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**Perceptions of Radiation Therapists and Radiation Oncologists
towards their interprofessional collaboration during radiation
therapy in Tshwane, South Africa**

A dissertation submitted in fulfilment of the requirements for the degree.

Masters of Radiation Therapy

By

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Declaration

I, Marlene Coetzee, student number 20038080 hereby declare that:

1. this dissertation, "Perceptions of radiation therapists and radiation oncologists towards their interprofessional collaboration during radiation therapy in Tshwane, South Africa," is submitted in accordance with the requirements for the master's degree in Radiography at University of Pretoria.
2. I understand what plagiarism is and am aware of the University's policy in this regard.
3. I declare that this dissertation is my own original work. Where other people's work has been used (either from a printed source, Internet, or any other source), this has been properly acknowledged and referenced in accordance with departmental requirements.
4. I have not used work previously produced by another student or any other person to hand in as my own.
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Signature

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ETHICS STATEMENT

The author, Marlene Coetzee, whose name appears on the title page of this dissertation, has obtained, for the research described in this work, the applicable research ethics approval.

The author declares that she has observed the ethical standards required in terms of the University of Pretoria's Code of ethics for researchers and the Policy guidelines for responsible research.

Ethics Approval Number: 64/2022

Dedication

I dedicate this research to my colleagues working in radiation oncology. May we persevere in the fight against cancer.

Acknowledgements

To have achieved this milestone in my life, I would like to express my sincere gratitude to the following people:

- My husband and daughter, who provided me the strength, knowledge, and perseverance to complete this study.
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ABSTRACT

Background: Collaboration in healthcare is essential as it cultivates excellence. Due to the overlap of the responsibilities of the RTT and the RO, the interdisciplinary collaboration between the two disciplines is critical to quality, holistic patient care. In the South African setting, it is unclear as to the nature of the interdisciplinary collaboration between the RTT and the RO. The Health Professional Council of South Africa (HPCSA) Scope of Practice for RTTs states that the RTT is to assist the RO during procedures in RT, while certain sectors purport close interdisciplinary collaboration between the RTT and the RO. Additionally, as far as the researcher could determine, there is a lack of literature describing the nature of the interdisciplinary collaboration between the RTT and the RO.

Purpose: This study aimed to explore the nature of the interdisciplinary collaboration between the radiation therapist (RTT) and the radiation oncologist (RO) during radiation therapy (RT).

Methods: An exploratory descriptive qualitative research design was adopted. The setting was the private and public RT departments situated in the Tshwane municipal area, Gauteng, South Africa. Practising RTTs and ROs were invited to take part in semi-structured, online interviews, using expert purposive sampling. Data analysis included content and thematic analysis where categories, sub- themes and themes were developed from the initial coding.

Results: Seven (7) radiation oncologists and ten (10) radiation therapists were interviewed. The two main themes deducted from the data were the dual purpose of the collaborative communication, and a grappling with the collaborative communication divide.

Conclusion: The study indicated that hierarchal issues, the physical divide between the two disciplines, and the status of the current communication being dominated by intermediaries are perceived by participants to hinder the collaborative communication between the two disciplines. The study offers to fill the gap in extant literature describing the specific interdisciplinary collaborative relationship between the RT and the RO

during RT, and suggests possible revisions to the current HPCSA scope of practice for RO.

Key words: Radiation therapy, Interdisciplinary collaboration, Perceptions, Radiation oncologists, Radiation therapists.

LIST OF ACRONYMS AND ABBREVIATIONS

WHO	World Health Organization
ASTRO	American Society of Radiation Oncology
RT	Radiation therapy
RO	Radiation oncologist
RTT	Radiation therapist
MP	Medical physicist
ON	Oncology nurse
AAPM	American Association of Physics in Medicine
HPCSA	Health Professions Council of South Africa
MDT	Multidisciplinary team
IDT	Interdisciplinary team
IDE	Interdisciplinary education
OIMS	Oncology information management system
R and V	Treatment planning and treatment record and delivery systems
OIS	Oncology information system

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OPERATIONAL CONCEPTS

1. **Collaboration:** An on-going partnership between members of a team, working together towards the same goal.¹ Shared decision-making, shared responsibility of patient care, and safe delivery of RT are contributing collaborative efforts shared between the RO and the RTT as part of the RT team.^{4,14}
2. **Interdisciplinary:** Examining, coordinating, and incorporating linked disciplines to work towards a common goal.⁹⁰ This mode of collaboration incorporates team members from different disciplines working together and drawing from each other's skills in a non-authoritative manner.^{1,14}
3. **Multidisciplinary:** Knowledge drawn from different disciplines, but each remaining within the confines of their own speciality.⁹⁰ It is characterised by teams lead by a leader. The teams meet to make decisions regarding a patient's care.²² Each team makes their own decisions, which is integrated by the leader.²²
4. **Interdisciplinary team:** Different disciplines, each with their own background and function, interdependently working together towards an ongoing operational goal. The safe delivery of RT is reliant on the coordination of several tasks delivered by disciplines from different interdependent backgrounds.¹
5. **Radiation oncology:** A medical speciality that utilises radiation therapy as a modality to treat cancer.⁹¹
6. **Radiation therapy:** The treatment of cancer with ionising radiation in such a way that the tumour receives the prescribed dose, and the surrounding organs at risk are spared.⁹² It constitutes a clinical modality involving the use of ionising radiations in the treatment of patients with malignant neoplasia's (and occasionally benign diseases). The aim of radiation therapy is to deliver a precisely measured dose of irradiation to a defined tumour volume, with as minimal damage as possible to surrounding healthy tissue, resulting in eradication of the tumour, a high quality of life, and prolongation of survival at competitive cost. In addition to curative efforts, radiation therapy plays a major role in cancer management in the effective palliation or prevention of symptoms of the disease.⁹³
7. **Perception:** To achieve a realisation of sensory inputs and to develop your own idea or philosophy on that observation. Refers to personal awareness, regard,

interpretation, and attitude towards a phenomenon which can be influenced by culture, values, beliefs, and the individual's worldview.⁹⁴

8. Nature: The key or characteristic aspects that distinguishes something as itself.⁷²

ORGANISATION OF THE DISSERTATION

To address the research objectives and to answer the research question, the layout of this dissertation is divided into six chapters. This preceding introduction chapter, the content of the subsequent chapters are as follows:

Chapter One: Provides the introduction and background to the study.

Chapter Two: Provides the literature sourced to gather insight into the empirical evidence from research conducted on interdisciplinary collaboration.

Chapter Three: Describes the research design and methodological strategies based on the research aim and objectives formulated. Included in this chapter are the data management processes and procedures.

Chapter Four: The findings are presented, based on the reiterative process of interpretation and analysis of per verbatim accounts of participants' interviews conducted to gain perspectives on the interdisciplinary collaboration between radiation therapists and radiation oncologists.

Chapter Five: Provides the higher structure of abstraction to address the problem statement and research aim of the study.

Chapter Six: In this chapter the main findings, the researcher's reflections, as well as the gaps and strengths of this study, are presented. The chapter concludes with recommendations for future studies.

CHAPTER 1

INTRODUCTION

Collaboration in healthcare is essential, as it cultivates excellence.¹ According to the World Health Organization (WHO), the term collaboration implies the incorporation of skills and knowledge from a team that consists of different disciplines.² These team members need to cooperate in a non-authoritative way with shared responsibilities towards a common goal.² In practical terms, interdisciplinary collaboration involves the sharing of evidence-based practices that improves decision-making and innovation.¹ This leads to improved patient outcome, which is the healthcare worker's moral duty.¹⁻³ The principles of interdisciplinary collaboration in fields in healthcare such as radiation oncology is supported by international bodies such as the American Society of Radiation Oncology (ASTRO).^{2, 4} According to Morley and Cashell, in order to orchestrate a number of clinical and technical activities in the field of radiation therapy (RT), it is important that effective collaboration and clear communication is maintained in the RT team.¹ The overriding purpose of the interdisciplinary collaboration in both radiation oncology and radiation therapy is to ensure that best outcomes are achieved in the management and treatment of patients diagnosed with cancer.^{1, 4, 5}

Radiation Therapy (RT), which includes external beam radiation and brachytherapy delivery, is managed by an interdisciplinary radiation oncology team consisting of the radiation oncologist (RO), radiation therapist (RTT), medical physicist (MP) and oncology nurse (ON).^{4, 6} Each member fulfils a distinct role to facilitate the radiation treatment, depending on the defined scope of their profession.¹ The RO is responsible for the decision to treat the patient, with radiation based on the clinical evaluation of the patient and patient histology.⁴ Further responsibilities include tumour volume delineation, the approval of the computerised treatment plan and the overall clinical management that includes clinical and psycho-social evaluation

during weekly follow-up appointments with patients undergoing RT.⁷ The RTT is responsible for carrying out the radiation treatment prescription through performing the technical aspects of the radiation dose planning and radiation delivery, whilst caring for the physical and emotional well-being of patients undergoing their course of radiation treatment.⁴ Furthermore, the sharing of information regarding RT with patients as well as the managing of radiation induced side effects are important aspects of clinical responsibilities of the RTT. ^{4, 8} The ON role overlaps with that of the RO and RTT in the clinical evaluation, psychosocial evaluation, patient and family education, coordination of patient care, and the administration of concurrent chemotherapy.^{4, 9, 10} The MP is responsible for ensuring the technical quality and safety of the radiation that is delivered.⁴ These responsibilities of the RT interdisciplinary team members are separate, but complimentary.¹ Specifically, the roles of the RO and the RTT overlap in the areas of support and holistic care of the patient, and the focus on the spatial identification and planning of the radiation to the patient's cancer and subsequently, the outcome of the patient's disease.^{9, 11}

The American Association of Physics in Medicine (AAPM) emphasises that, due to the complexity of treating cancer, the sophisticated technologies and the intricate treatment approaches, the integration of different disciplines in RT and effective communication is essential in order to ensure radiation safety and accuracy.^{5, 12} The RT team should consist of team members with integrated tasks and activities with horizontal power structures and across the board, open communication.^{1, 13}

Therefore, the successful management of patients with radiation therapy is dependent on the efficacy of the interdisciplinary collaboration of the radiation oncology team.¹

Despite the directions and recommendations made by leading international bodies such as the WHO, ASTRO, and AAPM, it is unclear as how these are implemented in practice. A literature review was conducted as to what is the reality of interdisciplinary collaboration within RO and RT environments (refer to chapter 2). Empirical studies have reported on the dynamics of interdisciplinary and

multidisciplinary collaboration in healthcare settings, including in RO and RT. No studies could be found that described specifically the dynamics of the interdisciplinary collaboration between ROs and RTs.

This study sought insight into the nature of the existing collaboration between the two disciplines in the Tshwane municipality, Gauteng South Africa to inform and thereby improve the collaborative efforts between the RTT and the RO in the South African RT setting.

1.1. Background

The existing Health Professions Council of South Africa (HPCSA) scope of profession for RTTs¹⁴, last amended in 1979, states that, in the care of the patient, the RTT is to assist the doctor during medical procedures and to note and report any changes in the patient's condition, report these to the doctor, and advise and instruct the patient in accordance with instructions received from the doctor.¹¹ This scope implies a hierarchal relationship dynamic between the RTT and RO, and that the RTT has to comply to the authority of the RO with respect to patient care. This dynamic is somewhat oppositional to the principle of interdisciplinary team collaboration, which incorporates team members from different disciplines working together in a non-authoritative manner towards a common goal.^{1, 15} However, a few South African Radiation Oncology centres purport that the RO and RTT work in a close and interdisciplinary way to ensure the best possible treatment for the patient.¹⁶⁻¹⁸

In recent times, the introduction of the integrated oncology information management (OIMS) and the treatment planning and treatment record and delivery systems (R and V) have been designed to serve as a computerised tool for collaboration and communication tool between the RO and the RTT.¹⁹ A typical example is modern computer technology that now allows the RO to draw tumour

volumes in remotely. This brings about a situation where the RO is not always present in the RT department during the simulation, planning, and treatment delivery of RT.²⁰

In deliberating the framework for South African professional scope for ROs and RTTs, and computer technology that is facilitating professional practice for patient radiation treatment, it is unclear as to the reality of the nature of interdisciplinary collaboration between the ROs and the RTTs in this country.

1.2. Problem Statement

Interdisciplinary collaboration between the RTT and the RO is recognised as an essential element in holistic patient care during radiation treatment planning and delivery.^{2, 9, 13} The dynamics of the interdisciplinary collaboration in the Radiation Oncology team has been researched from the perspective of the entire RT team including the patient,^{6, 13, 21} but not regarding the specific nature of the relationship between the RTT and RO. The South African scope of practice for RTTs implies that RTTs serve to assist and follow the instructions of the RO. This implies a hierarchical relationship.¹⁴ However, claims are made within the South African radiation oncology fraternity by some private healthcare facilities that there is interdisciplinary collaboration between the RO and RTT^{16, 18} It is therefore unclear as to the nature of interdisciplinary collaboration that occurs between the RO and the RTT within the South African context. Further there also appears to be a knowledge gap in that no empirical studies could be found related to the characteristics and behaviours of the RTT-RO interdisciplinary collaboration. This standpoint therefore steering the following research question and aim of this research study.

1.3. Research question, aim and objectives of the study

The primary question driving this research study was: What are the perceptions of RTTs and ROs concerning the nature of their interdisciplinary collaboration in South Africa?

The aim of the study was to explore and describe the perceptions of RTTs and ROs, with regards to their interdisciplinary collaboration in the RT setting of Tshwane, Gauteng. To achieve this aim, the objective was to

- Conduct interviews to determine the perceptions of RTTs and ROs working in private and public hospitals in Tshwane, Gauteng, regarding their interdisciplinary collaboration in RT.
- Transcribe verbatim.
- Utilize coding to establish:
 - Categories
 - Sub-themes
 - Themes

Semi-structured interviews were conducted with qualified RTTs and ROs practising in private and public RT centres in the Tshwane area, Gauteng.

