	8
On site supervision	9
Learning portfolio	10

In Table 4.2, rank 1 is the most preferred and rank 10 the least preferred. This implies that online activities were the most favoured choice for respondents whereas the learning portfolio was least preferred.

4.4.4. Challenges with regard to CPD

A questionnaire was employed to measure the construct, 'radiographer's CPD challenges experienced', which consisted of twelve questions in total. The internal consistency (Cronbach's alpha score) was 0.835. This indicates a high level of

consistency for each question. The Kaiser-Meyer-Olkin measure of sampling adequacy test was performed and the value obtained was 0.803 and the Bartlett's Test of Sphericity produced a value of $p<0.001$ which indicates acceptable conditions for factor analysis.

The responses to accessibility of resources are shown in Table 4.3.

TABLE 4.3: Responses (frequencies and %) to accessibility of resources

	Yes	
	Frequency	%
internet	133	91.1%
peer reviewed journals	93	63.7%
opportunities to undertake CPD	114	78.1%
transport to attend CPD activities	100	68.5%
funds to attend CPD workshops/seminars	60	41.1%

Majority of respondents (91.1%) have access to the internet (p=0.000) however more than half the respondents (58.9%) did not have access to funding to attend CPD workshops/seminars (p=0.031).

The two factors which affected CPD participation to a great extent were; lack of time (46.5%) and inability to attend CPD activities due to shift work (47.2%). Other factors affecting CPD participation was the lack of employer support in terms of funding (34.9%), time (36.3%) and motivation (21.9%). The factors that affected CPD participation the least were, lack of understanding for what is required (54.1%) and inaccessibility to technological facilities (47.9%).

4.5. Objective 2: To ascertain the radiographers' suggestions for improvement to CPD practices

A questionnaire was employed to measure the construct, 'radiographers' suggestions for improvement to CPD practices', which consisted of three questions in total. The internal consistency of the category (Cronbach's Alpha) was 0.724. This indicates a high level of consistency for each question. The Kaiser-Meyer-Olkin yielded a value of

0.645 and the Bartlett's Test of Sphericity produced a value of p< 0.001 which indicates acceptable conditions for factor analysis.

Most of the respondents agree that support should be provided for CPD engagement (p=0.000). The majority of respondents (84.14%) are in agreement that study leave should be provided to attend seminars, workshops and conferences (p=0.000). Respondents are also in agreement that employers should have formal policies to support CPD financially (94.48%) (p=0.000) and CPD update courses should be made available (94.48%) (p=0.000).

Suggestions to address the challenges related to CPD compliance included the following:

- ***Provision of funding should be allocated.***
- ***Provision of time should be allocated.***
- ***Increase accessibility of CPD activities.***
- ***Increase employer involvement.***
- ***Improved location of CPD activities.***
- ***Increase awareness of CPD.***
- ***Increase the HPCSA involvement with practitioners.***

Most of the respondents considered the provision of funding to be a method to overcome CPD challenges while others considered increasing the accessibility of CPD activities to be a means of overcoming some of the challenges. Respondents were also requested to provide suggestions regarding ways to improve the CPD auditing process. The common themes that emerged were:

- ***There should be a systematic approach to the audits.***
- ***Better instructions and communications from the HPCSA should be provided.***
- ***Increase the amount of time provided for submission of CEU's.***
- ***Improve the awareness amongst radiographers with regards to the audit process.***

Some respondents expressed negative feelings towards CPD audits and suggested "the doing away of audits". The majority of participants expressed that there should be an online system for uploading certificates directly to the HPCSA website for regular monitoring whenever the need arises.

4.6. Objective 3: To determine the relationship between KwaZulu-Natal radiographer's level of CPD participation and their demographic data, CPD opinions, level of awareness, challenges experienced and suggestions for improvement

The results linked to objective 3 will be presented in the form of questions ranging from 4.6.1 to 4.6.17.

4.6.1. Is there a significant relationship between shift work and the opinion that CPD is important?

Table 4.4 shows the relationship between shift work and the opinion that CPD is important. The Pearson's Chi-square test indicates a non-significant statistical association between the two variables (p=0.979).

Table: 4.4: Relationship between shift work and the opinion that CPD is important

			Are you a shift worker?		Total
			Yes	No	
CPD is important	Strongly Disagree	%	5,7	3,6	4,9
	Disagree	%	4,6	12,5	7,7
	Neutral	%	14,9	10,7	13,3
	Agree	%	49,4	33,9	43,4
	Strongly Agree	%	25,3	39,3	30,8
Total		%	100,0	100,0	100,0

4.6.2. Is there a significant relationship between the current position held and the opinion that CPD improves professional competence?

Table 4.5 shows the relationship between current position held and the opinion that CPD improves professional competence. The Pearson's Chi-square test indicates a significant statistical association between the two variables (p=0.032).

Table 4.5: Relationship between current position held and opinion that CPD improves professional competence

			Indicate your current position					Total
			Radiographer	Chief Radiographer Clinical	Chief Radiographer Supervisory	Assistant Manager / Manager	Other	
CPD improves professional competence	Strongly Disagree	%	9,2	0,0	0,0	0,0	14,3	7,0
	Disagree	%	11,5	20,0	5,6	0,0	7,1	9,8
	Neutral	%	16,1	20,0	0,0	14,3	21,4	14,7
	Agree	%	44,8	40,0	83,3	28,6	28,6	46,2
	Strongly Agree	%	18,4	20,0	11,1	57,1	28,6	22,4
Total		%	100,0	100,0	100,0	100,0	100,0	100,0

4.6.3. Is there a significant relationship between the current position held and the opinion that CPD improves the quality of patient care?

Table 4.6 shows the relationship between the radiographer's current position held and their opinion that CPD improves professional competence. The Pearson's Chi-square test indicates a significant statistical association between the two variables (p= 0.034).

Table 4.6: Relationship between current position held and opinion CPD improves the quality of patient care

			Current position held					
			Radiographer	Chief radiographer clinical	Chief radiographer supervisory	Assistant manager/ manager	Other	Total
CPD improves the quality of patient care	Strongly disagree	%	11.5	0	0	0	14.3	8.4
	Disagree	%	14.9	20	16.7	0	7.1	13.3
	Neutral	%	19.5	20	5.6	21.4	42.9	20.3
	Agree	%	41.4	60	66.7	35.7	28.6	44.1
	Strongly Agree	%	12.6	0	11.1	42.9	7.1	14
Total	%		100,0	100,0	100,0	100,0	100,0	100,0

4.6.4. Is there a significant relationship between the current health sector employment and the opinion that CPD is not costly to the practitioner?

Table 4.7 shows the relationship between the current health sector employment and the opinion that CPD is not costly to the practitioner. The Pearson's Chi-square test indicates a significant statistical association between the two variables (p=0.030).

Table 4.7: Relationship between current health sector employment and the opinion CPD is not costly to the practitioner

			Indicate your current health sector employment				Total
			Public hospital	Own practice	Private practice	Higher Education Institution	
CPD is not costly to the practitioner	Strongly Disagree	**%**	39,7	44,4	27,3	0,0	33,8
	Disagree	**%**	28,8	22,2	16,4	20,0	23,2
	Neutral	**%**	16,4	0,0	32,7	40,0	22,5
	Agree	**%**	5,5	11,1	18,2	40,0	12,0
	Strongly Agree	**%**	9,6	22,2	5,5	0,0	8,5
Total		**%**	100,0	100,0	100,0	100,0	100,0

4.6.5. Is there a significant relationship between health sector employment and the awareness of the importance of CPD?

Table 4.8 shows the relationship between health sector employment and the awareness of the importance of CPD. The Pearson's Chi-square test indicates a non-significant statistical association between the two variables (p=0.549).

Table 4.8: Relationship between health sector employment and the awareness of the importance of CPD

			Indicate your current health sector employment			
			Public hospital	Own practice	Private practice	Higher Education Institution
The importance of CPD?	No	%	9,6	22,2	5,5	0,0
	Neutral	%	11,0	0,0	10,9	0,0
	Yes	%	79,5	77,8	83,6	100,0
Total		%	100,0	100,0	100,0	100,0

4.6.6. Is there a significant relationship between SORSA membership and awareness of the different levels of CPD?

Table 4.9 shows the relationship between SORSA membership and the awareness of the different levels of CPD. The Pearson's Chi-square test indicates a significant statistical association between the two variables (p=0.000).

Table 4.9: Relationship between SORSA membership and the awareness of the different levels of CPD

			Are you currently a member of the society of radiographers (SORSA)		Total
			Yes	No	
The different levels of CPD?	No	**%**	13,2	44,4	32,9
	Neutral	**%**	15,1	6,7	9,8
	Yes	**%**	71,7	48,9	57,3
Total		%	100,0	100,0	100,0

4.6.7. Is there a significant relationship between the current health sector employment and the awareness of the different levels of CPD?

Table 4.10 shows the relationship between current health sector employment and the awareness of the different levels of CPD. The Pearson's Chi-square test indicates a significant statistical association between the two variables (p=0.047).

Table 4.10: Relationship between current health sector employment and awareness of the different levels of CPD

			Indicate your current health sector employment				Total
			Public hospital	Own practice	Private practice	Higher Education Institution	
The different levels of CPD?	No	%	41,1	0,0	27,3	20,0	32,4
	Neutral	**%**	8,2	33,3	7,3	20,0	9,9
	Yes	**%**	50,7	66,7	65,5	60,0	57,7
Total		**%**	100,0	100,0	100,0	100,0	100,0

4.6.8. Is there a significant relationship between age and level of awareness of the requirements of CPD compliance?

Table 4.11 shows the relationship between age and the level of awareness of the requirements of CPD compliance. The Pearson's Chi-square test indicates a significant statistical association between the two variables (p=0.046).

Table 4.11: Relationship between age and awareness of the requirements of CPD compliance

			Age				**Total**
			20 - < 30	**30 - < 40**	**40 - < 50**	**50 - < 60**	
The requirements of CPD compliance?	**No**	**%**	19,5	20,5	4,8	0,0	17,1
	Neutral	**%**	6,1	7,7	9,5	50,0	8,2
	Yes	**%**	74,4	71,8	85,7	50,0	74,7
Total		**%**	100.0	100,0	100,0	100,0	100,0

4.6.9. Is there a significant relationship between shift work and the level of CPD participation?

Table 4.12 shows the relationship between being a shift worker and the level of CPD participation. The Pearson's Chi-square test indicates a non-significant statistical association between the two variables (p=0.81).

Table 4.12: Relationship between shift work and CPD participation

			Are you a shift worker?	
			Yes	No
Do you participate in CPD?	Yes	%	93,1	83,9
	No	%	6,9	16,1
Total		%	100,0	100,0

4.6.10. Is there a significant relationship between SORSA membership and the frequency of CPD engagement?

Table 4.13 shows the relationship between SORSA membership and the frequency of CPD engagement. The Pearson's Chi-square test indicates a significant statistical association between the two variables (p=0.043).

Table 4.13: Relationship between SORSA membership and frequency of CPD engagement

			Are you currently a member of the society of radiographers (SORSA)		**Total**
			Yes	**No**	
How often do you engage in CPD?	Daily	**%**	0,0	1,1	0,7
	Weekly	**%**	1,9	5,6	4,2
	Monthly	**%**	24,5	24,4	24,5
	Quarterly	**%**	39,6	16,7	25,2
	Annually	**%**	11,3	17,8	15,4
	Never	**%**	0,0	5,6	3,5
	When interested	**%**	22,6	28,9	26,6
Total		**%**	100,0	100,0	100,0

4.6.11. Is there a significant relationship between marital status and lack of time?

Table 4.14 shows the relationship between marital status and lack of time for CPD participation. The Pearson's Chi-square test indicates a non-significant statistical association between the two variables (p=0.234).

Table 4.14: Relationship between marital status and lack of time

			Marital status			Total
			Married	Divorced	Single	
Lack of time	Not at all	%	9,0	0,0	8,1	8,2
	Least extent	%	0,0	0,0	6,8	3,4
	Some extent	%	41,8	80,0	39,2	41,8
	Great extent	%	49,3	20,0	45,9	46,6
Total		%	100,0	100,0	100,0	100,0

4.6.12. Is there a significant relationship between the health sector employment and the extent of lack of employer support in terms of funding?

Table 4.15 shows the relationship between health sector employment and the extent of lack of employer support in terms of funding. The Pearson's Chi-square test indicates a significant statistical association between the two variables (p=0.000).

Table 4.15: Relationship between health sector employment and the extent of lack of employer support in terms of funding

			Indicate your current health sector employment				Total
			Public hospital	Own practice	Private practice	Higher Education Institution	
Lack of employer/management support in terms of funding	Not at all	**%**	6,8	44,4	23,6	60,0	17,6
	Least extent	**%**	12,3	11,1	27,3	20,0	18,3
	Some extent	**%**	30,1	11,1	34,5	20,0	30,3
	Great extent	**%**	50,7	33,3	14,5	0,0	33,8
Total		**%**	100,0	100,0	100,0	100,0	100,0

4.6.13. Is there a significant relationship between health sector employment and the extent of lack of employer support in terms of motivation?

Table 4.16 shows the relationship between health sector employment and the extent of lack of employer support in terms of motivation. The Pearson's Chi-square test indicates a significant statistical association between the two variables (p=0.031).

Table 4.16: Relationship between health sector employment and the extent of lack of employer support in terms of motivation

			Indicate your current health sector employment				Total
			Public hospital	Own practice	Private practice	Higher Education Institution	
lack of employer/management support in terms of motivation	Not at all	**%**	16,4	55,6	32,7	60,0	26,8
	Least extent	**%**	17,8	11,1	25,5	20,0	20,4
	Some extent	**%**	34,2	22,2	30,9	20,0	31,7
	Great extent	**%**	31,5	11,1	10,9	0,0	21,1
Total		**%**	100,0	100,0	100,0	100,0	100,0

4.6.14. Is there a significant relationship between health sector employment and the extent of lack of employer support in terms of time?

Table 4.17 shows the relationship between health sector employment and the extent of lack of employer support in terms of time. The Pearson's Chi-square test indicates a significant statistical association between the two variables (p=0.001).

Table 4.17: Relationship between health sector employment and the extent of lack of employer support in terms of time

			Indicate your current health sector employment				Total
			Public hospital	Own practice	Private practice	Higher Education Institution	
Lack of employer/management support in terms of allocating time for CPD	Not at all	**%**	8,2	55,6	21,8	20,0	16,9
	Least extent	**%**	9,6	11,1	27,3	20,0	16,9
	Some extent	**%**	35,6	22,2	23,6	60,0	31,0
	Great extent	**%**	46,6	11,1	27,3	0,0	35,2
Total		**%**	100,0	100,0	100,0	100,0	100,0

4.6.15. Is there a significant relationship between age and the suggestion for CPD update courses to be available?

Table 4.18 shows the relationship between age and the suggestion for the availability of CPD update courses. The Pearson's Chi-square test indicates a non-significant statistical association between the two variables (p=0.963).

Table 4.18: Relationship between age and the suggestion for CPD update courses to be available

			Age				Total
			20 - < 30	30 - < 40	40 - < 50	50 - < 60	
CPD update courses should be available	No	%	2,5	5,1	4,8	0,0	3,4
	Unsure	%	2,5	2,6	0,0	0,0	2,1
	Yes	%	95,1	92,3	95,2	100,0	94,5
	Total	%	100.0	100.0	100.0	100.0	100.0

4.6.16. Is there a significant relationship between health sector employment and the suggestion for employers to have formal policies to support CPD financially?

Table 4.19 shows the relationship between health sector employment and the suggestion for employers to have formal policies to support CPD financially. The Pearson's Chi-square test indicates a statistical association between the two variables (p=0.000).

Table 4.19: Relationship between health sector employment and the suggestion for employers to have formal policies to support CPD financially

			Indicate your current health sector employment				**Total**
			Public hospital	**Own practice**	**Private practice**	**Higher Education Institution**	
Employers should have formal policies to support CPD financially?	**No**	**%**	1,4	33,3	0,0	0,0	2,8
	Unsure	**%**	0,0	22,2	3,6	0,0	2,8
	Yes	**%**	98,6	44,4	96,4	100,0	94,4
Total		**%**	100,0	100,0	100,0	100,0	100,0

4.6.17. Is there a significant relationship between CPD participation and the CPD opinions, awareness, challenges and suggestions for improvement?

Table 4.20 shows the relationship between CPD opinions, awareness, challenges, suggestions and level of participation. The correlation coefficients indicate an inversely proportional relationship between the CPD opinions in Table 4.20 and the

frequency of CPD engagement. The correlation coefficients indicate an inversely proportional relationship between the levels of CPD awareness in Table 4.20 and the systematic recording of CEU's. The correlation coefficients indicate a directly proportional relationship between the CPD challenges in Table 4.20 and the frequency of CPD engagement. The correlation coefficients indicate an inversely proportional relationship between the CPD suggestions in Table 4.20 and the systematic recording of CEU's.