The purpose of conducting this study was to describe the yet unexplored and describe the nature of the existing interdisciplinary collaboration between the two disciplines in a South African context. This made it possible to appraise the nature of the collaboration in terms of the recommended practice of interdisciplinary collaboration. Such appraisal provided some insights when it comes to possible improvements in the interdisciplinary collaboration and cohesion between RTT and RO.

CHAPTER 2

LITERATURE REVIEW

2.1. Introduction

This literature review was conducted in order to explore the empirical evidence from research conducted on interdisciplinary collaboration in healthcare in general, and in the field of radiation oncology and radiation therapy in particular.

The Google Scholar search engine on the University of Pretoria's online library was used with the following search terms: interdisciplinary collaboration between RTT and RO; communication between RTT and RO in RT; RT in South Africa; Collaboration in RT; interdisciplinary/ multidisciplinary collaboration in RT in South Africa; interdisciplinary collaboration World Health Organisation; interdisciplinary education in RT; interdisciplinary collaboration, and the patient, qualitative research in RT and communication in healthcare. Each article was assessed by analysing the research question, the motivation of the study, the results, the methods used. and by assessing the study's strengths, weaknesses, and room for improvement. A timeframe was not added to the search.

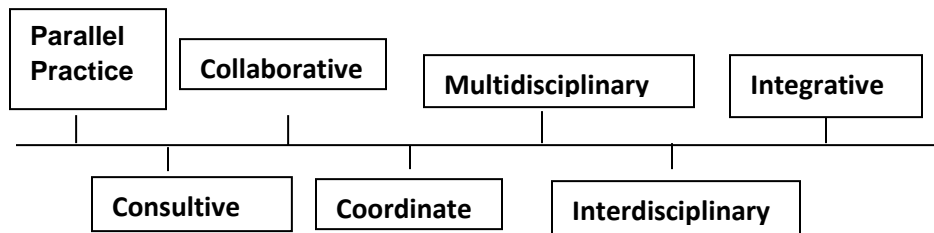
2.2. Ten principles of interdisciplinary collaboration

A research team from the United Kingdom conducted a systematic review of literature on interdisciplinary collaboration.²² To add to their findings, they facilitated semi-structured workshops with 253 healthcare workers from 11 institutions across the United Kingdom on the characteristics of ideal interdisciplinary teamwork.²² From this data they identified ten underlying principles of an effective interdisciplinary team.²² These principles included good leadership, good communication, personal rewards, development and training, the presence of

appropriate resources and procedures, a sufficient and appropriate skill mix between staff members, a positive team culture, positive individual characteristics, clarity of vision, quality patient-focused care and the understanding and respecting of each other's rolls.²²

2.3. Conceptual framework

Patient care is optimised when a healthcare team begins evolving towards an integrative, team-orientated healthcare practice. This is demonstrated by the continuum of team healthcare practice models which provide a conceptual framework for this study.²³



Philosophy

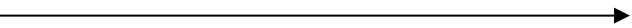
- Emphasises the whole person, diversity of healthcare philosophies & no. of determinants of health considered **increase**. →
- Reliance on biomedical scientific model **decreases** →

Structure

- Complexity **increases**. →
- Reliance on hierarchy and clearly defined roles **decrease**. →

Process

- Communication and no. of participants involved individualisation, synergy, and the importance of consensus **increase** →

- Practitioner autonomy **decreases** 

Outcomes

- Complexity and diversity of outcomes **increase.** 

Figure 1: A continuum of team health care practice models²³

This model, devised by Boon, Verhoef, O' Hara and Findlay in 2004, illustrate seven different approaches to interdisciplinary collaborative team practice in the health sciences. The model also includes the necessary attributes for such practice.²³

Parallel practice is described by the article as independent health care workers, each practicing in their formally define scope of practice within the same location. Consultative practice involves professional advice, shared between healthcare professionals, either by face-to-face communication, or using a referral letter. The practice where two independent healthcare workers, usually independently of each other, share knowledge regarding a patient being treated by both, is referred to as collaborative practice. The coordinated model is described as a standardised, organisational structure, which requires communication and the sharing of patient records for the treatment of a specific disease. This is done by a team specifically gathered for the purpose of delivering a specific therapy. The multidisciplinary model is characterised by teams by a designated leader. This teams meet to make decisions regarding a patient's care. Each team makes their own decisions, which is integrated by the leader. The interdisciplinary model arises from the multidisciplinary model when teams start to form a group, making group decisions based on frequent, face-to-face meetings. On the far right of the continuum, and the most distinguished model, is the integrative model, where an interdisciplinary, non-hierarchal team collaborate to treat the patient in a holistic way, based on specific core values.

Each approach can be examined in terms of four key components. Evolution from left to right along the continuum leads to a wider range of team members with a variety of healthcare philosophies. This leads to more significant holistic healthcare. The intricacy of the team structure is increased, moving from left to right on the continuum, calling for clear definition of roles, decreased formality of the hierarchal structure, and development of trust and respect among team members. The third key component is process. Communication between individuals increases from left to right on the continuum. As the number of individuals increase along the continuum, respect for diversity of viewpoints and like-minded decision-making need to be prioritised, while individual autonomy decreases. The patient is recognised as part of the healthcare team, with increasing synergy between all team members, moving from left to right. Finally, the outcome along the continuum is more focused on multiple aspects of the wellbeing of the patient, which evolves to being more cost-effective with outcomes that are increasingly more patient-defined.²³

This continuum was initially developed to incorporate conventional medicine and complementary or alternative medicine philosophies, but the article stated that the continuum can be applied to any team-based healthcare system.²³

The outcomes of this study were related to these seven approaches of interdisciplinary collaboration, according to the categories and themes developed from thematic analysis during data analysis.

2.4. Review of studies on interdisciplinary collaboration in cancer care settings

A qualitative study using a grounded theory methodology was conducted in Montana, USA to explore the experiences, roles, and attributes of physicians, nurses, social workers, and chaplains working in three palliative care centres.

Positive interdisciplinary team experience in this setting was attributed to a shared sense of purpose, relational coordination, holistic thinking, trust, and respect for patient autonomy. The respondents identified self-awareness, spirit of inquiry, humility, and comfort with dying as the most important individual attributes for working in such an interdisciplinary setting.²⁴

A quantitative, descriptive study was conducted in Ghana to examine the process of information transfer and communication in the multidisciplinary team (MDT). This team comprised of ROs, medical doctors, RTTs, MPs, ONs, engineers, secretaries, receptionists, and record clerks in an oncology unit in a teaching hospital in Ghana. The study identified that the lack of effective communication in RT leads to technical and clinical medical errors in the patients' radiation therapy. Critical information or overlooked changes in patient's status on the Oncology Information System was identified as a source of miscommunication in the MDT.²⁵

A qualitative study in Indonesia interviewed healthcare workers treating outpatient breast cancer patients. Participants included resident physicians, oncologists, nurses, and pharmacists. The study claimed that the accurate comprehension regarding interprofessional collaboration is limited in healthcare workers, and that limited qualitative studies have been conducted on this topic. Main findings included that interprofessional collaboration was seen as positive by respondents and that various obstacles will have to be conquered for interprofessional collaboration to succeed.²⁶ These obstacles included interpersonal and interprofessional interactions leading to conflict, weakness in terms of leadership, hierarchy, the presence of a complex bureaucracy and the unavailability of medical records.²⁶

In Denmark, eleven dyadic interviews and two focus group interviews were done in a qualitative study. The study aimed to investigate experiences and perceptions of patients and their caregivers, as well as of physicians and nurses of the interdisciplinary collaboration between nurse and physician during serious illness conversations. The main findings called attention to the significance of serious

illness conversations, which required existential and descriptive language. The study further concluded that each profession's expertise is amplified by interdisciplinary collaboration.²⁷

In Central America and the Caribbean, a cross-sectional survey was done to report clinical experiences with interdisciplinary paediatric cancer care in low and middle-income countries. In addition, the survey assessed the day-to-day communication practices of interdisciplinary team members. Participants included nurses, members from medical subspecialties, oncologists, psychosocial care providers, surgeons, pathologists, radiologists and ROs. It was discovered that intense interdisciplinary collaboration accounts for increased job satisfaction, and increased quality of care. Oncologists reported daily communication with nurses with a representative percentage of 95 percent. Nurses, however, reported less communication with oncologists, at 66%, indicating the difference in perception of interdisciplinary communication.²⁸

A case study approach was taken by researchers in a busy radiation oncology department in Ghana, where the possibility of role extension of RTTs in terms of pain assessment of patient on RT treatment was conducted. RTTs were asked to give 90 patients questionnaires on pain assessment. Their field notes as well as participant observation was used in order to add to the data collection. Qualitative data was collected through interviews of individuals as well as focus groups. The main findings were that the quality of patient care improved, the workload of the ROs decreased, and patient satisfaction improved.²⁹

A qualitative study claimed that there is a lack of literature available on interdisciplinary collaboration in radiation oncology. These researchers in British Columbia, Canada, therefore, asked RTTs in six cancer agency centres to fill out questionnaires on the type, frequency, and the mode of interdisciplinary collaboration with members of the interdisciplinary team. Results indicated that RTTs mostly collaborate with ROs, ONs and MPs, and prefer face-to-face communication and phone calls to e-mails.¹³

Another study conducted due to limited data in interdisciplinary collaboration in radiation oncology was done by Schultz et al. in Chicago, USA. Semi-structured phone interviews were conducted with ROs, ONs, dosimetrists, RTTs, MPs and medical students in a single academic medical centre on interdisciplinary collaboration in radiation oncology. The main finding concluded that the misunderstanding of each other's roles caused barriers in communication between the disciplines, where interprofessional education ought to be considered a priority in radiation oncology.³⁰

Although not directly related to interprofessional collaboration in radiation therapy, a honours student dissertation in Texas identified that ineffective and inefficient team collaboration and problematic team relationships were second and fifth highest on a list of 30 factors that contributed to RTT burnout, while working within inefficient and ineffective teams and problematic relationships with team members was high on the list of factors that contributed to burnout.³¹

2.5. Contributing factors of interdisciplinary collaboration in health care

To propose competency statements for an interdisciplinary team, a research team in the United Kingdom set out to conduct a systematic review of literature on interdisciplinary teamwork, where 153 studies were reviewed. The data was merged with qualitative data obtained from 253 staff working in community rehabilitation centres, by hosting semi-structured workshops on each person's ideas on the characteristics of a good team. The combined data was used to form a framework for 10 characteristics of a good interdisciplinary team. These include leadership and management, good communication, personal rewards, training, and development; appropriate resources and procedures, appropriate skill mix, team culture, individual characteristics, clarity of vision, quality and outcomes of care and respecting and understanding roles.²²

According to an article written by two nursing professionals from the United States of America (USA), 70% of adverse effects reported is due to poor communication and collaboration. It further stated that gender, age, culture, and level of experience may play a role in the quality of collaboration between individuals. The article aimed to establish a theory for the improvement of collaboration using the King's theory of goal attainment.³² This theory is often associated with nursing, but applicable to any individual in any interaction as it describes a dynamic, interpersonal relationship to the advantage of the patient. The article mentions the conventional patriarchal physician-nurse relationship, and states that it is important to gain physicians' buy-in when research is done, as their input is valuable and their historical leadership of teams bring experienced data to a research project.³³

An exploratory, descriptive design study was conducted in Gauteng, South Africa, where nurses reported the patriarchal physician culture to be one of the contributing factors to their moral distress during end-of-life care within the interdisciplinary team.³⁴

The issue of including physicians in interdisciplinary research was discussed in a recent article compiled in 2021 in Leeds in the United Kingdom, addressing the integration of the discipline of medicine with allied health and other disciplines to advance stronger collaboration with more depth. The article concludes that doctors will remain leaders of teams in healthcare settings, but that consciousness is needed to confront the deepening health inequalities.³⁵ These articles provided an important insight and rationale for including physicians in allied discipline studies.

A mixed method study done in Cincinnati in the USA set out to assess interdisciplinary collaboration during ward rounds between 24 professionals including nurses, therapists, and social workers in a geriatric ward. Perceptions of teamwork, job satisfaction and communication were assessed and compared with a control group from other wards in the hospital. It was found that good

communication and job satisfaction lead to improved patient care.³⁶ This study involved only allied professionals and not perceptions of physicians or clinical specialists, but did amplify the importance of effective communication for improved patient outcome. The study could be more comprehensive when the physicians' point of view was included.

An integrative review conducted in the USA on interprofessional communication highlighted several barriers to interdisciplinary communication and collaboration that includes complexity of healthcare, lack of structure and standardisation, distracting nature of healthcare settings, lack of experience, lack of confidence, language barriers, as well as diversity in roles and interprofessional hierarchies.³⁷ The study aimed to focus on the trend in literature with regards to interdisciplinary collaboration specifically between nurses and physicians and found that miscommunication leads to poor patient outcomes. This study could be enhanced by obtaining reflections from nurses and physicians with regards to their interdisciplinary collaboration.

A study conducted in 2002 in Canada identified organisational and professional factors limiting interdisciplinary collaboration in community healthcare centres. Factors influencing interdisciplinary collaboration were closely related to work group internal dynamics, conflicting values and beliefs, tension between professionals and interdisciplinary models where professions grow into monopolies. Interdisciplinary collaboration, according to this article, is a goal to attain with the formalisation of roles and procedures, however the synchronisation of different services remains challenging.³⁸ The focus of this article is collaboration in a community centre, featuring several different disciplines, each with their own speciality, all working together in the same building. This took place before the era of online meetings, social media, and smart phones and as a consequence, the online communication so prevalent today has not been considered.