Table 4.20: Relationship between CPD participation and the CPD opinions, awareness, challenges and suggestions for improvement

	Correlation Coefficient	p value	N
CPD opinions	**How often do you engage in CPD?**		
improves professional competence	-0.274	0.001	146
improves your knowledge	-0.167	0.44	146
improves professional/clinical practice/standards	-0.200	0.016	146
aids in advanced technology learning	-0.199	0.016	146
benefits the employer	-0.233	0.005	146
benefits the patient	-0.234	0.004	146
is an investment to the employer	-0.236	0.004	146
is an investment to the practitioner	-0.184	0.026	146
CPD awareness	**Do you record and file evidence for your CEU's systematically?**		
The different levels of CPD?	-.258**	0.002	146
The requirements of CPD compliance?	-.176*	0.034	146
The guidelines available?	-.225**	0.006	146
CPD opportunities available?	-.309**	0.000	146
CPD challenges	**How often do you engage in CPD?**		
peer reviewed journals	0.166	0.045	146
opportunities to undertake CPD	0.198	0.016	146
lack of employer/management support in terms of motivation	0.212	0.010	146
lack of employer/management support in terms of allocating time for CPD	0.182	0.028	146
Difficulty keeping own records up to date	0.192	0.020	146
No help from the HPCSA when required	0.230	0.005	146
CPD suggestions	**Do you record and file evidence for your CEU's systematically?**		
Study leave should be provided	-.220**	0.008	145

4.7. SUMMARY OF RESULTS

Majority of respondents were female (85.6%) with the average age of respondents being 31 years old. The general opinion of most radiographers was that CPD is an important concept and it improves knowledge. However many respondents participated in CPD merely as this is a requirement by the HPCSA. Engaging in CPD activities was also regarded as a costly requirement by the radiographer. This study revealed that majority of radiographers supported the alignment of CPD to professional needs and that CPD should be provided through in-house training.

Respondents were positively aware of the importance and purpose of CPD. However respondents were mostly aware of attendance based CPD activities as opposed to other methods such as the learning portfolio and practice audit. A small number of respondents stated they were non-compliant with CPD requirements. The most common time interval for CPD engagement was quarterly and whenever interested. More than half the respondents have not been audited by the HPCSA. Those that were audited expressed concern with the number of CPD points required.

The major contributors to CPD non-compliance were shift work and lack of time. Respondents suggested support be provided by the employer in terms of funding and time to attend CPD activities. CPD audits were considered to be a limiting factor. Respondents suggested having an online data base for the recording and monitoring of engaged CPD activities. This would be a way forward to overcome challenges experienced from the random audits.

CHAPTER FIVE
DISCUSSION

5.1. Introduction

The results presented in chapter four are discussed in this chapter. The discussion includes the radiographers' opinions on CPD as well as their level of participation in and awareness of CPD activities. Continuing professional development challenges experienced will be addressed in addition to suggestions for overcoming the barriers. This chapter will provide a discussion on the respondents' suggestions for improving overall CPD compliance and recommendations for the improvement of the auditing process. Lastly, the relationships between selected variables will be discussed. These are in alignment with the study objectives.

This study obtained a response rate of 50%. According to Nulty (2008:302) online surveys yield an average response rate of 33.3%. The response rate achieved for this study was therefore acceptable.

5.2. Demographics

The majority of the respondents in this study were in the age group of 20-29 years old. The high response rate from this age group could be as a result of the study being conducted via an online survey/questionnaire and it can be rationalised that this generation have greater access to technology. The age of respondents in this current study ranged from 21 to 57 years old. This is important to note as this provided a wide range of responses from both the newly qualified and the more senior radiographers in the profession.

The average career span of radiographers in this study was approximately 39 years. This is similar to Austin (2013:138) who reported the average career span of healthcare workers to be between 30-40 years. Due to this long career span within the radiography profession, the need for CPD is evident. Lifelong learning is encouraged to ensure continuous learning throughout a long career span (Laal 2013:937; Laal, Laal and Aliramaei 2014:4052; Talati 2014:86).

There was a reasonable number of respondents who had been working in the profession for more than 10 years. Hence the rationale behind CPD is to encourage professionals to update their knowledge and skills to ensure continuous, good quality health care (Austin 2013:138; Baxter et al 2013:355; Cantillon and Jones 1999:1276; HPCSA 2011:5; van Vuuren and Nel 2013:41). It can be argued that the radiographers suggestions provided were based on their long standing exposure to CPD since its introduction in 2007.

The respondents of this study were predominantly female which is in accordance with the gender profile of radiographers in South Africa. The marital status of the respondents in this study revealed a relatively even distribution between married and single individuals.

In this study the majority of the respondents were diagnostic radiographers. This was expected as all the hospitals in KZN have diagnostic radiography facilities and the percentage of radiographers registered with the HPCSA, belonging to the diagnostic radiography programme, is higher than any other programme. Only a limited number of hospitals in KZN have ultrasound, radiation therapy and nuclear medicine facilities.

Participants of this study included radiographers from both the private and provincial health sectors. Radiographers managing their own practice and professionals employed in an academic institution were also included in this study. However the majority (50%) were from the public health sector. The reason for this could be associated with the fact that there are approximately 71 provincial hospitals in KZN (Department of Health KwaZulu- Natal 2016).

The majority of respondents in this study were shift workers (59.6%). Forty seven point two percent (47.2%) of the respondents in this study indicated that working shifts affected their level of CPD participation to a great extent. This is could be due to most attendance based CPD activities being conducted on weekends. Similarly, Castillo and Caruana reported that Maltese radiographer's level of CPD participation was affected by working shifts.

The most frequent qualification possessed was the National Diploma in Radiography (57.3%). This was expected as at the time of the study the basic qualification offered by academic institutions, to be a radiographer in South Africa, was the National Diploma in Radiography. All respondents indicated current registration with the HPCSA. This was expected as registration with the council is a prerequisite for employment in South Africa (Health Professionals Council of South Africa 2016).

In Japan the majority of the nurses were members of a professional society (Mizuno – Lewis et al 2014:199). Similar to Japan, Castillo and Caruana (2014:40) reported that the majority of the radiographers in Malta attended CPD activities that were arranged by their societies. However the majority (63.7%) of the respondents in this study were not members of the Society of Radiographers of South Africa (SORSA). The respondents' reasons included the high annual fees required in addition to paying for each of the seminars/conferences separately. It was also acknowledged that the society was also unable to provide the full CPD requirements per annum.

5.3. Objective 1: To identify the opinions, level of awareness, participation, and challenges related to CPD compliance by radiographers in KwaZulu-Natal

5.3.1. General opinions of CPD

The importance of CPD was acknowledged by the majority of respondents in this study. Similar findings were noted in numerous studies conducted internationally and amongst other professionals (Marshall, Punys and Sykes 2006:336; Sholer et al 2011:22; Castillo and Caruana 2014:37).

The majority of respondents in this current study were of the opinion that CPD improves both a professional's knowledge (90.4%) and clinical skills (70.5%). This is similar to several studies conducted on a number of professionals where it was reported that engaging in CPD activities is expected to improve a professional's knowledge and skills (Brestovacki and Milutinovic 2011:461; Dowds and French 2008:2; Gibbs 2011:153; Opfer and Pedder 2010:413).

Continuing professional development participation is expected to benefit the professional, the organisation and the patient. However many authors are in

agreement that ultimately the patient should benefit from a professional engaging in CPD activities (Gibbs 2011:153; Hegney et al 2009:142; Mizuno–Lewis et al 2014:200; Nsemo et al 2013:328). Similar findings were obtained in this study by the majority of the respondents as they were of the opinion that CPD does benefit the patient (64.3%).

The majority of respondents in this study were in disagreement with the statement "CPD is not costly to the practitioner" (57.5%). According to Opfer and Pedder (2010:414) the "value for money judgement", affects compliance with rules and regulations. Individuals find themselves questioning the benefit of CPD in relation to the cost factor (Opfer and Pedder 2010:414). It can be proposed that reducing the cost of activities may result in an increase in the overall compliance of CPD participation.

The finding that engagement in CPD occurred only because it is a mandatory requirement by the HPCSA is similar to that in Malta where radiographers displayed a similar attitude towards mandatory CPD (Castillo and Caruana 2014:37). According to the compliance theory individuals may comply merely to maintain mandates (OECD 2000:11). In addition the OECD (2000:11) stated that compliance with a regulation does not mean that the desired purpose is being achieved. Hence recommendation was made by Schafheutle, Hassell and Noyce (2013:199) that CPD be based on outcomes instead of attaining a number of points or hours.

The opinion that CPD should not be compulsory/mandatory is similar to that reported by Sholer et al (2011:22), van Niekerk (2009:611), and Castillo and Caruana (2014:37). James and Francis (2011:133) noted the lack of change in the behavior of Radiographers in Australia since the implementation of mandatory CPD, which has subsequently resulted in them discontinuing such requirements. However it was noted that paramedics from Ireland are fully supportive of mandatory CPD requirements by their council (Knox, Cullen and Dunne 2014:2).

The linkage of developmental needs with professional needs as proposed in the current study seems problematic. Hegney et al (2009:142) state that finding a balance between needs of the organisation and the individual can pose a major challenge as CPD participation is generally based on personal preference. Hence employer

support from the organisation is recommended to motivate staff to participate in CPD activities that would benefit both parties (Henwood 2000:6; Gawugah, Javda-Patel and Jackson 2011:334).

5.3.2. Responses on the awareness of CPD

The awareness of the importance of CPD was well acknowledged by the respondents in this study. In this study the health sector in which the radiographer was employed did not affect their awareness of the importance of CPD. This is in contrast to the findings reported on by Sholer et al (2011:22) which revealed that Western Australian radiographers working in the private health sector had a higher regard for the importance of CPD as compared to the public sector.

In this study the lack of awareness of the availability of the different CPD opportunities and the HPCSA guidelines in this regard is similar to reports by Henwood and Flinton (2012:179), whereby the authors indicated a lack of awareness by the UK radiographers of the various CPD activities available despite the availability of published guidelines. Radiographers in Ghana expressed similar views on the awareness of CPD, however their lack of awareness was based on an absence of guidelines and policies available (Gawugah, Javda-Patel and Jackson, 2011:332). According to the OECD (2000:12) the compliance theory indicates that a lack of awareness of the rules and regulations may result in non-compliance by individuals. Hence promotion of these guidelines by means of roadshows and proper advertising is highly recommended (Gibbs 2011:152). Follow up studies in the UK have shown improvement of radiographer's awareness towards CPD subsequent to the roadshows being conducted (Henwood and Flinton 2012:179).

The awareness of attendance based CPD activities such as conferences and seminars could be due to the frequency with which such CPD activities are advertised. This is similar to Henwood's (2000:7) findings that most individuals are limited to attendance based activities. The SORSA organises seminars and conferences at least twice a year (SORSA 2016).

5.3.3. Responses to the level of CPD participation

The poor participation rate in CPD activities in this study is similar to that in New Zealand and Australia (Taylor 2008:28). According to Levi, Tyler and Sack (2008:1) non-compliance may exist if individuals lack motivation and the validity for abiding by a regulation.

The two most common methods for CPD engagement, in this study, was attendance based activities and the answering of journal questionnaires. This is similar to findings from other studies internationally (Recker-Hughes et al 2010: 19; Castillo and Caruana 2014:40). However according to Cantillon and Jones (1999:1277) attendance based activities are the least effective method of CPD engagement. Encouragement of the other effective methods need to be emphasised. Examples of these include interactive informative meetings, learning linked to clinical practice and learning involving multiple educational methods (Cantillon and Jones 1999:1277). Gibbs (2011:155) reports that attendance based CPD is too costly, both in terms of allowing staff time off from work and for the provision of educational resources. Radiographers from Western Australia also indicated reading of journals as a common method for CPD engagement (Sholer et al 2011:21). The SORSA journals provide questions that support the earning of CPD points (SORSA 2016). However this is limited to members and must be submitted manually. Manual submission can be deemed as a limiting factor as it requires more time to submit as opposed to an online submission.

Participation in CPD when interested was one of the most common responses to “how often do you engage in CPD activities”. Online CPD participation will allow for more flexibility amongst these radiographers and may increase compliance levels. However, CPD engagement should include a variety of activities, such as post graduate studies, publishing articles and being an external examiner and should not be limited to a single type of engagement hence the different levels specified by the Council (HPCSA 2011:5).

It is important to note that more than half (56.8%) of the respondents had not been audited which could account for why only about half of them were keeping systematic records of the accredited activities that they attended. Henwood and Flinton

(2012:181) noted similar challenges amongst UK radiographers with regards to record keeping of CPD activities.

Preference of online CPD activities was ranked as number one by the respondents in this study. Online learning provides convenience especially in the health profession where professionals are expected to work shifts. However according to Gould, Papadopoulos and Kelly (2014:613) online CPD activities may not be suitable for all individuals and Baxter et al (2013:353) reports that in order for online CPD to be successful it must be relevant and easily accessible.

5.3.4. CPD challenges

This study revealed that a lack of funding to engage in CPD was a challenge as only 41.1% of respondents had access to funds. This finding was similar to that noted amongst other professionals internationally (Castle, Hollaway and Rage 1998:27; Watson 2004:71; Summers 2015:337-338). There was a lack of employer support in terms of funding evident especially amongst the public health sector respondents. However radiographers working in an academic institution did not consider funding as a major challenge as 80% of them indicated having access to funding for CPD engagement.

In this study, lack of time was identified as another major challenge. This is in keeping with numerous studies conducted where time was reported as a barrier to CPD participation (Marshall, Punys and Sykes 2006; Summers 2015:337; Henwood and Flinton 2012; Sholer et al 2011:22). Lack of time could be directly associated with working shifts. Shift work and family commitments are major contributors to the lack of time available to participate in CPD activities (Hegney 2009:144).

Lack of employer support in terms of time off and motivation to participate in CPD were other common challenges noted amongst the respondents in this study. This is similar to other studies (Summers 2015:337; Henwood and Flinton 2012:18; Hegney 2009:144). This current study also revealed that many respondents considered employer support to be a vital component in terms of allocating time for CPD participation. This is in keeping with Sholer et al (2011:22), who reported that radiographers wanted support from their employers for time to engage in CPD.

Employers need to have polices and rosters in place to assist with the allocation of time off for staff to engage in CPD activities (Castillo and Caruana 2014:41).

5.4. Objective 2: To ascertain the radiographers' suggestions for improvement to CPD practices

Suggestions provided by the respondents to improve CPD practices are discussed. Methods for improvement obtained from the open ended questions will also be discussed in this section.

Suggestions for overcoming CPD challenges were predominately funding and time related. In accordance with the respondents' challenges, this study revealed that employer support for CPD engagement was important. This is similar to Mathers, Mitchell and Hunn (2012:15) who reported that management support is crucial for effective CPD engagement. In order to overcome the challenges of lack of time, the majority of the respondents were in agreement that study leave should be provided to attend CPD activities. Respondents in this study were in agreement that formal polices should be in place to assist with funding similar to the Maltese radiographers (Castillo and Caruana 2014:41). This would benefit the public health sector employees as currently they are greatly affected by the lack of funds.

There is a need for convenient and easily accessible CPD engagement methods such as online activities and in-house training. Currently, most seminars and conferences occur over weekends making attendance difficult due to shift work. Methods recommended to overcome this challenge include in-house training, work-based learning (WBL) and maintaining a reflective portfolio (Gibbs 2011:154; Henwood and Flinton 2012:179; Marshall, Punys and Sykes 2006:332). These methods of CPD can be conducted at the convenience of the professional and requires minimal leave from work.

Improvement of the locations for CPD activities and increased accessibility to CPD resources were common suggestions made by the respondents in this study as means of overcoming some of the CPD challenges. Taylor (2008:27) reports that physicians from Australia experienced a similar challenge with the geographic locations of CPD

activities. The Royal Australasian College of Physicians chose technology as a means for improved CPD engagement by creating innovative online programmes like “MyCPD” for doctors working in rural areas (Taylor 2008:28). Increasing awareness of the various levels of CPD activities is recommended as it may alleviate these challenges as all CPD engagement does not have to be attendance based.

The respondents from this current study indicated suggestions of increasing the HPCSA and employer involvement in order to improve overall CPD compliance. This is similar to Castillo and Caruana (2014:41) who found that management should have appropriate infrastructure to support the development of radiographers.