Research conducted from the patients' perspective of interdisciplinary collaboration also provide insights as to the effects of the interdisciplinary dynamic on their care. An ex post facto quasi-experimental study on the effects of interdisciplinary teamwork on patient experience in cancer centres in Canada, compared patient feedback from high intensity interdisciplinary teamwork centres with low intensity interdisciplinary teamwork centres. Patients reported positive feedback in terms of prompt access to care, person-centred responses, quality of patient-professional communication, and continuity of care in high intensity interdisciplinary cancer centres.³⁹

The perception of the patient regarding interdisciplinary collaboration in RT was explored in a one-time survey in Ontario, Canada. The results indicated that patients perceive the collaboration with ROs, RTTs and ONs is most significant for their overall care and wellbeing.⁶

2.6. Conclusion

The benefits of interdisciplinary collaboration in healthcare are well recognised and can be translated into the interdisciplinary team in the discipline of radiation therapy that is embedded in the discipline of radiation oncology. Studies conducted from the patients' perspective revealed that interdisciplinary collaboration is seen to be important for their cancer treatments. Studies demonstrated various contributing factors to interdisciplinary collaboration either positive or negative, which leads to different perceptions of interdisciplinary collaboration among colleagues. It is this difference of perception that amplifies the importance of including physicians in allied health qualitative research. Two studies mentioned the lack of literature with regards to interdisciplinary collaboration in the field of radiation oncology, while only a few studies could be found involving ROs and RTTs amongst other members of the interdisciplinary team in radiation oncology. Empirical studies researching multidisciplinary and

interdisciplinary collaboration in radiation oncology tends to focus on the range of role players in the team. Although the study from British Columbia, Canada mentioned that, according to their results, RTTs collaborate the most with ROs from all members of the RT, while no studies could be found involving only RTTs and ROs and the interdisciplinary collaboration between them.

CHAPTER 3

RESEARCH METHODOLOGY

3.1. Introduction

This study focused primarily on the interdisciplinary collaborative relationship between the ROs and RTs within the medical speciality of radiation oncology and the treatment modality of RT. This study did not directly involve the relationships of the other members of the radiation oncology interdisciplinary team or the multidisciplinary oncology team. In this chapter, the research design that was used to address the research question, that is stated in Chapter 1, will be discussed in terms of the philosophical assumptions related to the qualitative research design. Thereafter, the data collection methodology and process, philosophical assumptions, followed by rigour and reflexology will be discussed in-depth.

3.2. Research design

An exploratory descriptive qualitative research design was followed. Such a study explores a phenomenon that has an influence on the reality experienced by someone in a specific culture and social context.⁴⁰ In this study, the phenomenon of the interdisciplinary collaboration between the ROs and RTTs working in the RT departments of Tshwane Municipality, Gauteng, South Africa was explored. A specific culture and social context received focus. Bradshaw, Atkinson, and Doody describe the naturalistic approach to a descriptive, qualitative study.⁴¹ It generates a grasp of a phenomenon by assessing perceptions of the research participants in their natural setting.⁴¹ This type of research aims to generate an illustration of the experience portrayed by the research participants.⁴¹ The researcher conducted interviews with RTTs and ROs to expose elements

influencing the interdisciplinary collaboration between the two groups within the RT department.⁴²

This study followed the interpretivist paradigm, where every effort was made to understand the subjective viewpoint of the interviewed RO or RTT. According to Kivunja and Kuyini, by choosing an interpretivist paradigm, one states that the social world is not to be comprehended from the view of the individual.⁴² There is a belief that there are many realities, which are built by different social experiences.⁴² The researcher accepts that inevitable interaction occurred between herself and the ROs and RTTs that were interviewed, and contextual factors were considered. Reality in such a study is socially constructed.⁴²

A relativistic ontological assumption was made, where the stance was taken that the interdisciplinary collaboration between the RTT and the RO has multiple realities.^{41, 42}

The epistemological basis of the way in which knowledge was acquired in this study was extracted from the reality portrayed by the RTTs and ROs.⁴⁰ The data were analysed through the researcher's cognitive thinking based on the interactions with the RTTs and the ROs. Knowledge was assembled socially as a result of the researcher's personal experiences interviewing the RTTs and ROs within their working environment.⁴² As for Bradshaw, Atkinson and Doody, the researcher accepts that many explanations of the truth exist, noting that what is presented is a subjective interpretation of the knowledge acquired.⁴¹

Interviews were conducted with RTTs and ROs in RT departments to obtain underlying perceptions of RTTs and ROs in terms of their interdisciplinary collaboration. The findings were utilised in order to gain knowledge on the subjective views of the participants and their reality in their natural setting.⁴¹

3.3. Research geographic delineation and research participants

As indicated in the research objectives (refer to 1.3.) this study was focused on ROs and RTTs working in the private and public sector RT departments situated in Tshwane Municipality, Gauteng Province, South Africa. The geographic position of the Tshwane municipality is demonstrated on the map (see Figure 2)⁴³. The City of Tshwane was preferred by the researcher for accessibility as the researcher lives and works in Tshwane, Gauteng. Moreover, Tshwane forms part of the most densely populated province in South Africa namely, Gauteng, with numerous hospitals and RT departments, as indicated on the map in Figure 3.⁴⁴

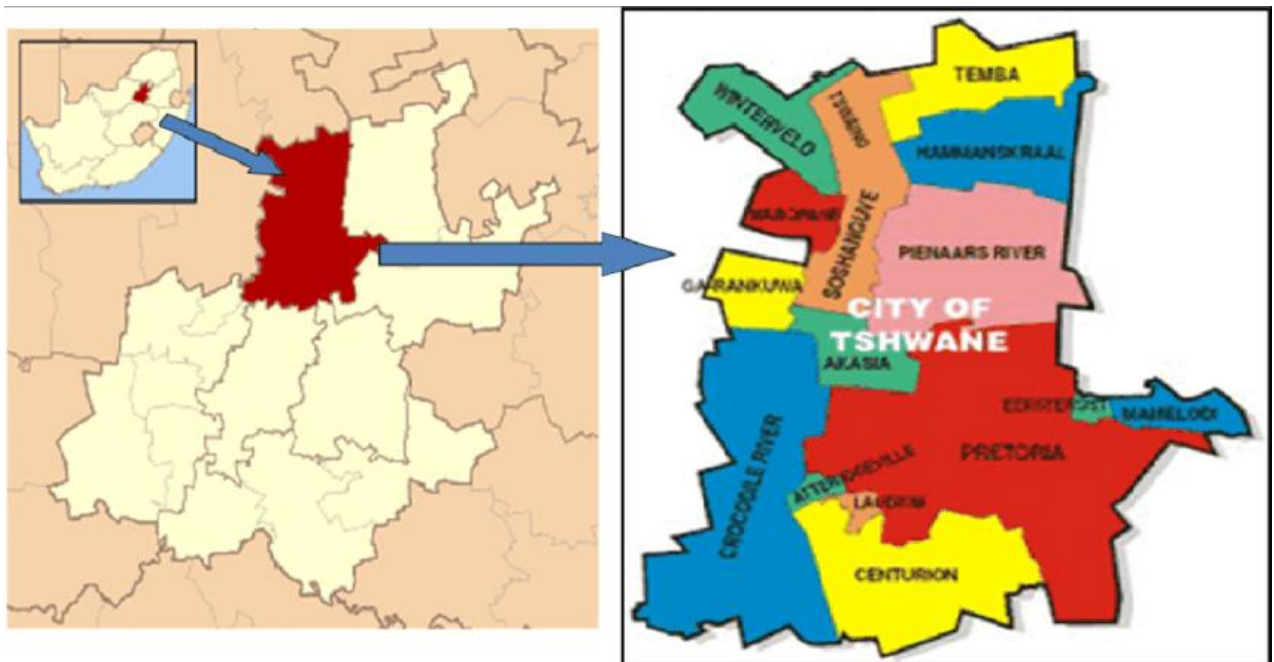


Figure 2: City of Tshwane in Gauteng, South Africa⁴⁵



Figure 3: Location of Hospitals in Tshwane⁴³

The setting of this study was the private and public RT departments situated in the Tshwane area, Gauteng South Africa. Tshwane District is indicated on the map,⁴⁵ with the hospitals where participants are practising indicated on a Google-sourced map.⁴³ Private healthcare facilities tend to serve the community who can afford to have medical aid in South Africa, while the public service is accessible to all citizens of the country.⁴⁶ There is currently one public service RT department and six private practice RT departments in Tshwane, where ROs and RTTs practising in the public sector are employed by the Gauteng Department Health. ROs in the private sector are either partners managing their own practices or are shareholders in major healthcare facilities. RTTs in private practices are employed by private healthcare companies. Currently, a total of 16 RO's are consulting in private practises in Tshwane, while four qualified RO's are consulting in the public academic hospital. 45 RTT's are employed in private practice in Tshwane while 16 RTT's are employed in the public sector.

As mentioned in Chapter 1, the whole radiation oncology interdisciplinary team is comprised of RTTs, ROs, MPs and ONs, who provide the radiation oncology

service, but this study focuses only on RTTs and ROs from both sectors. It was envisaged that conducting this study in Tshwane would provide insight into the RTT-RO interdisciplinary dynamic.

To gain an understanding of the perceptions of ROs and RTTs towards their interdisciplinary collaboration, only practising ROs and RTTs were invited to take part in this study. ROs and RTTs practising either in a private or public RT department and were employed or managing their own practise were considered for study participation.

3.4. Participant selection and recruitment

The researcher made use of a purposive sampling approach. Purposive sampling refers to the intentional selection of participants due to their particular knowledge and experience in a certain field of knowledge.⁴⁴ The researcher assumed that by virtue of these ROs and RTTs working together on a daily basis in the radiation therapy environment, they would be able to share their experiences of their interdisciplinary collaboration. To this end, the potential participants needed to be qualified RTTs and ROs registered with the HPCSA. It was expected that participants could provide rich, in-depth information. Therefore, RO registrars, RTT students, as well as RTTs doing community service, were excluded from this study.⁴⁷ This is illustrated in table 1:

Table 1: Inclusion and exclusion criteria.

Inclusion criteria:	Exclusion criteria:
1. Participants in this study will include fully qualified RTTs and ROs.	1. RO registrars employed in the public sector hospital or medical officers employed in the private practices

Inclusion criteria:	Exclusion criteria:
2. All participants need to be registered with the HPCSA.	2. RTTs students
3. Participants need to be practising either in a private or public RT department and be currently employed or managing their own practise.	3. RTTs employed in their year of community service

Participants were contacted by the researcher to be part of the study. In order to achieve this, the researcher obtained ROs room telephone numbers from phone directories in the same RT department in which she (the researcher) practises. Other ROs were searched on Google and consultation room telephone numbers were obtained online. These rooms were contacted, and it was explained what the study entailed, and the RO's e-mail addresses were then obtained.

The RTTs were approached face-to-face and e-mail addresses obtained verbally as these individuals were either colleagues, former colleagues, or acquaintances of colleagues. Because the researcher and certain prospective participants were from Netcare Healthcare company, permission had to be obtained from the hospital manager for the hospital in which the researcher practises (See Addendum A) in order to conduct interviews during working hours when the opportunity presented itself.

Each potential participant was e-mailed a participant invitation letter (see Addendum B). The ROs and RTTs that responded to the invitation (see Addendum B) were contacted to check whether they complied with the inclusion criteria. Participants who accepted the invitation were e-mailed informed consent (see Addendum D) ahead of the interview appointment, so that they could have time to re-consider whether or not they wished to participate in the interview.

The researcher experienced some difficulty in getting ROs to respond to invitation e-mails. The researcher followed up by contacting the RO consulting rooms and formal appointments were made with the RO to be able to conduct a face-to-face interview. This seemed to work well with the recruitment of most ROs, except one who cancelled a booked appointment on the day of the interview. Another RO declined when approached in-person to be part of the study. RTTs mostly responded to invitation e-mails after being notified in-person or per WhatsApp message that an invitation e-mail to this study has been sent to them. One RTT also declined to be part of the study when approached in-person.

Interviews with RTTs were mostly arranged after hours or during their lunch hours, as suitable to the participant. Exceptions included the interviews conducted at Hospital 5, where the permission to interview the RTTs was obtained (see Addendum A). These interviews were conducted during office hours, when the time was available, and both the researcher and participant were able to engage for about 30 minutes.

Interviews were approached in two different ways: either face-to-face or telephonically, using either WhatsApp call or video. Before each interview, informed consent was signed, either online using Adobe online signature, or in person. In total, five interviews were conducted telephonically, and 12 interviews were done in person.

In order to facilitate a relaxed atmosphere during the interviews, an icebreaker question was asked regarding what led each participant to enter into the field of RT. Participants were then asked the following questions in terms of the interdisciplinary collaboration between the two disciplines: a philosophy describing what the interdisciplinary collaboration between the RO and RT ought to be like according to each participant; a description of what takes place between the two disciplines in their daily working engagement; and each participant's thoughts and feelings on their interdisciplinary collaboration between the two professions (see Addendum E: Interview Guide). The different viewpoints from the participants

formed a reality experienced, which formed a common reality and was accepted by the researcher as the knowledge formed by theoretical assumptions.

3.5. Data collection method

The study involved individual semi-structured interviews to gain qualitative data on the perceptions of RTTs and ROs regarding their interdisciplinary collaboration in RT departments in Tshwane, Gauteng, South Africa.

Semi-structured interviews make use of open-ended questions that were planned beforehand. These interviews are ideal in a situation where limited literature is available on a subject, as the researcher asks a prepared question and can then use prompts to get the participant to elaborate on their answers.⁴⁸ According to Diccico-Bloom and Crabtree, interviews allow the researcher to explore the experiences of individuals so as to provide rich, in-depth information into social and personal matters, as opposed to the limitations of questionnaires.⁴⁹ Furthermore, interviews were chosen above focus groups, due to the public nature of focus groups, which prevents exploring more deeply into the opinions of the individual.⁴⁹

All interviews were conducted using an interview guide (see Addendum E). It was decided to conduct a trail interview to be able to identify potential pragmatic difficulties in the data collection procedure.⁵⁰ The researcher selected an RTT that was readily available for this trial interview.

The interview was conducted online as the participant could not meet in person. Problems were experienced with data interruptions due to power failures. The interview was completed with WhatsApp Messenger ©internet platform using the video call and recorded with the recording app of a second iPhone. The trial interview was found to be successful in acquiring useful data to determine perceptions from RTTs and ROs on their interdisciplinary collaboration. The supervisor reviewed the interview recording and improvements to the interview

style was received. Suggestions were made by the supervisor to avoid using closed ended questions that stopped the flow of the participant's discussion. Guidance was received as to utilising probing questions in order to obtain more in-depth information. The findings from this pilot interview were not included in the final data analysis.

The formal data collection process commenced one week following the pilot interview process. The subsequent interview was labelled Interview 1 RT and indicated the start of the data collection. It was conducted a week after the pilot interview after discussions with the supervisor.

3.6. Interview recordings and transcriptions

Each interview was recorded using the voice recording application on an Apple iPhone ©. In some instances, the participant could not meet in person and the interview was done via WhatsApp Video call. As WhatsApp is not able to record these calls, a second iPhone was used to record the interview.

All interviews were transcribed verbatim by the international, online audio transcription service Way with Words© and validated by the researcher for authenticity.⁵¹ Each interview was validated for accuracy by the researcher. Where the researcher was unsure of the participant's words or meaning of words used, the participant was consulted in order to clarify these statements. This was done with two participants, where the words were not clear on the recordings.

All participants' names and all other names mentioned in the recordings were anonymised in the transcriptions. The abbreviation MA was used wherever the researcher spoke. The abbreviation RT was utilised for radiation therapists and RO was used to refer to a radiation oncologist. Where names, hospitals and practises were mentioned, these were also given codes. Each transcription was named according to the discipline being interviewed, for example, the first interview was

with an RTT and was named “Interview 1 RT” and the first interview with an RO, was named “Interview 1 RO”. All transcribed data including the recordings and consent documents are stored on Google Drive, with access only granted to the researcher and supervisors.

The transcribed documents were uploaded onto the Atlas.Ti version 23 © application by importing the Word document, and from there, saved on the researcher’s computer. AtlasTi 23 © automatically adds reference line numbering when a quote is copied from the application.

A reflective journal was kept during the data collection process where the thoughts and challenges experienced and events during each interview were recorded. The report of the reflective journal will be presented in section 3.8 of this chapter.

3.7. Data analysis

Braun and Clarke’s practical six-phase approach to thematic analysis was followed in this study.⁵² This process involved the researcher familiarising herself with the data. Step one involved the immersion in the data when the researcher checked the transcribing of the data from the transcribing company *Way with Words*. This was followed by the generation of initial codes, whilst making analytical memos.⁵³ In the second cycle coding, categories were developed from which themes were devised, through inductive analysis.⁵² The Atlas.Ti programme facilitated the development and identification of codes, categories, and themes.⁵² Step three involved the refinement of the codes, categories and themes, while going back and forth between codes, categories and themes.⁵² These were presented to the supervisor in step four and regular discussions between the researcher and the supervisor improved the designation of the codes to categories and themes until consensus was reached.⁵² Step five involved the finalisation of the themes with the generation of definitions for each theme.⁵² The

Atlas.Ti programme also facilitated the linking of the participants' quotes to the codes that are embedded in the categories and the subsequent themes. The quotes could be easily referenced to the participant when exemplars were used in step 6 to support the categories within the sub-themes and overarching themes.⁵²

3.8. Rigour

Guba has devised a model for trustworthiness which determines rigour for qualitative studies.^{54, 55} The aspect of truth in qualitative research is that each participant experiences his/her own reality as the truth and that the qualitative researcher needs to demonstrate these multiple subjective realities as close as possible to what was meant by the participant. Trustworthiness was ensured in the following:

a) Credibility:

Credibility is how trustworthy or believable a study is.⁵⁶ This was ensured by participant triangulation.⁵⁶ By comparing perceptions from both disciplines on their interdisciplinary collaboration, the researcher mitigated bias that could arise by exploring viewpoints from only one discipline.⁵⁶ A reflexive journal was kept throughout the data collection period to demonstrate the degree to which the researcher's subjectivity influenced the research proceedings. (Refer to 3.8.1. for Researcher's reflections)

b) Transferability:

Transferability is to be able to reproduce this study in a different environment.⁵⁷ To ensure transferability, vigorous attempts have been made to describe the site, the participants, and the data collection process (see section 3.6.4). Within this dissertation, the researcher has attempted to provide as thick a description of how the data was acquired through the interviews (refer to chapter 4 –Findings).

c) Confirmability:

Confirmability is the level at which the results of a study can be substantiated by other investigators.⁵⁷ Preliminary data coding was done after the researcher interviewed five participants from each discipline. This was done in order to get a sense of whether data saturation was being reached. It was decided in conjunction with the research supervisor that patterns were emerging, but that further interviews might deliver additional perspectives. Interviews of a further five RTTs and two ROs were conducted before it was noted that no significant different information was being gathered.⁵⁸

d) Dependability:

Dependability is established when the research process is described in enough detail that another researcher can repeat it.⁵⁹ This was ensured through the audit trail of the raw data, data reduction and reconstruction, and process notes that are available on the Atlas.Ti 23[©] qualitative research data management system.⁵⁷

3.8.1. Researcher's reflection

Olmos-Vega et al. suggest that qualitative researchers should take advantage of their reflexivity during the research process.⁵⁷ Reflexivity in qualitative research is described as the ongoing process through which the researcher, aware of his/herself during the research process, analyse, assess and inspect how his or her subjectivity impacted the research process.⁵⁷ The subjectivity of a researcher and how it influences the study ought to be disclosed, and cannot be ignored.⁵⁷

3.8.1.1. Reflexivity on embarking on the study

The position of the researcher within this study can be viewed in two ways, as an insider and an outsider.⁶⁰ As an insider, the researcher is a qualified RTT having

13 years of experience in the field of RT. The researcher may be viewed as an insider as a reflexive journal was kept during data collection, making the researcher a participant reflecting on each interview facilitated with colleagues from the same area of practice.⁶⁰ The researcher may also be seen as an outsider, as the researcher mindfully stepped back to be able to acquire perceptions from RTTs and ROs on their interdisciplinary collaboration during RT.⁵⁷

Prolonged engagement in the field of RT gave the researcher the advantage of access to RTTs and ROs working in RT. What was also helpful during data collection, was the researcher's positive personal value when interacting with RTTs and ROs throughout the years. The researcher's values of respect, diligence and good relations towards all colleagues are believed to have contributed to the access to both disciplines. Due to ROs viewed as leaders of the RT team,⁴ the researcher had to be mindful of power dynamics when interviewing ROs. Owing to the researcher's confidence engaging with the ROs in collaboration throughout the years, the researcher experienced mostly positive reciprocation from the ROs for this study. The researcher expected RO's to be overcommitted with patient duties and not have time to participate in the study. However, although fewer ROs were interviewed due to non-responsiveness to participation invites, the ROs that did take part were welcoming and willing to positively engage in the study.

Within this experience, a broad understanding of the inter-professional dynamics between the role-players within the field of radiation oncology and particularly radiation therapy has developed. Personal observations and experiences of the researcher as a RTT have taken place during professional practice in both the public and private sectors. The experiences of working in simulation, treatment planning and the treatment delivery machine, gave the researcher the opportunity to experience and observe the interprofessional dynamics between the RTTs and ROs. The researcher experienced various occasions where suboptimal interdisciplinary collaboration between the RTT and the RO led to compromised

patient care. This motivated the researcher to explore this topic through research. Discussions with RTT colleagues, who experienced similar circumstances, provided further impetus to pursue this research topic.

To gain perceptions from both disciplines of the interdisciplinary collaboration, the researcher had to suspend the relationship role as a RTT and invite the RTTs and the ROs to participate in this study. Arranging the interviews with RTTs was uncomplicated, as RTTs were receptive to e-mailed invitations and appointments for interviews were promptly arranged. As an RTT researcher, there was a feeling of reticence in arranging interviews with ROs, being mindful of their busy schedules, however, this was overcome by arranging formal appointments with the ROs through their receptionists. ROs and RTTs were generous with their time and their optimism for this study, which contributed to the ample data collected.

3.8.1.2. Reflexivity in the data collection and analysis process

To facilitate effective data collection, the researcher had to be open to the perceptions of the “other” discipline and gained insight into what drives ROs to care for their patients. Effort had to be made to mindfully suspend existing personal perceptions as an RTT on the topic. Concerted effort was necessary to not influence what was being said by the participants. It was necessary to remain mindful to observe and accept without judgement what was being said, without bias.

Despite these efforts, it became apparent when reading the RTT interview transcripts that there were some occasions where this line was over-stepped by the researcher. This was not the case in the interviews with the ROs.

The researcher’s familiarity in the field of RT gave the researcher the advantage of access to RTTs and ROs working in RT. Ease of communication based on

familiarity led to ease when conducting the interviews, where rich data was obtained during the interviews. Participants are cited verbatim.

Participants all formed part of a small, interconnected community where each participant's view formed part of a reality experienced. The RTTs and ROs were given a focused opportunity to reflect on how they perceive the current state of the interdisciplinary collaboration as it exists. This impression arose from statements made by some participants:

"I wish you could have a big survey about this. Maybe doctors will be able to hear it and know what radiation therapy is about." [4:46 ¶ 183 in Interview 4 RT](#)

"I think it would be interesting for me to, to eventually see what, um, other views were on, on, um, this research project of yours" [5:56 ¶ 156 in Interview 5 RT](#)

"Um, I do think that sometimes the therapists don't realize, ugh, and you can put this down, because it's, I think it's important. They don't realise that we are divided between clinical and planning tasks." [18:23 ¶ 70 – 72 in Interview 6 RO](#)

Both groups seemed eager to get to understand the others' viewpoints and saw this study as a vehicle to achieving this.

The researcher identified the ethical dilemma of discomfort during the pilot interview as being a potential issue in data collection. The pilot participant was uncomfortable to adjust into the interview with the first question. It was decided in discussion with the supervisor that an ice breaker should be used to ease the participant into the interview. This was attended to by the researcher by beginning each interview with an ice breaker topic. The participants were asked to share their personal professional journeys. It seemed that in order to have succeeded as most participants seemed to relax and a smooth transition could be made into talking about the focused areas of the research topic. However, some participants had to

be encouraged to elaborate on their answers when the researcher believed that there could be more information to their answers. Conducting interviews as a novice presented a learning curve, and from a reflexive point of view, the researcher would in hindsight undertake improvements with regards to the number and type of probing questions. Improving on the focus of the probing questions and directing the conversation more towards the topic and not on what may be of interest to the researcher. Additionally, the researcher would in future be mindful of interruptions and observing what is being said as opposed to taking part in the conversations with the participants.

The researcher made field notes during the interviews of impressions being gained. The repetitive sentiments which emerged from the field notes was that both groups were wanting collaboration for the prioritisation of the overall wellbeing of the patient. This insight became a focal point when the researcher began the inductive analysis of the interview transcripts.

Through reflexivity, the researcher wanted to demonstrate how bias from an RTT's point of view led to the initialisation of this study. And so, this study was a fascinating discovery of perceptions and realities experienced by both disciplines. While ensuring that ethical consideration was adhered to in each step of this process, the researcher became aware of participants' thoughts, concerns, and expectations which would remain undiscovered were it not for this study.

3.9 Ethical considerations

Due to the intimate nature of semi-structured interviews, the research participant's confidentiality needed to be protected.⁴¹ This was achieved by recording only the audio of the interview and not the visual part while all names and institutions were kept anonymous. The data obtained by the researcher will be kept at the University of Pretoria, Department of Radiography, only to be

accessed by the researcher and supervisors. The researcher were mindful of contextualization in order to protect participants' identities, while still producing an accurate description of what was reported by the participant.⁴¹

Participants were considered as autonomous beings and consenting to partake in the study was voluntary with the option to terminate participation at any point in the study.⁴¹ Data collection only commenced on the 22nd of May 2022, when permission was granted by the Faculty of Health Sciences Research Ethics Committee, University of Pretoria. (See Addendum D) Participants who accepted the invitation were e-mailed informed consent (see Annexure E). Before each interview commenced, the researcher briefly discussed informed consent and the purpose of the study to adequately prepare the participant.

Protection of personal information according to the Protection of Personal Information Act, Act No.4 of 2013 (POPI act) signed into effect on July the first 2021, were adhered to.⁶¹

Lastly, the researcher had the ethical responsibility to interpret the participants' words in such a way that it is as close as possible to what was meant by the participant.⁴¹

3.10. Conclusion

To be able to answer the research question, the aim and objectives of this study was addressed by exploring the perceptions of RTTs and ROs on their interdisciplinary collaboration by facilitating semi-structured interviews with these professionals. Data analysis of the transcribed semi-structured interviews was done by thematic analysis facilitated by the data analysis programme Atlas.Ti version 23 ©. Reliability and transferability of the data collection and analysis was adhered to as seen in the in-depth description of the processes described in this chapter. Reflexivity provided rigour in terms of disclosing the degree in which the

researcher's subjectivity influenced the research proceedings. Ethical considerations taken in the data collection and analysis were carried out and mentioned throughout this chapter.