In order to improve the CPD audit system, a recommendation that an online database be created was suggested. The majority of respondents that had been audited by the HPCSA had indicated that the audit process was quite stressful. According to literature many professional societies have implemented an online facility to upload and record CPD activities (General Pharmaceuticals Council 2016; South African Institute of Chartered Accountants 2012; Pharmaceutical Society Northern Ireland 2013). These societies provide two methods for evidence keeping; paper based and online, however both societies encourage the use of the online system (General Pharmaceuticals Council 2016; South African Institute of Chartered Accountants 2012; Pharmaceutical Society Northern Ireland 2013). This method allows for convenient and safe recording of CPD evidence. It can be argued that providing an online system for the recording of all CPD activities engaged in, can alleviate the stress currently being experienced during audits. With the online database, the HPCSA will be able to regularly monitor each professional and immediately identify those professionals that have an inadequate number of CPD points. These professionals can be audited if necessary. Having a system like this could also encourage professionals to comply with CPD regulations as it provides the convenience that is currently lacking.

5.5. Objective 3: To determine the relationship between KwaZulu-Natal radiographer's level of CPD participation and their demographic data, CPD opinions, level of awareness, challenges experienced and suggestions for improvement

The marital status of the respondents were associated with their level of CPD participation. In this study it was noted that marital status did not have any effect or impact on CPD participation. This was similar to findings reported on by Castillo and Caruana (2014:40) amongst Maltese radiographers where CPD participation was not affected by the marital status of respondents.

In this study, shift work was related to the statement "do you participate in CPD" and it was noted that shift work had no effect on the level of CPD participation amongst the respondents. This is however in contrast with Castillo and Caruana (2014:39) who reported that shift work radiographers participated less in CPD activities.

Continuing professional development is aimed at improving clinical skills and professional competence (Cantillon and Jones 1999:1276; Van Vuuren and Nel 2013:41). The opinion that CPD improves professional competence was associated with rank. It was noted that a progression in rank resulted in a greater level of agreement that CPD does improve professional competence. According to Schafheutle, Hassell and Noyce (2013:200) CPD may ensure professional competence however there is a lack of evidence that it guarantees good clinical skills/practice.

The relationship between difficulties keeping own records up to date and how often individuals engaged in CPD were directly proportional. The infrequency of CPD engagement increased as the difficulties of keeping own records up to date increased. Hence having a similar online recording system, for acquired CPD points/hours, to other societies may assist in overcoming this challenge (General Pharmaceuticals Council 2016; South African Institute of Chartered Accountants 2012; Pharmaceutical Society Northern Ireland 2013).

Health sector employment was related to the lack of employer support in terms of funding. The lack of funding was noted as a greater challenge with the public health sector employees as opposed to the private sector. It is recommended that the South African government sector consider incorporating methods to assist with funding of CPD activities similar to Australia (Summers 2015:337).

This study revealed that the lack of employer/management support in terms of motivation and allocation of time for CPD had a directly proportional relationship with the infrequency of CPD engagement. As the lack of support from employers increased, the infrequency of CPD engagement increased. Hence lack of support from employers as a challenge directly affected CPD participation and compliance. Employer support is highly encouraged by numerous authors (Henwood 2000:6; Gawugah, Javda-Patel and Jackson 2011:334).

CHAPTER SIX
CONCLUSION, LIMITATIONS AND RECOMMENDTIONS

6.1. Introduction

This chapter provides the conclusion, limitations of the study and further recommendations for future research. .

6.2. Limitations and future studies

The response rate for this study could be a limiting factor to make generalizations. This could be due to the incorrect number of radiographers on the HPCSA e-register. Many radiographers were still registered under KZN however they had left the province or the country. Another limiting factor was a lack of literature on CPD studies conducted on radiographers in South Africa. It is recommended that future studies be conducted on the relationship between mandatory CPD and improved professional competence.

6.3 Recommendations

Numerous CPD challenges have been identified and recommended remedial action requires time. While suggestions have been made for the employer and the HPCSA, the radiographer will also need to take responsibility for their own professional development. Continuing professional development should include both professional and personal development. Therefore it is important to have a balance between organisational goals and individual needs.

6.3.1 Recommendations to Radiographers

While employer support for CPD engagement is critical, ultimately it is the individual's responsibility to ensure compliance. The concept of lifelong, independent learning is highly recommended. It is expected that this type of learning will develop more critical thinking radiographers. Radiographers are encouraged to visit the HPCSA website and download a copy of the CPD guidelines available. Radiographers should take the responsibility of reading and understanding these guidelines. This will assist them to engage in a variety of activities other than seminars and conferences which requires leave from work to attend. Maintaining a reflective portfolio is also recommended as a method for cost effective CPD engagement.

6.3.2. Recommendations to Radiography employers

Employer support in terms of motivation, allocation of time and funds is encouraged for effective CPD compliance. Employers are also encouraged to develop polices for CPD in order to have a system in place to assist staff in CPD engagement. The public sector may find this a challenge as polices take time to be approved and then implemented however it is highly recommended to start the process. This will be very encouraging to staff.

Employers are also recommended to provide more in-house and work-based CPD activities. This will eliminate the need for staff to spend hours away from work and this will drastically reduce financial implications for radiographers. It is anticipated that reducing financial implications of CPD activities may improve overall compliance.

6.3.3. Recommendations to the HPCSA

Increased involvement from the HPCSA has been suggested by the respondents in terms of better communication with professionals and for the provision of CPD activities. The HPCSA has developed guidelines for CPD engagement amongst their professionals however a lack of awareness of this is a challenge. Promotion of these guidelines in the HPCSA newsletters is recommended. Another method that is highly recommended is that roadshows pertaining to CPD engagement, similar to that in the UK (Gibbs 2011:152), are conducted in South Africa with the aim to improve CPD awareness. The HPCSA does conduct roadshows however emphasis needs to be placed on effective CPD engagement. It could be rationalised that an increase in awareness of the guidelines may result in the improvement of CPD compliance.

Additional recommendation for the HPCSA is to consider changing the current CPD system from point based to outcomes based (Schafheutle, Hassell and Noyce 2013:199). There is no guarantee that attendance at a seminar or conference ensures improved clinical performance even though the subsequent points have been obtained. Interactive learning is highly recommended for professional development

It has also been suggested that the HPCSA develop an online database for the recording of CPD activities as it was evident from this study that many respondents do not record their CPD activities systematically. It is expected that this system will

reduce the stress levels experienced during random audits and improve overall compliance. This will also improve the monitoring of professionals by the HPCSA. It is hoped that this system will eliminate the need for random audits. Audits can be conducted on those professionals that have been monitored and where non-compliance is evident.

6.4. Conclusion

The majority of the respondents in this study acknowledged CPD as a process for maintaining and improving their knowledge and skills. Respondents also agreed that CPD was beneficial to the practitioner, the employer and the patient. Despite this finding there was evidence that radiographers were engaging in CPD activities only due to it being a registration requirement of the HPCSA. This defeats the intended purpose of CPD and this type of attitude should be discouraged. This could be achieved by increasing the level of awareness of the purpose and benefits of CPD amongst healthcare workers.

This current study has revealed that radiographers in KwaZulu-Natal understand the importance of CPD however they are experiencing similar CPD challenges relating to other professionals. Continuing professional development was considered to be an expensive requirement by the majority of the respondents. Lack of funding, lack of time and lack of employer support were identified as the most common challenges experienced. As a consequence of these challenges, radiographers are unable to attend CPD activities of their choice. Another consequence is that radiographers are being limited to participate only when it is possible by their employers.

Radiographers in KZN lacked awareness of the guidelines available by the HPCSA and hence were not familiar with the different CPD levels accredited. This in turn resulted in the majority of the respondents engaging mostly in attendance based CPD activities. The less formal CPD opportunities such as case study discussions, mentoring/supervision and maintaining a learning portfolio have been disregarded.

The lack of an online recording system for the retaining of evidence from accredited CPD activities added unnecessary stress to the radiographers. Some private

professional societies provide their members with an online database and this was acknowledged by respondents as being very successful especially during audits.

In conclusion the research aim and objectives of this study were achieved. This study will aid in reducing the lack of literature in South Africa regarding radiographers' opinions and challenges about CPD. It is evident that professional knowledge and competence requires regular revising/renewing particularly in a profession that is constantly evolving. The results of this study indicated that while the importance of CPD is well acknowledged there is still uncertainty regarding the mandatory aspect of it. Does mandatory CPD ensure improved professional competence? This is an area for future research. It is apparent that similar challenges, to that of international healthcare workers, does exist amongst KZN radiographers. It is imperative that radiographers acquaint themselves with the available CPD guidelines so as not to be limited by the activities to which they can engage in.