CHAPTER 4

FINDINGS

4.1. Introduction

This chapter presents the interpretation and explanation of the RTTs and ROs perceptions of their interdisciplinary collaboration in the field of RT. It focuses on the perceptions of current nature of their existing interdisciplinary collaboration.

The findings in this chapter are summarised in a table format. Thereafter each of the themes, sub-themes and categories will be systematically unpacked. The inter-relatedness of the themes and sub-themes will be defined, described, and explained through supportive literature sources and associated participant quotes.

4.2. Participant profiles and descriptions of their workplace settings

There were ten (10) RTTs and seven (7) ROs interviewed. One RO and one RTT declined to be interviewed when approached in-person. The following two (2) tables profiles the participants' profiles and their associated interviews.

Table 2: Radiation Therapist participants

Code	Gender	Years' experience	Public/Private institution	Duration of interview	Type of interview
RTT 1	Female	2,5 years	Private	28.17min	WhatsApp call
RTT 2	Female	8 years	Private	16.14 min	WhatsApp video call
RTT 3	Female	3,5 years	Private	16.54 min	Face-to-face
RTT 4	Female	11 years	Private	28.07 min	WhatsApp call
RTT 5	Female	13 years	Private	16.04 min	Face-to-face
RTT 6	Male	10 years	Private	20.27 min	Face-to-face
RTT 7	Female	10 years	Private	15.21 min	Face-to-face
RTT 8	Female	14 years	Public	16.10 min	Face-to-face
RTT 9	Female	15 years	Private	13.16 min	Face-to-face
RTT 10	Female	10 years	Public	39 min	Face-to-face

Table 3: Radiation Oncologist participants

Code	Gender	Years' experience	Public/Private institution	Duration of interview	Type of interview
RO 1	Female	2,5 years	Public	15.17 min	WhatsApp video call
RO 2	Female	2 years	Private	17.59 min	WhatsApp call
RO 3	Female	9 years	Private	14.05 min	Face-to-face
RO 4	Female	12 years	Private and public	23.34 min	Face-to-face
RO 5	Male	1 years	Private	16.03 min	Face-to-face
RO 6	Female	7 years	Public	13.79 min	Face-to-face
RO 7	Female	11 years	Private	17.38 min	Face-to-face

Participants from four private hospitals and one public, academic hospital were interviewed. Hospitals were named hospital 1, 2, 3, 4 and 5 for anonymity. Each private hospital belongs to a different entity, each with their own policies and procedures. Each RT department will be described from the researcher's perception and may be viewed as part of the reflexivity of this study. The descriptions of the dynamics of the radiation oncology and radiation therapy services and the ensuing interprofessional collaboration between the RO and RTT are made here. The description has its origins in the researcher's knowledge of these departments as an insider in this study (refer to section 3.9).

4.2.1. Hospital 1

Hospital 1 is the only public sector hospital in the Tshwane region where the radiation oncology and radiation therapy services are delivered. RTTs and ROs are therefore public service employees. The radiation oncology and radiation therapy departments have the status of academic, tertiary, departments affiliated to the University of Pretoria, where undergraduate and specialist training is offered to medical and allied health students.⁶² The Department receives RT patients from secondary hospitals in Gauteng, as well as establishments in the bordering province of Mpumalanga.⁶³ The clinical management of patients on RT, follow up patients and patients admitted in the oncology ward is managed in this department.

The radiation oncology section and the radiation therapy section are all under the same roof, but the entire department covers an expansive area. The clinics and consultation rooms sit at the front of the department. The radiation therapy section is adjacent to this section and includes the treatment planning division made up of the planning CT-scan and the treatment planning room, containing three planning stations and one station where ROs and registrars can draw in tumour volumes. The Department further includes the brachytherapy suite and recovery rooms, as well as two large waiting rooms facilitating patients from other hospitals waiting for their treatment. At the far end of the department are the linear accelerators, operated by the RTTs, where the distances to be covered for the ROs and RTTs to physically reach each other prove somewhat inconvenient. The RO consultant offices are situated one floor above the main department.

The discipline of RO in this hospital is managed by an RO who has oversight of a medical team consisting of several RO consultants, medical officers, and registrars, as well as the radiation oncology clinical service delivery. The RT department is managed by an Assistant Director RTT, who is responsible for the daily radiation therapy service delivery and the management of the RTT personnel. Oncology nurses and medical physicists complete the interdisciplinary team.

Weekly multidisciplinary meetings are held, and incorporate the disciplines of surgery, neurosurgery, nuclear medicine, urology, gynaecology, and paediatric oncology.⁶³ Mondays are reserved for a breast clinic, Tuesdays are for nuclear medicine and neurosurgery, Wednesdays are for paediatric oncology, and Thursdays for gastrointestinal tract, and head and neck cases.⁶³

Interdisciplinary meetings are facilitated by the head of department and involve the discussion of difficult cases between the ROs and RTTs. Clinics and consultation rooms are at the front of the department, with the RO consultant offices are situated one floor above.

4.2.1. Hospital 2

The Oncology Department at Hospital 2 is jointly owned by two medical oncologists and two radiation oncologists. Three medical officers are employed who attend to patients admitted in the ward or to assist with monitoring of the patients who are receiving chemotherapy and radiation treatments.

The RTTs are contracted to and salaried by the hospital. This has the consequence that RTTs are not only answerable to the ROs, but also to the hierarchy of the hospital management within the hospital group. The RT department is managed by the lead RTT. When RTTs need to consult the RO on patient matters, they need to engage with the ROs receptionist. ROs schedule a part of their day in the planning division of the RT Department, giving RTTs a chance to discuss matters with the ROs in person.

The ROs have their patient consulting rooms on the first floor of the hospital, while chemotherapy administration and radiation therapy treatment planning and the linear accelerator are situated on ground level. ROs are therefore present in the same building as the RTTs, but they are not always in attendance as they also consult patients at other hospitals. The clinical oncologists and radiation

oncologists and other associated medical disciplines referring to this department convene weekly multidisciplinary meetings within the radiation oncology department.

4.2.3. Hospitals 3 and 4

In hospitals 3 and 4, the radiation oncology departments are owned by nine ROs, where each RO is autonomous in their own practice. These RO's alternate between the two hospitals' radiation oncology consultation rooms and radiation therapy departments and other practice sites within Tshwane. Each hospital has its own radiation therapy department. The RO offices are located within the RT Department, within close proximity to where RTTs operate, and where it is easy for RTTs to reach ROs for discussion, by walking to their consultation rooms.

About eight RTTs are involved in external beam treatment delivery in each of these departments and are led by a lead RTT in each department. The computerised treatment planning is undertaken at a department in Hospital 3 for both departments, while the brachytherapy treatments are performed at Hospital 4. RTTs are employed by Equra Healthcare, which is part of a network of 26 radiation oncology departments across the country.⁴⁵

4.2.4. Hospital 5

Hospital 5 is an RT department that forms part of a large private hospital entity. This private hospital's primarily a 24-hour, Level 2 trauma hospital.⁶⁴ The RTTs are employed by this hospital. About 12 ROs, each owning their individual practices, refer patients to this RT department. This RT department also receives referrals from ROs situated in areas outside of Tshwane.

The RT department is situated within the hospital, while the building that houses the RO's consulting rooms is separate and adjacent to the hospital. Seven RTTs are responsible for performing the treatment planning, quality assurance, and the radiation treatments on the single linear accelerator. Planning CT scans are done in the radiology department within the hospital. One lead RTT leads the team.

4.3. Codes, categories, subthemes, and themes

Guided by the Braun and Clarke model for thematic analysis, 589 quotes were identified related to the interdisciplinary collaboration between the RTT and the RO with 527 codes attached to these quotes.⁵² The 527 codes were consolidated to 20 code groups with the help and guidance from the study supervisor to ensure reliability and trustworthiness.

In the second cycle coding, 8 categories were developed from which themes were developed through inductive analysis.⁵² (see Table 5 in Chapter 4).

Table 4: Code groups (n=20)

Code group	Nr. of quotes.
"Outliers"	10
Collaboration regarding patient radiation planning/ treatment related matters	42
Consequences for gaps/lack in collaboration and communication	18
Consequences for patient due to lack/gaps in communication and collaboration	9
Distinguishing collaboration in different settings	5
Distractor/Barriers to RTT/RO collaboration	64
Expectations for quality communication and collaboration	75
Finding alternative routes of communication in not being able to reach RO directly	10
Identifying importance of communication for patient outcomes	8
Identifying/ Perceiving barriers to collaboration regarding patient radiation planning/ treatment related matters	5
Importance of RTT /RO communication and collaboration	23
Modes of communication	26
Motivating need for academic professional collaboration	22
Need for academic professional collaboration awareness	10
Need for academic professional collaboration to update, upskill and share	7
Opinion of the other on communication and collaboration-RO-RTT	60
Opinions of the other on communication and collaboration - RTT of RO	69

Code group	Nr. of quotes.
Proximity of communication	30
Suggesting / recommending solutions for academic professional collaboration improvements	23
Suggestion solutions for improvement of professional collaboration	18

The first subthemes were “professional collaboration in the RT process” and “continuous knowledge sharing”, indicating the rationale for interdisciplinary collaboration between the RTTs and the ROs. These two subthemes could then be consolidated to one main theme namely “Dual purpose of the collaborative communication.” Other categories arising from the interview questions were distractions to collaborative communication, unfulfilled expectations from the other discipline, consequences of diminished collaborative communication and suggestions for improved collaboration. These categories could be merged into the two subthemes “Interferences to collaborative communication” and “impacts and solutions for collaborative communication”. The two subthemes were then combined to one theme named “Grappling with reality of the collaborative communication dyadic”. Emerging themes, sub-themes and categories are presented here in Table 5: Themes, Sub themes and categories.

Table 5: Themes, sub-themes, and categories

<u>Themes</u>	<u>Sub-themes</u>	<u>Categories</u>
Dual purpose of collaborative communication	Professional collaboration in the radiation therapy process	Collaboration on planning and treatment matters
		The collaboration milieu
	Collaboration in sharing knowledge and skills	Inter-professional knowledge gaps
		Engagement to close the inter-professional divide.
Grappling with the reality of the collaborative communication dyadic	Interferences with collaborative communication	Distractions to collaborative communication
		Unfulfilled expectations of the “other”
	Impacts and solutions for collaborative communication	Consequences in diminished collaborative communication
		Suggestions made for improved collaboration

4.3.1. Theme 1: The dual purpose of collaborative communication

Collaborative communication is the sharing of information between two or more individuals or groups working towards a common goal.⁶⁵ The RTTs and the ROs perceived collaboration and the associated communication was primarily focused around two main outcomes namely “professional collaboration in the radiation therapy process” and “continuous knowledge sharing”.

Subtheme 1.1. Professional collaboration in the radiation therapy process

The RTT's and RO's perception of their professional collaboration formed a trend focusing on their collaborative efforts to facilitate the patient's RT. Articles by Huynh et al. and Feng et al. stipulate the six steps of the radiation therapy workflow as follows: patient assessment, simulation, planning, quality assurance, treatment and follow up.^{7, 66, 67} Collaboration between members of the RT interdisciplinary team is essential to all six steps.^{66, 67}

1.1.1. Category 1. Collaboration on planning and treatment matters.

The six steps of the RT workflow are meant to be focused on the patients' clinical and psychosocial needs.^{4, 7, 67} Both RTTs and ROs recognise that the patient lies at the core of the RT process and by extension their collaboration. This is the focus of their collaboration:

"The patient should always be the center focus of the treatment." [2:5 ¶ 18 in Interview 2 RT](#)

"We know that it is the patients that we're here for and we're putting them first and we all strive to do the best for our patients." [10:17 ¶ 20 in Interview 1 RO](#)

It is evident that both professions' priority is the patient and the reason they entered the discipline of RT.

The RO initiates the collaborative process with the RTT by communicating the radiation dose prescription.⁶⁸ For the patient's radiation treatment to be planned and delivered, positioning of the patient during the simulation process is sometimes an important discussion between the two disciplines.⁴ Discussions tend to be held between the RTTs and the ROs on the specifics of the patients' intended treatment planning when the patient's case is complicated or unusual. The RTT indicated:

"So, uh, the doctor would generally chat to us about, um, what, what area we're treating. What, uh, prescription, what radiation dose they're giving... We do have some patients where we have to actually discuss positioning of the patient with the doctor before we scan. Um, because it may, maybe treating in an awkward area."

[6:13 ¶ 55 in Interview 6 RT](#)

While the RO acknowledged that they tend to reach out to the RTT for discussions prior to the patient's treatment planning particularly if it was an atypical case:

"Uh, how to do the simulation. That's important. If it's something, um, if it's something out of the ordinary, um, and then also in terms of planning, when, when the planning is done," [15:7 ¶ 54 – 56 in Interview 3 RO](#)

The RTT's find that they may need to follow up on the written prescription to obtain more clarity from the RO as to what is intended for the patient's radiation treatment planning:

"Sometimes when you receive the script, and you might have to ask the doctor: "what did you mean?" with whatever the doctor wrote on the script. If it's like a positioning query or with contrast media or fusion or you're not sure of the area then you can query it before scanning the patients" [1:73 ¶ 20 in Interview 1 RT](#)

The RO's acknowledge close collaboration with the RTTs during the dosimetric treatment planning process, and are somewhat reliant on the RTTs' expertise:

"So, every day I will closely work with the radio therapist at the planning scan. Then I spent a lot of time with the radiographers working in planning. They are the radiographers I spent the most time with evaluating plans and I always appreciate their advice on plans as well, because obviously they are very, they have a lot of experience." [10:10 ¶ 12 in Interview 1 RO](#)

Both the ROs and RTs indicated that more collaboration takes place between the RTT and the RO during the planning phase of RT than during the treatment phase of RT.

"Okay. So, at the moment, it is predominantly, we are predominantly involved with the planning therapists here." [18:6 ¶ 29 in Interview 6 RO](#)

"I believe that, planning actually has more exposure to the doctors." [2:10 ¶ 22 in Interview 2 RT](#)

Interdisciplinary collaboration between the RO and the RTTs involved with the patient's treatment delivery, occurs when the RTT has a specific concern about the patient's condition. The RO recognised that the RTT will approach them to resolve patient-related issues.

"If they need advice on a patient or if, if someone has a problem, they, they will contact me and, and ask me for advice, and, uh, maybe make an appointment for the patient to see me if it's necessary." [15:16 ¶ 89 in Interview 3 RO](#)

RTTs will contact the patient's RO if a patient experiences difficulty due to RT side effects and needs a medication prescription. RTTs are in the unique position to be able to alert the RO when a patient is not doing well by advocating for the patient:⁶⁹ This RTT explained that a request would be made to the RO to:

"Please evaluate the patient." if there are any side effects, um, that the patient experiences and that she feels is abnormal, you will as a radiotherapist contact the doctor and say that you are worried about patient, can you please evaluate patient?" [1:26 ¶ 20 in Interview 1 RT](#)

1.1.2. The collaboration milieu

“Milieu” is defined by the Cambridge Dictionary as the individuals, the tangible communal surroundings and experiences that brings forth the circumstances in which a person functions and resides.⁷⁰ Participants acknowledged that the availability and the proximity of the ROs and the RTTs in the workplace affects the ease of collaborative communication.

Challenges are often encountered by the RTT on the treatment units in accessing the RO when they need to discuss a patient’s case. Direct contact with the RO often needs to occur through an intermediary. Either a general practitioner, the RO’s receptionist or with social media:

"So, we actually collaborate more with the GP's than we did with oncologist while we're working on machine. Of course, if you're in planning you will collaborate more with oncologists." [12:26 ¶ 26 in Interview 9](#)

"So, we just treat patients and whatever is wrong with the patient or if we see that something needs to be done, we then will phone the receptionist of the oncologist and then discuss if the oncologist comes to us to discuss what we can do about the situation at that moment." [2:13 ¶ 22 in Interview 2 RT](#)

In order to make direct contact with the RO, the RTT has to communicate with the RO via a messaging platform or telephonically:

"So, we mostly use, especially in private practice, we mostly use WhatsApp messages, or you would phone that doctor." [1:108 ¶ 22 in Interview 1 RT](#)

One RT stated when asked how easy it is to have contact with the RO:

"Well, that is fairly easy, because we can have direct contact. We are fortunate enough to be in the same building so it's easier for us to go to the receptionist and then they can, you know, schedule an appointment or book." [2:16 ¶ 34 in Interview 2 RT](#)

The RO also recognised immediacy of communication when located in the same area:

"So, they will, they will phone me. Phone me or maybe talk to me in the passage. Or come to my office, ja. So, no, it's direct communication." [15:17 ¶ 95 – 101 in Interview 3 RO](#)

As is evident from entry 4.2. – Participant profiles and description of settings in which participants perform RT services, ROs and RTTs mostly work in separate locations or in different parts of the same building, making face-to-face collaboration impractical. Collaborative communication is frequently mediated by different communication methods. In order to notify their colleagues of the essential tasks for which they are co-responsible for in treatment planning and delivery, the RTTs and ROs have come up with a solution that involves the use of a messaging platforms with joint membership. A RTT explained:

"We have a WhatsApp group where the radiation therapist and radiation oncologists are on. We only discuss planning matters on that group. So, uhm, when you come in on a Monday and we scan patients and we will post on the group, PTV's to be drawn. Uhm, if plans have been done, we place on the group plan approvals. Other checks that usually takes place is for the first day of treatment we do the first day verification images which the oncologist must also check, so we'll also post" [3:11 ¶ 30 in Interview 3 RT](#)

Although this quote indicated that only planning matters are discussed on this messaging group, it is the researcher's experience that these groups are also used between ROs and RTTs during treatment delivery. This group communication is perceived by the RTTs and ROs to be convenient, as it allows the ROs to perform their collaborative functions at distance.

"But there are advantages to communicate over the phone. It might be time saving and doctors can work in multiple centres so it will increase productivity." [1:46 ¶ 30 in Interview 1 RT](#)

"So, in terms of time, it does help, because I can multitask in my office and see to other things, and see to the clinic, while checking upstairs. Uh, as opposed to, you know, having to dedicate time to go to planning. Uh, but I do feel some things get lost in translation." [18:11 ¶ 59 in Interview 6 RO](#)

However, this approach might not always be efficient, as messages can be misinterpreted, and mistakes can be made. This remote communication causes frustration for the ROs, as the RTTs often expect an immediate response to their request that requires the ROs attention, while the RO is attending to something elsewhere:

"So, then they, like, want volumes, and they want something to be approved. So, yes, it's nice going remote, but it's also frustrating, and I think, um, not comfortable because they have an expectation that we are remote and we need to, um, approve their claims immediately." [19:25 ¶ 82 in Interview 7 RO](#)

Although the RO-RTT collaborative activities can continue via telephonic or messaging platform communication, these remote communication methods can result in personal misperceptions of one another, as the parties have never met face-to-face. One RTT complained:

"I found that when I started there was a doctor who did not want me to plan her pediatric patients, because she found that I was too inexperienced, and, and we haven't, we've never met. So, I feel that if we worked with one another and in person that she would have seen that I know what I'm doing." [143-1:44 ¶ 28 in Interview 1 RT.](#)

The Oncology Information System (OIS) facilitates remote delineation of tumor volumes as well as approval of treatment set-up verification images. It is a tool that facilitates the RO and RTT completing these essential tasks remotely from each other. ^{19, 20}

"That kind of thing is more remote now. So, some of us go downstairs and check the plans, but we can even check the plans remotely, yes." [18:23 ¶ 55 in Interview 6 RO](#)

In the absence of face-to-face collaborative communication, intermediaries such as the receptionist or online communication options become the solution.

1.2. Subtheme 2. Collaboration in sharing knowledge and skills

Despite the researcher not having specifically asked a question on formal continued formal knowledge sharing, the category emerged from the interviews. Continued formal knowledge sharing can take on many forms. It may include courses or workshop or weekly meetings held between medical professionals to be able to improve knowledge and bring about quality improvement.⁷¹ The definition of a professional is an individual who repeatedly looks to improve and master their profession and apply that understanding to their occupation.⁷² The continuous updating of a professional's skills and the learning of other team members' disciplines results in improved patient care and an improved understanding of team member's roles.³⁰ The ideal is to start with interprofessional education when professionals are students in such a way that different disciplines are not unfamiliar to one another.³⁰ The expressed views from both disciplines indicated the need for interdisciplinary collaboration for scholarly purposes.

1.2.1. Category 1: Inter-professional knowledge gaps

ROs identified that there are gaps in the RTT's knowledge in understanding the complexities of what they require from them to plan and treat the patients.

One RO said:

"And I found that on the physicists' and the, uh, radiotherapists' side they were, they were not on par. So, I wanted to do something, and they didn't even understand what I was trying to ask." [16:9 ¶ 111 – 112 in Interview 4 RO](#)

Conversely, an RTT perceived that RO's do not understand complexities of the technical aspects of radiation therapy treatment delivery:

"Doctors need to learn what a setup looks like for me, to understand what we go through on a daily basis as a radiation therapist." [4:46 ¶ 67 – 71 in Interview 4 RT](#)

There would appear to be a lack of the RTT understanding the medical driven perspective of the RO, and the RO's lack understanding of the technical driven perspective of the RTT. In order to improve the professionals understanding of each other's disciplines, it is important that there be collaboration in sharing of discipline specific knowledge between the disciplines. ROs often practice in isolation from their peers and tend to follow patient treatment management protocols that they prefer. The RTTs are then left to manage patients differently, depending on who the referring RO might be. Further to this, the ROs might change their treatment management protocols without necessarily sharing these with the RTTs. The absence of this collaboration results in the RTTs doing or saying the "wrong" thing to the patient. This results in discontent on the part of the RO of the RTTs not managing the patients according to their wishes. This situation was explained by a RTT as follows:

"Especially, also with managing side effects. In our department, we have quite a few radiation oncologists. Some of them like their patients to use certain types of products and other one doesn't want you to advise those products to the patients. So, I think, and we only found that out, I think, a few months in, where we would give advice to a patient and the oncologist was very upset, 'cause, 'why have we advised this?'" 3:5
[¶ 14 in Interview 3 RT](#)

The RTT's are left uncertain as to what is expected of them from the ROs. The following RTT commented on the difficulty experienced to collaborate with ROs in the morning, while they have their patient discussion meeting. A daily meeting which, in the past, included all members of the RT interdisciplinary team. Due to the disruption that the Covid 19 pandemic brought to numerous aspects of the healthcare sector, RTTs opted out of the meetings, according to one of the participants. This participant disclosed that RTTs experience frustration when ROs attend this meeting in the mornings, while not being able to reach them for collaborative communicative purposes:

"The only time I struggle with doctors is in the mornings, when they have their meetings." [8:14 ¶ 146 in Interview 8 RTT](#)

When probed, the RTTs acknowledged that they were not part of the departmental meetings in the morning, as had been the case prior to the introduction of Covid-19 pandemic protocols. It seems that RTTs in this department perceive to not have the freedom to rejoin these meetings.

Communication between RTTs and ROs needs to be aligned in terms of many aspects of a given patient's RT journey.¹³ A trend of miscommunication between the two disciplines was demonstrated and the need for RTTs and ROs to align their expectations from each other is clear.⁴

1.2.2. Category 2. Engagement to close the inter-professional divide

In the collaboration milieu where communication is mediated by a social platform and OIS communication (see 1.1.3. Describing the collaboration milieu), ROs and RTTs are often strangers to each other. This informal engagement was seen to be a first step in facilitating the beginnings of improved collaboration. One RT expressed the desire to become acquainted with the RO's in person:

"I think searching for possible solutions for this is to arrange a meet and greet between doctors and the radiotherapists because you work together with doctors, and you've never met them. I think if we can, you know, just meet them, and see who they, how are they. Even if it's online." [1:56 ¶ 36 in Interview 1 RT](#)

The potential for intellectual engagement through research collaboration and quality improvement for patient services was proposed by a RO:

"I think there's so much that we could do together in terms of research and helping the patients. It would be the goal" [10:7 ¶ 10 in Interview 1 RO,](#)

Another RO identified that more opportunities need to be created where ROs and RTTs can engage in the shared improvement of competencies in the new advancements in radiation therapy:

"We need a lot more uhm platforms where both oncologists and therapists are updating skill in terms of from a therapy perspective." 13:28 ¶ 110 in Interview 2 RO.

The RTTs were also of the opinion that more frequent collaboration with the ROs regarding the management of the patients is needed. One RTT suggested the following:

"So it would be, it would be nicer if we could have that collaboration where we could easily contact a doctor to talk about a patient. Or have, maybe have a weekly, just a short meeting or a touch with the doctor." 5:7 ¶ 39 – 41 in Interview 5 RT

Implied within these comments, both the ROs and RTTs recognise that there is a need for the coming together of minds to collaborate for the purpose of research, solving patient-related problems and the technological applications of advancements in radiation therapy.

4.3.2. Theme 2. Grappling with the reality of the collaborative communication dyadic

A dyad refers to the way in which two people interact, or the way in which two persons relate to each other.⁷³ The nature of a dyad can be extensive, taking on the form of superior-subordinate, mentor-student, colleague-colleague or collaborator-collaborator.⁷³ Data demonstrated that a grappling with the collaborative communication dyadic exists between the RTTs and the ROs. RTTs and ROs seemed to mostly communicate when problems occurred. Throughout the interviews, it was apparent that the ROs and RTTs often grapple with their collaborative communication dyadic. It seemed that the collaborative communication occurs mostly when mandatory tasks needed to be completed,

such as the drawing of tumor volumes, the approval of treatment plans, and the approval of verification images. Collaborative communication also come to the fore when problems related to the patient's management arises. Although most participants envisioned the collaborative communication as mainly concerning the physical and psychosocial needs of the patient, barriers to interdisciplinary collaboration will still exist due to diverse knowledge, interests, abilities and authority.¹

2.1. Subtheme 1. Interferences with collaborative communication

The gaps in the collaborative communication were clearly a concern. Both groups shared their perceptions of what they believe hindered the communication and behaviours of "the other" that interfered with communication.