7.0. REFERENCE LIST

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RESULT FOR THE PERIOD
2009-07-01 - 2013-01-31
FOR AUDIT TYPE: STANDARD AUDIT

RADIOGRAPHY AND CLINICAL TECHNOLOGY

	COMPLIANT				NON COMPLIANT						RECEIVED BUT UNFINALIZED		RECEIVED	
Register	**Compliant**	**Compliant Abroad**	**Total**	**Perc**	**Non Compliant**	**No Response**	**Replied (Letters)**	**RTS**	**Total**	**Perc**	**Total**	**Perc**	**Total**	**Perc**
DR (Radiographer)	411	14	**425**	**14.79%**	381	1530	0	12	**1923**	**66.91%**	13	**0.45%**	**2361**	**82.15 %**
EE (Electro-Encephalographic Technician)	1	0	**1**	**0.03%**	1	8	0	0	**9**	**0.31%**	0	**0.00%**	**10**	**0.35 %**
KT (Clinical Technologist)	54	1	**55**	**1.91%**	72	250	0	1	**323**	**11.24%**	1	**0.03%**	**379**	**13.19 %**
KTG (Graduate Clinical Technologist)	0	0	**0**	**0.00%**	1	0	0	0	**1**	**0.03%**	0	**0.00%**	**1**	**0.03 %**
RLT (Radiation Technologist)	1	0	**1**	**0.03%**	1	3	0	0	**4**	**0.14%**	0	**0.00%**	**5**	**0.17 %**
RSDR (Restricted Supp Diag Radiographer)	0	0	**0**	**0.00%**	1	1	0	0	**2**	**0.07%**	0	**0.00%**	**2**	**0.07 %**
SDR (Supplementary Diagnostic Radiographer)	4	0	**4**	**0.14%**	19	91	0	1	**111**	**3.86%**	0	**0.00%**	**115**	**4.00 %**
SKT (Supplementary Clinical Technologist)	0	0	**0**	**0.00%**	0	1	0	0	**1**	**0.03%**	0	**0.00%**	**1**	**0.03 %**
TOTAL	**471**	**15**	**486**	**16.91%**	**476**	**1884**	**0**	**14**	**2374**	**82.60%**	**14**	**0.49%**	**2874**	**100 %**

RESULT FOR THE PERIOD
2009-06-01 - 2013-01-31
FOR AUDIT TYPE: NON-COMPLIANCE RE-AUDIT

RADIOGRAPHY AND CLINICAL TECHNOLOGY

	COMPLIANT				NON COMPLIANT						RECEIVED BUT UNFINALIZED		RECEIVED	
Register	**Compliant**	**Compliant Abroad**	**Total**	**Perc**	**Non Compliant**	**No Response**	**Replied (Letters)**	**RTS**	**Total**	**Perc**	**Total**	**Perc**	**Total**	**Perc**
DR (Radiographer)	293	5	**299**	**33.08%**	66	246	0	75	**387**	**42.81%**	5	**0.55%**	**690**	**76.33 %**
EE (Electro-Encephalographic Technician)	1	0	**1**	**0.11%**	0	4	0	1	**5**	**0.55%**	0	**0.00%**	**6**	**0.66 %**
KT (Clinical Technologist)	51	1	**52**	**5.75%**	14	67	0	21	**102**	**11.28%**	0	**0.00%**	**154**	**17.04 %**
RSDR (Restricted Supp Diag Radiographer)	0	0	**0**	**0.00%**	0	2	0	0	**2**	**0.22%**	0	**0.00%**	**2**	**0.22 %**
SDR (Supplementary Diagnostic Radiographer)	5	0	**5**	**0.55%**	7	35	0	4	**46**	**5.09%**	0	**0.00%**	**51**	**5.64 %**
SKT (Supplementary Clinical Technologist)	0	0	**0**	**0.00%**	0	1	0	0	**1**	**0.11%**	0	**0.00%**	**1**	**0.11 %**
TOTAL	**350**	**6**	**357**	**39.49%**	**87**	**355**	**0**	**101**	**543**	**60.07%**	**5**	**0.55%**	**904**	**100 %**

COMPLIANCY REPORT FOR THE PERIOD
2009-06-01 - 2013-01-31

TOTAL AUDITED	**4465**	100	**%**
TOTAL RECEIVED	**2207**	49	**%**
NOT SUBMITTED	**2239**	50	**%**
RECEIVED BUT NOT FINALIZED	**19**	0	**%**

NO RESPONSE	**2239**	50.1	**%**
COMPLIANT ABROAD	**21**	0.5	**%**
RECEIVED BUT NOT FINALIZED	**19**	0.4	**%**
NON-COMPLIANT	**563**	12.6	**%**
CANCELLED	**11**	0.2	**%**
RETURN TO SENDER	**114**	2.6	**%**
NO REPLY	**676**	15.1	**%**
COMPLIANT	**821**	18.4	**%**
DEFERRED	**1**	0	**%**

Please note that the percentage (%) is derived from the total received.

GENDER

	Audited	Received		Not Submitted	
		Total	Percentage	Total	Percentage
Male	851	408	9.14	443	9.92
Female	3614	1818	40.72	1796	40.22
Grand Total	**4465**	**2226**	**49 %**	**2239**	**50 %**

ANALYSIS OF SUBMITTED PORTFOLIOS FOUND TO BE NON-COMPLIANT FOR THE PERIOD 2009-06-01 - 2013-01-31

FOR AUDIT TYPE: NON-COMPLIANCE RE-AUDIT

RADIOGRAPHY AND CLINICAL TECHNOLOGY (RCT)					
Register	**All Compliant**	**All Non Compliant**	**Only EHRL Compliant**	**Only Total Compliant**	**Total**
DR (RADIOGRAPHER)	0	43	11	12	66
KT (CLINICAL TECHNOLOGIST)	0	9	4	1	14
SDR (SUPPLEMENTARY DIAGNOSTIC RADIOGRAPHER)	3	2	2	0	7
RCT Total	**3**	**54**	**17**	**13**	**87**

FOR AUDIT TYPE: STANDARD AUDIT

RADIOGRAPHY AND CLINICAL TECHNOLOGY (RCT)					
Register	**All Compliant**	**All Non Compliant**	**Only EHRL Compliant**	**Only Total Compliant**	**Total**
DR (RADIOGRAPHER)	1	283	48	49	381
EE (ELECTRO-ENCEPHALOGRAPHIC TECHNICIAN)	0	1	0	0	1
KT (CLINICAL TECHNOLOGIST)	0	53	6	13	72
KTG (GRADUATE CLINICAL TECHNOLOGIST)	0	1	0	0	1
RLT (RADIATION TECHNOLOGIST)	0	1	0	0	1
RSDR (RESTRICTED SUPP DIAG RADIOGRAPHER)	0	1	0	0	1
SDR (SUPPLEMENTARY DIAGNOSTIC RADIOGRAPHER)	0	15	3	1	19
RCT Total	**1**	**355**	**57**	**63**	**476**

Report Parameters

Board	**RCT**
Period start from	**2009/06/01 00:00:00**
Period end to	**2013/01/31 00:00:00**
Audit created from	
Audit created to	

Appendix B -Information sheet

The following questionnaire is designed to identify challenges experienced by KZN radiographers in terms of continuing professional development (CPD) compliance. This is part of my Master's research study in radiography. I kindly request that you complete this short questionnaire. The questionnaire will have six sections as follows: Section A is based on participant's opinions and perceptions of CPD in general, section B comprises of questions regarding level of CPD awareness, section C is based on participant's level of CPD participation, section D is on challenges experienced by participant's while engaging in CPD activities, section E is on suggestions for improving CPD compliance and then lastly section F has questions pertaining to the participant's demographics. It should not take more than 10-15mins minutes of your time to complete. Your response is of the utmost importance to me however your participation in this survey is entirely voluntary.