2.1.1. Category 1. Distractions to collaborative communication

Barriers to interdisciplinary collaboration cause a breakdown in teamwork.¹ One perceived barrier often repeated was the hierarchal position of the RO:

"I also think that in the private sector, sometimes, there's this hierarchal kind of thing where oncologist has the final whatever." [13:9 ¶ 38 in Interview 2 RO](#)

The RTTs also sense that this hierarchy affects the collaboration. An RTT tried to explain:

"You do get doctors that are always gonna be on that level where, you know, you have the superiority where... And, and it, sort of, it hinders the collaboration between the therapist and the doctor." [6:4 ¶ 22 in Interview 6 RT](#)

An insightful perception from more than one RO was that in the public sector, the RTTs tended to usurp the ROs decision-making:

"But then at the same time I sometimes feel like in government the opposite happened. And then things are huge where, you know, as an oncologist you are like, but this what I want to do and then therapy feels they can overhaul a decision... that's made clinically by the doctor which is also completely skew. So, there's a disconnect somewhere." [13:34 ¶ 46 – 52 in Interview 2 RO](#)

RTTs feel excluded from multidisciplinary collaborations that the ROs have with other health care professionals. This is evident in this quote by an RTT. where there appeared to have been scheduled meetings between the ROs and RTTs in a particular practice. These had ceased, but the ROs continued to collaborate with others in the interdisciplinary and multidisciplinary team:

"So, something they, I've heard, they always did it in the past was to have weekly meetings with the radiation oncologist and the radiation therapist. I think it's also because at the moment the oncologist and all the doctors and chemo sisters, because they are part of Oncology Department 1, they have, every Monday, they have meetings. But we, the radiation therapists are part of Hospital 1, so we are not always included in that meeting." [3:6 ¶ 18 in Interview 3 RT](#)

Within this perceived hierarchy, RTTs feel unrecognised for the contribution that they feel that they can make to the collaborative communication dyadic. When the researcher asked a participant who forgot to mention her master's degree, she answered the following:

"I forgot about that because no-one recognises it." [7:5 ¶ 25 – 26 in Interview 7 RT](#)

RTTs perceived having to engage in collaboration beyond the mandatory tasks as having to take on greater responsibility that that which they were prepared to do without appropriate remuneration:

"Because to be honest, I don't think we get paid enough to...take more responsibility." [7:17 ¶ 86 – 88 in Interview 7 RT](#)

The ROs are of the perception that the RTT's are resistant to collaboration when the ROs want them to change to more up-to-date radiation treatment methods that are in keeping with the advancements in the field. This RO said:

"And they just don't realise, you know what, things have changed, okay. They don't wanna know that things have changed. And they're, like, 'why do you want to change it?' Because it's working so well." [16:45 ¶ 381 in Interview 4 RO](#)

Part of the barriers to effective interdisciplinary collaboration between the two disciplines would seem to lie in the perception of the professional dominance on the part of the RO. However, some RTTs claim to have opted out of the engagement, on the grounds that they are inadequately recognised for their professional worth. This reluctance to engage is a source of frustration for the RO who want collaboration for changes that are occurring in the field of radiation therapy.

2.1.2. Category 2. Unfulfilled expectations of the “other”

Within the perceived hierarchy dynamic and the lack of meaningful collaborative communication, there are unspoken expectations for the “others” conduct and communication for the daily mandatory collaboration. This involves the six steps of the RT process to facilitate the patient’s RT as discussed in section 4.2 of this chapter.⁶⁷

RTTs want ROs to be available when needed, and experienced frustration when faced with a patient in need of the ROs help:

"Uhm, I would say I need a doctor every day because there's questions that we need to ask. But now, in the place where we are working, you have to wait for a doctor. Maybe you might see the doctor in two days, the doctor is not at the practice. What then? Who must sort out the patient?" [4:15 ¶ 103 in Interview 4 RT](#)

The ROs complained that the RTTs expect them to always be available for patient-related issues in treatment planning or on the treatment machines. They need the RTTs to understand that they have to prioritise their commitments to consulting the patients:

"And I think because they only work at the machine side of things or at the planning side of things, they don't understand that sometimes maybe patients and clinical, uh, situations take preference over coming to check a plan, or to check and verify." 18:17 ¶ 74 in Interview 6 RO

RTTs want to be informed of the patients' clinical history in order for them to better understand their patients and to be able to optimise their care of the patient. They feel dissatisfied that they are not informed by the RO of the patient's clinical background and do not have access the RO's clinical notes. One RT complained:

"It's, it's very easy to, um, to not know what's going on with your patient. Because you only get to see the radiotherapy picture of it. We're not involved. Um, in the ideal world it would be where we know exactly which date a patient is going for chemo. What the doctor's decision, decision was when they consulted the patient the previous day. Whereas we don't have privy on the doctor's notes." 5:13 ¶ 53–61 in Interview 5 RT

However, the ROs are of the viewpoint that some clinical information is not relevant to what the RT needs to know about the patient:

"Sometimes the clinical isn't related to the therapist." 13:34 ¶ 160 in Interview 2 RO

This same RO experienced frustration when an RTT overstepped professional boundaries to make a unilateral medical related decision, and cancelled a patient's RT. In this instance, the RTT had clinical information about the patient, but failed to communicate with the RO regarding this medical related observation:

"I know why we're requesting hemostatic, you know, for this patient and the patient has been transfused, you don't know about that, true, but you know, you call me first before you make the decision to cancel a patient." 13:34 ¶ 156 in Interview 2 RO

The lack of appreciation for the other's role and the unmet expectations for collaborative communication for radiation management of the patient constitutes a point of dissatisfaction between the two disciplines.

Subtheme 2.2. Impacts and solutions for collaborative communication

Diminished communication within an interdisciplinary cancer team may have dire consequences.²⁵ Miscommunication is defined by the Oxford dictionary as the neglect to communicate sufficiently.⁷⁴ Misinterpretation is the activity of explaining something incorrectly,⁷⁴ and misunderstanding is explained as the neglect to grasp something accurately.⁷⁴ Many participants reported negative impact from past experience, where communication breakdowns had an impact on either the collaborative dyad itself, or on the patient's wellbeing. Solutions were also suggested to enhance collaborative communication.

2.2.1. Identifying the consequences in diminished collaborative communication

ROs acknowledged that miscommunication or misinterpretation occurs in their instructions to the RTT regarding patient setup and planning objectives. Written prescriptions are placed in the file.⁶⁸

"We're still writing our scripts. So, it's a very standard script that we've always had. It only looks at the technique you want to use, whether a patient is radical or palliative, your target volume, your dose." 18:23 ¶ 116 – 126 in Interview 6 RO

What the RO perceives to be basic understandable written instruction is not always interpreted as such by the RTT, thus resulting in the RO not obtaining a treatment planning result that they were expecting:

" Looking at how they do the actual planning and what we expect in the outcomes of a plan. I think sometimes that gets lost in translation." 18:3 ¶ 18 in Interview 6 RO

The RTTs also acknowledge that they are not aware of what the ROs expect of them regarding the patient's radiation treatment:

"But that is the bad, um, situation that we're in is we, we sometimes because of the bad communication, we don't know what the expectation is of, from the other side."
[5:54 ¶ 159 in Interview 5 RT](#)

An example of fatal miscommunication was re-counted by an RTT of an event that occurred whilst she was a student. She observed that her qualified RTT mentors did not feel comfortable to consult with a patient's RO about the deteriorating condition of their patient:

"But it was bad for me that no one wanted to say something with fear of the doctor and me as a student I have to stand up and say something. That gave me a bit of a fright." [1:107 ¶ 41 in Interview 1 RT](#)

Ultimately, diminished collaborative communication has consequences for the patient. Where there is diminished communication regarding the patient's wellbeing the outcome for the patient might be dire. Lack of communication and miscommunication may for example lead to fatal errors in cancer care.²⁵

2.2.2. Suggestions made for improved collaborative communication

In the face of these potential consequences of miscommunication, misunderstanding of communication and misinterpretation of communication, the participants proposed various approaches to improving their collaboration and communication.

This RTT voiced a "roadmap" for ideal collaborative communication for patient care in radiation therapy. Embedded in this suggested plan, the RTTs call for mutual respect, where the concerns that the RTTs raised are heard without fear of reprisal:

"So, we need to have mutual respect, and I think it's very important to give proper updates for regarding the patient to one another and to communicate through every stage where the patient is at currently and I think both parties should be willing to engage in discussions as to what is the best way forward for the patient and regarding

the patient's treatment and the pretreatment phase and the on treatment phase and you should also feel free to raise concerns" [1:67 ¶ 16 in Interview 1 RT](#)

The idea of regular patient-related communication was also raised by an RO, who stated:

"Um, I think more from the... I think the day-to-day things. Um, I, I, I would like to get a little bit more feedback on a day-to-day basis on issues that might arise with patients before I see them once a week." [17:11 ¶ 76 in Interview 5 RO](#)

In the seeming absence of formal interdisciplinary collaboration (refer to 2.1.1), a few ROs recognised the importance of including RTTs in their weekly interdisciplinary meeting, as they perceive their input to be valuable:

"We should have, every month, every week we have meeting that are called clinical discussions of problem cases and we've identified there is a gap where, we actually need to have therapists in some of those meetings because the treatment in terms of the radiation of the patient is very much part and parcel of the therapy." [13:17 ¶ 64 in Interview 2 RO](#)

While RTTs expressed the need to be included as valuable members of the interdisciplinary team:

"And so I think the ideal would be that the radiotherapist is seen as a valuable member of the Oncology team and not only as somebody who, where a patient is referred to." [5:3 ¶ 27 in Interview 5 RT](#)

In order to overcome and improve diminished collaborative communication, both participant groups agreed that being physically present during collaboration is a catalyst for interdisciplinary collaboration between the RTT and the RO related to the patient's radiation treatment. Here, the RO explains the rationale for in-person over remote communication:

"To both be there and look at the plan and scroll through look at what the issue is, you know. The world is such that is a lot of things have to be done remotely but I

think we definitely benefit from that whole both being able communicate. Therapy can point out this this, this, this from a therapy perspective and you can say, but clinically I wanted that." [13:20 ¶ 82 in Interview 2 RO](#)

The RTT also agree that face-to-face communication is the ideal mode for RTT-RO as it minimises miscommunication in the RT process:

"Whereas I think in person it's much easier. The doctor can see that you are, you mean well, and they can see in your body language and the person that you are. You mean it in the best possible way." [1:39 ¶ 26 in Interview 1 RT](#)

The idea of regular interdisciplinary meetings is seen as being necessary for common understanding within the interdisciplinary team:

"And I think that all parties, that is the radiation oncologist, the nurses, the, the physicists, and the radio therapists, need to be on the same page..." [16:61 ¶ 94 in Interview 4 RO](#)

Remedies proposed by both disciplines were face-to-face communication, especially during treatment planning, as well as attending regular meetings together.

4.4. Summary

This chapter highlighted the themes that came to represent the perceptions of the RTTs and ROs towards their interdisciplinary collaboration within the hospitals described in Chapter Three. The first theme inducted from the data revealed two main nexuses for the interdisciplinary collaboration. The points of collaboration are identified as when these professionals come together during the radiation therapy process to focus on the patients' treatment, and where they share professional knowledge. The second theme brought to the fore the challenges encountered within the collaborative communication. The issues that exist in the minds of the

professionals form their perceptions of the barriers that hinder optimal collaboration and communication was presented. Despite frustrations reported, participants were positive regarding solutions for improved collaboration and communication between the two disciplines.

CHAPTER 5

DISCUSSION

5.1. Introduction

Interdisciplinary collaboration between the RTT and the RO is recognised as an essential element in holistic patient care during radiation treatment planning and delivery.^{2, 9, 13} Research studies have reported on the dynamics of the interdisciplinary collaboration in the radiation oncology team has seen research from the perspective of the entire RT team including the patient,^{6, 13, 21} but not regarding the specific nature of the relationship between the RTT and RO. This study sought to examine the nature of the dynamics of this relationship in the Tshwane region in Gauteng, South Africa.

The focus of this chapter is to integrate the findings with the context of this study and literature sources to address the research question. The discussion will be delineated within the ASTRO's framework for safety in radiation oncology care⁴ and the HPCSA scope of practice for RTT's and medical practitioners.^{14, 75} The dynamic of the interdisciplinary collaboration between the two disciplines will be compared to the Boon et al. model for interdisciplinary team practices in health sciences.²³

5.2. Structure of the interdisciplinary collaboration

Although there is no specific HPCSA scope of practice for ROs, they adhere to the scope of practice for medical practitioners, which states that a medical practitioner is to examine and advise any person on their physical state, and to diagnose on the basis of information received from any person or from the patient self.⁷⁵ The scope further states that the appropriate medicine or treatment should be prescribed accordingly.⁷⁵ ASTRO directs the RO to be the RT team leader, to assess the patient's clinical history and to prescribe and approve the patient's RT.⁴ The HPCSA mandate of the RTT is to operate radiation treatment delivery technology to accurately deliver the planned RT, to care for the patient during the entire RT process, and to provide information on side effects management with regards to instructions given by the RO.^{4, 14} The patient's condition need to be communicated with the RO, along with providing the patient with instructions from the RO in response to the problem experienced by the patient.¹⁴ The RTT's scope of practice instructs the RTT to work under the direction of the RO.¹⁴ The scope implies a top-down, somewhat hierarchical relationship between the RTT and the RO. This hierarchical relationship is perceived as a barrier to interdisciplinary collaboration by Boon et al.,²³ and specifically in RT by Morley and Cashell.¹

It is well known that for an interdisciplinary team to succeed, hierarchy needs to decrease.²³ According to literature, an RO should be the team leader of the RT interdisciplinary team.⁴ However, in the public sector, some ROs felt that the roles are sometimes reversed. RTTs were perceived by ROs to override decisions made by the RO in terms of treatment planning objectives. Some RTTs indicated the pressure to “keep the stakeholders happy”, and the superior position ROs are perceived to occupy. This was echoed by ROs. Participants from the private sector described fatal errors, where RTTs were too “afraid” to call an RO, or to address an RO on the psychosocial needs of their patient, not having the freedom to address someone perceived to be their superior. ROs also made mention of RTTs

feeling that they could cancel a patient's treatment due to a low hemoglobin or planning RTTs trying to override planning objections set by the RO. Not having an understanding of one's own conduct and awareness and how it can impact the team may lead to fatal mistakes, which impact the patient's welfare.⁷⁶ Overriding the other discipline without question resulted in an imbalance of power, where negative emotions such as fear and distrust were present. The Royal College of Radiologists investigated human error leading to fatal errors in RT, where they found that hierarchy and miscommunication within a team was one of the main causes for RT incidents.⁷⁷

Green et al. use the analogy of the tangent of a hierarchal gradient⁷⁶ to explain that the situation at hand sometimes calls for a steep gradient, where an experienced decision is needed, while in other circumstances, a flat gradient is needed where the whole team's input is required.⁷⁶ Strong leadership is necessarily needed to know the difference.⁷⁶ The strong presence of a hierarchy in both the public and the private sectors indicated a communication gap between the two disciplines. Specifically, RTTs perceived a disconnect from the RO in the private sector, due to the perceived superiority of the RO. Moreover, RTTs were perceived to be subordinate to their RO colleagues. Perceptions of striving to "keep the doctors happy", the need to be seen as equal members of the team and their lack of freedom to communicate with the RO indicated their perceptions of inferiority. A further indication was the lack of drive to study further in the field of RT, where, even if further studies were completed, that is not acknowledged in the workplace. These all indicated a perceived inferior position within the RT team, and may lead to decreased sense of job satisfaction, which in turn, may influence patient care in a negative manner.³⁶ One RO complained that RTTs were not on par with the ROs in terms of change management, and getting to know new improved technological advances in RT. Resistance to change constitutes a method used by some employees to ensure that things stay the same, with a view to maintaining a secure, well-known workplace.⁷⁸ Resistance to change is not always negative, and may

ensure the reliability of a system, however, constant resistance to change can cause frustration, and may be an indication of a negative culture within the system.⁷⁸ It seems that the subordinate perceived position of the RTTs may be an indication of a culture where their significance is not acknowledged, particularly in the case of the treatment machine, where RTTs who seldom collaborate with the RO as data demonstrated that ROs show a bias to collaborate with planning RTTs. RTTs at the machine reported having minimal collaboration with the RO, and when there is a need from the machine RTTs to collaborate with the RO, they often need to resolve to work through an intermediary.