Your name and contact details are not required, this study is completely anonymous. All information provided will be kept confidential. If you are willing to participate please follow the link below:
https://www.surveymonkey.com/s/kzncpdchallenges

Should you have any queries or comments, feel free to contact me or my supervisor as follows:
Researcher email: kathleen_chetty@yahoo.com
Supervisor email: nalenen@dut.ac.za
Telephone: 0313732450/3055

Thanking you in advance.
Yours sincerely,

Kathleen Naidoo

Section A - Opinions and perceptions of CPD

1 / 7		14%

* 1. In my opinion CPD:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.1. is important	○	○	○	○	○
1.2. improves the effectiveness of service delivery	○	○	○	○	○
1.3. improves professional competence	○	○	○	○	○
1.4. improves the quality of patient care	○	○	○	○	○
1.5. improves your knowledge	○	○	○	○	○
1.6. improves your clinical skills	○	○	○	○	○
1.7. decreases patient waiting time by having more skilled employees	○	○	○	○	○
1.8. improves professional/clinical practice/standards	○	○	○	○	○
1.9. aids in advanced technology learning	○	○	○	○	○
1.10. benefits the individual	○	○	○	○	○
1.11. benefits the employer	○	○	○	○	○
1.12. benefits the patient	○	○	○	○	○
1.13. should be delivered by radiographers working in the hospital/clinical environment	○	○	○	○	○
1.14. is not costly to the practitioner	○	○	○	○	○
1.15. is an investment to the employer	○	○	○	○	○
1.16. is an investment to the practitioner	○	○	○	○	○

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
1.17. is not a waste of time					
1.18. has to be completed because it is a requirement for the HPCSA					

* 2. In my opinion CPD should be:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
2.1. compulsory					
2.2. optional and conducted when you wish to do so					
2.3. only evidence based					
2.4. delivered by the experts in the higher education sector					
2.5. provided through in house training					
2.6. linked to developmental needs					
2.7. aligned with the professional needs					
2.8. conducted during the week, Monday to Friday, 8am - 4pm					
2.9. conducted during weekends and after hours					

2.10 please state any other opinions or perceptions that you have on CPD

Next

CPD awareness

2 / 7		29%

* 3. Are you aware of:

	No	Neutral	Yes
3.1. mandatory CPD?	○	○	○
3.2. the different levels of CPD?	○	○	○
3.3. the requirements of CPD compliance?	○	○	○
3.4. the importance of CPD?	○	○	○
3.5. the purpose of CPD?	○	○	○
3.6. the number of CEU's required annually?	○	○	○
3.7. the random audits conducted by the HPCSA every two months?	○	○	○
3.8. the penalties of non compliance?	○	○	○
3.9. the guidelines available?	○	○	○
3.10. the reflective portfolio related to CPD	○	○	○
3.11. CPD opprtunities available?	○	○	○

* 4. Do you visit the HPCSA website?

No	Yes
○	○

* 5. Does your hospital/institution/practice have a notice board with CPD activity notifications?

No	Yes
○	○

Prev Next

Section B - CPD awareness

3 / 7 | 43%

* 6. Which of the following CPD activities are you aware of: (you may choose more than one option)

- [ ] Case study discussions
- [ ] Conferences/seminars
- [ ] Mentoring and supervision
- [ ] Interest group meetings less than six times a year
- [ ] Author or co-author of publications
- [ ] Presentations of posters or short courses
- [ ] Co presenter of accredited short courses
- [ ] Formal departmental meetings
- [ ] Research
- [ ] Reviewer of an article
- [ ] Answering questionnaires
- [ ] Guest lecturer at an accredited institute
- [ ] Post graduate qualifications
- [ ] Short courses minimum 25 hours
- [ ] Learning portfolio
- [ ] Practice audit
- [ ] External examiner

Prev Next

Section C - CPD participation

4 / 7 | 57%

* 7. Do you participate in CPD?

- ( ) No
- ( ) Yes

* 8. How do you ensure that you are compliant with CPD requirements?

* 9. How often do you engage in CPD?

Daily	Weekly	Monthly	Quarterly	Annually	Never	When interested
○	○	○	○	○	○	○

please explain your answer

* 10. Do you record and file evidence for your CEU's systematically?

No	Yes
○	○

If yes, please explain how

* 11. Does your hospital/institute/practice:

	No	Unsure	Yes
11.1. have a CPD program for staff?	○	○	○
11.2. encourage staff to participate in CPD?	○	○	○

* 12. Have you ever been audited by the HPCSA for CPD compliance?

No	Yes
○	○

13. If yes to question 12, answer questions below.

If no proceed to question 14

13.1. How did you know you were being audited?

13.2. Were you compliant?

13.3. If no, what did you do to ensure you were compliant?

13.4. How was your experience of the audit process?

13.5. What is your opinion on the number of CEU's required?

13.6. Did you receive any notification after submission of your portfolio of evidence?

13.7. If yes, explain your answer

* 14. Using the list below, rank your preferred learning styles for engaging in CPD activities from 1-10, with 1 being the most preferred (please note answers will be rearranged according to your selection)

- Attendance based learning
- Online activities
- Reflective learning
- Work-based learning
- Academic studies
- Journal articles
- Team assignment
- In service training
- On site supervision
- Learning portfolio

Prev Next

Section D - Challenges experienced

5 / 7		71%

* 15. Do you have access to the following:

	No	Yes
15.1. internet		
15.2. peer reviewed journals		
15.3. opportunities to undertake CPD		
15.4. transport to attend CPD activities		
15.5. funds to attend CPD workshops/seminars		

* 16. Indicate the extent to which each of the following has affected your participation in CPD activities

	Not at all	Least extent	Some extent	Great extent
16.1. lack of time				
16.2. lack of funding and financial support for CPD				
16.3. lack of employer/management support in terms of funding				
16.4. lack of employer/management support in terms of motivation				
16.5. lack of employer/management support in terms of allocating time for CPD				
16.6. inability to participate in CPD activities due to shortage of staff				
16.7. unable to attend CPD activities due to shift work				

	Not at all	Least extent	Some extent	Great extent
16.8. lack of understanding of what is required				
16.9. inaccessibility of technological facilities				
16.10. outside work commitments limit time for participation				
16.11. difficulty keeping own records up to date				
16.12. no help from HPCSA when required				

16.13. please state any other challenges that affect your participation

Prev Next

Section E - Do you have any suggestions to facilitate the achievement of CEU's

6 / 7 86%

* 17. Do you think the following will support practitioners in attending CPD activities:

	No	Unsure	Yes
17.1. study leave should be provided to attend seminars, workshops, conferences?			
17.2. employers should have formal policies to support CPD financially?			
17.3. CPD update courses should be available			

* 18. What are your suggestions on overcoming the challenges related to CPD compliance?

* 19. What are your suggestions to improve the CPD auditing process?

Prev Next

Section F - Demographics

7 / 7 100%

Answer the following questions about yourself

* 20. Indicate your gender

Male	Female
○	○

* 21. State your age

* 22. Marital status

Married	Divorced	Single
○	○	○

* 23. Indicate your current position

Supplementary radiographer	Radiographer	Chief Radiographer clinical	Chief radiographer supervisory	Assistant manager/manger	Other
○	○	○	○	○	○

if other please specify

* 24. Indicate which discipline you are qualified in

Nuclear Medicine	Diagnostic	Ultrasound	Radiation Therapy	Dual
○	○	○	○	○

* 25. Indicate your current health sector employment

Public hospital	Own practice	Private practice	Other
○	○	○	○

if other please specify

* 26. Are you a shift worker?

No	Yes
○	○

* 27. State number of years that you have been working in the radiography profession

* 28. Indicate the highest professional qualification obtained in radiography

National Diploma in radiography	Higher diploma in radiography	Bachelor of technology in radiography	Master of technology in radiography	Doctor of technology in radiography	Honours Degree in Radiography	Other
○	○	○	○	○	○	○

if other please specify

* 29. Are you currently registered with HPCSA?

No	Yes
○	○

if yes, how do you know your registration is current/up to date?

* 30. Are you currently a member of the society of radiographers (SORSA)

No	Yes
○	○

If no, please provide a reason

Prev Done

Section A - Opinions and perceptions of CPD

1 / 7		14%

* 1. I think CPD:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
is important	○	○	○	○	○
improves the effectiveness of service delivery	○	○	○	○	○
improves professional competence	○	○	○	○	○
improves the quality of patient care	○	○	○	○	○
improves your knowledge	○	○	○	○	○
improves your clinical skills	○	○	○	○	○
decreases patient waiting time by having more skilled employees	○	○	○	○	○
improves professional/clinical practice/standards	○	○	○	○	○
aids in advanced technology learning	○	○	○	○	○
benefits the individual	○	○	○	○	○
benefits the employer	○	○	○	○	○
benefits the patient	○	○	○	○	○
should be delivered by clinically active staff	○	○	○	○	○
is not costly to the practitioner	○	○	○	○	○
is an investment to the employer	○	○	○	○	○
is an investment to the practitioner	○	○	○	○	○
is not a waste of time	○	○	○	○	○
has to be completed because it is a requirement for the HPCSA	○	○	○	○	○

* 2. I think CPD should be:

	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree
compulsory	○	○	○	○	○
voluntary	○	○	○	○	○
only evidence based	○	○	○	○	○
delivered by the experts in the higher education sector	○	○	○	○	○
provided through in house training	○	○	○	○	○
linked to developmental needs	○	○	○	○	○
aligned with the professional needs	○	○	○	○	○
conducted during working hours	○	○	○	○	○
conducted during weekends and after hours	○	○	○	○	○

please state any other opinions or perceptions on CPD

Next

CPD awareness

2 / 7 29%

* 3. Are you aware of:

	Yes	Neutral	No
mandatory CPD?	○	○	○
the different levels of CPD?	○	○	○
the requirements of CPD compliance?	○	○	○
the importance of CPD?	○	○	○
the purpose of CPD?	○	○	○
the number of CEU's required annually?	○	○	○
the random audits conducted by the HPCSA every two months?	○	○	○
the penalties of non compliance?	○	○	○
the guidelines available?	○	○	○
the reflective portfolio related to CPD	○	○	○
CPD opprtunities available?	○	○	○

* 4. Do you visit the HPCSA website?

No	Neutral	Yes
○	○	○

* 5. Does your hospital/institution/practice have a notice board with CPD activity notifications?

No	Neutral	Yes
○	○	○

Prev Next

Section B - CPD awareness

3 / 7 43%

* 6. Which of the following CPD activities are you aware of: (you may choose more than one option)

- [ ] Case study discussions
- [ ] Conferences/seminars
- [ ] Mentoring and supervision
- [ ] Interest group meetings less than six times a year
- [ ] Author or co-author of publications
- [ ] Presentations of posters or short courses
- [ ] Co presenter of accredited short courses
- [ ] Fromal departmental meetings
- [ ] Research
- [ ] Reviewer of an article
- [ ] Answering questionnaires
- [ ] Guest lecturer at an accredited institute
- [ ] Post graduate qualifications
- [ ] Short courses minimum 25 hours
- [ ] Learning portfolio
- [ ] Practice audit
- [ ] External examiner

Prev Next

Section C - CPD participation

4 / 7		57%

* 7. Do you participate in CPD?

- ( ) Yes
- ( ) No

* 8. How do you ensure you are compliant?

* 9. How often do you engage in CPD?

Daily	Weekly	Monthly	Annually	Never	When interested
○	○	○	○	○	○

please explain your answer

* 10. Do you record and file evidence for your CEU's systematically?

No	Neutral	Yes
○	○	○

If yes, please explain how

* 11. Does your hospital/institute/practice:

	Yes	No
have a CPD program for staff?	○	○
encourage staff to participate in CPD?	○	○

* 12. Have you ever been audited?

No	Neutral	Yes
○	○	○

13. If yes to question 12, answer questions below.

If no proceed to question 14

How did you know you were being audited?

Were you compliant?

If no, what did you do to ensure you were compliant?

What was your opinion of the audit process?

What is your opinion on the number of CEU's required?

Did you receive any notification after submission of your portfolio of evidence?

If yes, explain your answer

* 14. Using the list below, rank your preferred learning styles for engaging in CPD activities from 1-10, with 1 being the most preferred (please note answers will be rearranged according to your selection)

- Attendance bases learning
- Online activities
- Reflective learning
- Work-based learning
- Academic studies
- Journal articles
- Team assignment
- In service training
- On site supervision
- Learning portfolio

Prev Next

Section D - Challenges experienced

5 / 7		71%

* 15. Do you have access to the following:

	No	Neutral	Yes
internet	○	○	○
peer reviewed journals	○	○	○
opportunities to undertake CPD	○	○	○
transport to attend CPD activities	○	○	○
funds to attend CPD workshops/seminars	○	○	○

* 16. Indicate the extent to which each of the following has affected your participation in CPD activities

	Not at all	Least extent	Some extent	Great extent
lack of time	○	○	○	○
lack of funding and financial support for CPD	○	○	○	○
lack of employer/management support in terms of funding	○	○	○	○
lack of employer/management support in terms of motivation	○	○	○	○
lack of employer/management support in terms of allocating time for CPD	○	○	○	○
inability to participate in CPD activities due to shortage of staff	○	○	○	○
unable to attend CPD activities due to shift work	○	○	○	○
lack of understanding of what is required	○	○	○	○
inaccessibility of technological facilities	○	○	○	○

	Not at all	Least extent	Some extent	Great extent
outside work commitments limit time for participation	○	○	○	○
difficulty keeping own records up to date	○	○	○	○
no help from HPCSA when required	○	○	○	○

please state any other challenges that affect your participation

Prev Next

Section E - Do you have any suggestions to facilitate the achievement of CEU's

6 / 7 86%

* 17. Do you think the following will support practitioners in attending CPD activities:

	No	Neutral	Yes
study leave should be provided to attend seminars, workshops, conferences?	○	○	○
employers should have formal policies to support CPD financially?	○	○	○
CPD update courses should be available	○	○	○

* 18. What are your suggestions on overcoming the challenges related to CPD compliance?

* 19. What are your suggestions to improve the CPD auditing process?

Prev Next

Section F - Demographics

7 / 7 100%

answer the following questions about yourself

* 20. Indicate your gender

Male	Female
○	○

* 21. State your age

* 22. Marital status

Married	Divorced	Single
○	○	○

* 23. Indicate your current position

Supplementary radiographer	Radiographer	Chief Radiographer clinical	Chief radiographer supervisory	Assistant manager/manger	Other
○	○	○	○	○	○

if other please specify

* 24. Indicate which discipline you are qualified in

Nuclear Medicine	Diagnostic	Ultrasound	Radiation Therapy	Dual
○	○	○	○	○

* 25. Indicate your current health sector employment

Public hospital	Own practice	Private practice	Other
○	○	○	○

if other please specify

* 26. Are you a shift worker?

Yes	No
○	○

* 27. State number of years that you have been working in the radiography profession

* 28. Indicate the highest professional qualification obtained in radiography

National Diploma in radiography	Higher diploma in radiography	Bachelor of technology in radiography	Master of technology in radiography	Doctor of technology in radiography	Other
○	○	○	○	○	○

if other please specify

* 29. Are you currently registered with HPCSA?

Yes	No
○	○

if yes, how do you know your registration is current/up to date?

* 30. Are you currently a member of the society of radiographers (SORSA)

Yes	No
○	○

If no, please provide a reason

Prev Done

APPENDIX E

STUDENT NAME: Mrs Kathleen Naidoo

IREC REFERENCE NUMBER: REC 12/15

ETHICAL CLEARNCE NUMBER: IREC 022/15

PILOT QUESTIONNAIRE	CHANGES MADE TO FINAL QUESTIONNAIRE
1. Number each sub question	Sub questions were numbered
2. Changed wording to questions: 1.13	Wording changed to : should be delivered by radiographers working in the hospital/clinical environment
2.2.	Wording changed to: optional and conducted when you wish to do so
2.8	Wording changed to: conducted during the week, Monday to Friday, 8am - 4pm
2.10	Please state any other opinions or perceptions you have on CPD
8.	How do you ensure you are compliant with CPD requirements?
9	Added quarterly
11	Added unsure
12	Have you ever been audited for CPD compliance
13.4	How was your experience of the audit process
17	Removed neutral changed to unsure

28	Added Bachelor Degree in Radiography
3. Remove neutral from questions: 4 5 10 12 15	Neutral removed

Please underline all changes/additions to the research proposal in the amended document in order to facilitate review thereof.

_____ _____

SIGNATURE OF STUDENT SIGNATURE OF SUPERVISOR

_____ _____

DATE DATE

APPENDIX F

Institutional Research Ethics Committee
Faculty of Health Sciences
Room MS 49, Mansfield School Site
Gate 8, Ritson Campus
Durban University of Technology

P O Box 1334, Durban, South Africa, 4001

Tel: 031 373 2900
Fax: 031 373 2407
Email: lavishad@dut.ac.za
http://www.dut.ac.za/research/institutional_research_ethics

www.dut.ac.za

28 April 2015

IREC Reference Number: **REC 12/15**

Mrs K Naidoo
77 Bowker Road
Unit No. 2
Olde Well Mews

Dear Mrs Naidoo

Continuing Professional Development: Compliance challenges experienced by radiographers in KwaZulu-Natal

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

We are pleased to inform you that the questionnaire has been APPROVED; you may now proceed with data collection on the proposed project.

Kindly ensure that participants used for the pilot study are not part of the main study.

Yours Sincerely

[redacted]

Professor J K Adam
Chairperson: IREC

DUT DURBAN UNIVERSITY OF TECHNOLOGY
2015 -04- 28
INSITUTUTIONAL RESEARCH ETHICS COMMITTEE
P O BOX 1334 DURBAN 4000 SOUTH AFRICA

APPENDIX G