5.3. The dynamic of the interdisciplinary collaboration

The approach to the interprofessional interaction appears to shift, depending on the purpose of the interaction during the radiation therapy process. The initial step in the radiation therapy process involves the RO referring the patients who need RT to the RTTs via means of a written prescription. According to the ICRU, a written prescription is a medico-legal requirement in radiation therapy.⁷⁹ According to the Boon et al. model, this should be a consultative practice, as it is one that is initiated through the medico-legal requisite of the RT prescription.^{23 79} Although a written prescription is provided as per both disciplines, RTTs reported that they often require clarification of this prescription from the ROs, and then prefer face-to-face communication in this consultative collaboration. The ROs indicated that they are in favour of discussing planning objectives in person with the RTTs. Participants from both disciplines indicated that the sharing of clinical knowledge is essential between the two disciplines to facilitate a patient's RT planning. The RTTs reported that this sharing of knowledge was somewhat lacking and indicated that they often find it challenging to acquire the full clinical background of a patient. Both disciplines acknowledged that discussions for clarification of tumour volumes and treatment planning objectives are needed in order to clarify the RO's intent.

ASTRO defines treatment planning as an extensive, intellectual endeavour carried out by the RO and the interdisciplinary team to facilitate a patient's RT.⁴ The RO, functioning from a professional perspective to clinically assess the patient, prescribe treatment, outline volumes, approve plans, and monitor patients on RT by means of a weekly assessments.⁴ The RTT's professional perspective is to respond by performing the CT simulation and formulating treatment plans according to the RO's prescription.^{4, 14} The participants reported that their collaboration for treatment planning is mostly focused on the technical aspects of the treatment planning.

The perceived collaborative efforts of the RTTs and the ROs for treatment planning suggested that RTTs and ROs mostly work independently from one another, although both disciplines indicated the need for knowledge sharing for the optimisation of a patient's RT plan. The dynamic of these interdisciplinary collaborative efforts for planning between the two disciplines is referred to as a parallel practice, according to Boon et al.²³ (see figure 1, page 7)

Machine RTT reported that they had less interaction with ROs than planning RTTs. They generally communicate with the ROs regarding image verification, side effect management and the patient's psycho-social needs during patient treatment delivery.¹⁴ However, these RTTs often do not have direct contact with the RO, and communication often takes place via an intermediary, such as social media or receptionists, where this dynamic is referred to as parallel practice.²³ (see figure 1, page 7)

In order to coordinate health care practice in radiation therapy, standardised, organisational structure, which requires communication and the sharing of patient records for the treatment of a specific disease, proves essential.^{1, 5, 23} Boon describes this as coordinated practice. Both disciplines indicated the need for the sharing of patient clinical records. The RTTs suggested that there was a lack of sufficient clinical information from the ROs about the patients that they were

planning or treating. Surprisingly, certain ROs believed clinical information was not relevant to RTTs. Participants indicated that procedures and protocols were not always standardised in terms of certain issues, such as side effect management, resulting in gaps in shared radiation oncology and radiation therapy knowledge. These factors potentially contribute to poor co-ordinated interdisciplinary practice. Hartman recommends the establishment of quality management teams within the RT team in order to be able to put in place a quality management programme.⁸⁰ This team ought to consist of RTTs, ROs, and MPs, and should continually manage and assess quality improvement, improve departmental efficiency, enhance personal morale and reduce chances of litigation.⁸⁰

Some participants from both disciplines indicated the need for structured professional knowledge sharing through interprofessional meetings or interprofessional continued professional development activities. Chera et al. suggest “morning huddles”, where both disciplines participate in an informal meeting where concerns are raised, tasks to be completed are discussed, and any announcements made.⁸¹ The presence of interdisciplinary meetings between the RO and ON in the private sector, where patient information is discussed, were confirmed by both disciplines. Both disciplines acknowledged the need for the presence of RTTs in these meetings. However, in reality, RTTs are not included in these meetings.

The public sector seems to lean towards the multidisciplinary practice of collaborating professionals involved in the oncological management of patients, in sharing structured professional knowledge. Boon et al., for example, describes the multidisciplinary model consisting of teams governed by a leader, forming a group, who then make joint decisions, and have regular face-to-face meetings.²³ The public sector participants made mention of group decisions being made on difficult cases after face-to face meetings between the radiation oncology and radiation therapy disciplines. Again, these practices seem to be somewhat absent in the

private sector practice. Disconnects in the in-person interactions between the ROs and RTTs during the radiation treatment process and lack of sufficient knowledge sharing results in potentially compromised patient treatments and care.²⁶

5.4. Interdisciplinary collaboration

Boon et al defines the interdisciplinary model when teams start to form a group, making group decisions based on frequent, face-to-face meetings.²³ In a Canadian study in which the reasons for interdisciplinary collaboration with members of the RT team were assessed, RTTs were found to collaborate the most with ROs within the team, and preferred communicating face-to-face.¹³

Frustration is experienced by both disciplines with the lack of face-to-face collaboration, as demonstrated in this study. Reasons for lack of face-to-face collaboration as per the participants were that RTTs and ROs did not practice within the same building, RTTs were not part of interdisciplinary meetings, ROs reported that they were often inundated with consulting duties, and some participants from both disciplines admitted preferring to communicate via an intermediary. ASTRO suggests regular in-person interaction between RT team members to achieve clear, unambiguous communication between team members, and in particular, stated the challenge when team members work in separate buildings.⁴ The use of asynchronous communication³⁷ as a result of the varying locations and multifaceted professional responsibilities, such as RT planning, treatment delivery, consultation, side-effect management, as well as emotional and physical carers, have been well demonstrated within this study.

Numerous strategies have been introduced into radiation therapy practice to ensure collaborative communication. It was reported that communication between the RTT and RO is mediated through electronic media, such as telephone, e-mails, and online messaging platforms, such as WhatsApp. This led to a shift to the use

by ROs of social media communication platforms as a preferred mode of communication⁸² and in some instances, the use of human intermediaries. These may include general practitioners, receptionists, and nursing staff.

The Oncology Information Systems (OIS) has become a mainstream tool allowing for the sharing of information within the interdisciplinary radiation oncology team.⁸³ ROs are now able to approve RT prescriptions, tumour volumes, treatment plans, and image verification remotely. It has been internationally accepted that the RTT and the RO can function as a “geographically dispersed team” through the use of OIS.⁸⁴ The OIS exists to facilitate the running of the RT machine and serves as an electronic medical record shared by ROs, RTTs and MPs.⁸³ The use of OIS has reported disadvantages as it is often not used by all the members of the interdisciplinary RT team.⁸³ The OIS as a communication medium fails if there is not a leader with a clear vision for the RT department to evolve to a paperless system.⁸³

In other instances, the communication is mediated through a third-party such as the ROs secretary, the lead RTT, or other medical doctors assisting in the ROs practice. Therefore, communication between the RO and RTT tends to be mostly asynchronous.⁴³ Regardless of the mode of communication, the final clinical decision lies with the RO.^{4,7} Within this study, the downside of intermediaries were indicated by RTTs when they needed to wait for the RO to reciprocate a request posted on the messaging platform group or communicated with the RO’s receptionist. The result was often a delay in the patient’s treatment, causing diminished patient care. Some ROs indicated the upside of the use of intermediaries in terms of being able to continue with their clinical duties, while being able to receive tasks through an intermediary to which they can attend later in the day when their consultations with patients are completed. RTTs were mindful of this preference on the part of the RO, and acknowledged the advantage of the use of intermediaries, however, a few examples were given by both disciplines where communication through an intermediary failed.

5.5. The interprofessional communication divide

In-person communication presents opportunities to succeed in building trust and agreement around complicated situations and to synchronise each team member's duties.⁸⁴ Both disciplines indicated a grappling with collaborative communication. Some participants indicated their preference for only communicating through an intermediary, while others disclosed their frustration with the misconceptions being created when RTTs and ROs are not meeting face-to-face.

RTTs on the treatment machine see a patient daily, and is in the unique position to be able to assess the psychosocial needs of the patient on a daily basis.⁸⁵ It is expected of an RTT to form a relationship with a patient and provide a sense of emotional ease during RT.⁸⁵ It is therefore difficult for an RTT to experience the suffering of a patient, with whom a relationship was formed. There is an obligation for the RTT to alleviate the situation for the patient with whom they are faced. Due to the fact that RTTs are not able to prescribe medication, the RTT often needs to collaborate with the RO either for advice on the patient's treatment or for a prescription to alleviate the patient's symptoms.⁸⁶ These are the instances in which RTTs seek to speak to the RO, whether on the phone or in person.

It would appear that communication between the RTT and the RO tends to occur in situations where there is a problem such as an emergency plan and verification that needs to be checked by the RO; in the case of the need for a consent document that needs to be discussed with a patient by the RO before RT commences; or when a patient experiences physical distress and needs to see an RO as soon as possible. ROs reported that they feel overwhelmed with the demand that some RTTs place on them to be present in the radiation oncology clinics, in planning, as well as at the treatment unit. One RO complained about the RTTs having unrealistic expectations when requesting volume drawing and plan approvals within minutes, when it can be a longer process than anticipated. The two disciplines may be described as a geographically dispersed team.⁸⁴ This is described as a collection

of individuals working towards the same goal, completing interconnected pieces of work and communicating online, rather than face-to-face.⁸⁴ The asynchronous collaborative efforts between the two disciplines often leads to a delay in the treatment planning issues, and other clinical enquiries eagerly awaited by the patient on RT or the RTT not being aware of a clinical decision made by the RO.

Due to the two disciplines not being able to properly discuss issues that arise during the treatment planning process and planning objectives being “lost in translation” from the RO to the RTT. This frustration experienced by both disciplines reflects what ASTRO referred to as “Rotating between different physical locations and/or equipment, which may exacerbate misunderstandings.”⁴ The fact that ROs are not within close proximity to the RTTs on the treatment machine results in RTTs not being able to discuss urgent clinical matters arising from the RT patient’s side. It often happens that clinical matters regarding a patient, for example treatment breaks due to severe side effects, are not communicated from the RO to the RTT, where RTTs are left to decipher why the patient did not arrive for treatment today. An Asian study explored the possibility of giving RTTs the opportunity to perform weekly assessments on patients undergoing RT.⁸⁶ Although the article stated that RTTs will be able to do weekly assessments with proper training,⁸⁶ it is this type of information that is needed by the RTTs when contacting the RO after consulting the patient on a daily basis.

5.6. Expectations for improved interdisciplinary collaboration

Interprofessional collaboration refers to reciprocal collaboration between a number of professionals from different disciplines working jointly towards the same goal.⁸⁷ High quantities of communication, collective decision-making and shared responsibilities and inputs discern this type of collaboration from parallel practice.^{1, 23, 87} Skyberg and Innvaer describe three forms of logic used to comprehend the dynamic of interdisciplinary collaboration, namely assimilation, segregation, and

integration.⁸⁷ Assimilation refers to the adaptability of each discipline to intertwine professional boundaries in terms of work and perspectives, segregation involves encouraging active boundaries between disciplines, and integration refers to how two disciplines complement and enhance one another.⁸⁷ The dynamic of integration is understood as the rationale for developing interprofessional teams who deal with complicated cases.⁸⁷ Proposed suggestions to maintain integration within an interdisciplinary team are to integrate complicated cases by regular interdisciplinary meetings, where each professional are given the opportunity for contributions and queries, thereby demonstrating mutual trust, respect, communication and effective sharing of knowledge.⁸⁷ Both disciplines were forthcoming with similar solutions to bridge the interprofessional communication divides and the interpersonal divides.

RTTs commented often about the fact that they were unsure of the expectations from the ROs, and ROs commented on their expectations from RTTs not being met. A need was demonstrated for more frequent sharing of clinical information between the two disciplines. The situation presenting itself is one that needs daily or weekly opportunity, where the two disciplines could have regular discussions and touch base on these needs. According to data, multidisciplinary meetings and interdisciplinary meetings are held, but RTTs are mostly excluded from these meetings. As discussed in Chapter Four, some participants emphasised the need for RTTs to be part of these meetings. Consequently, the absence of frequent meetings between the two disciplines was noted to hamper good interdisciplinary collaboration for both disciplines. The attending of frequent meetings will not only increase the closeness of the interdisciplinary team, but ensure the improved patient care.^{4, 81} RTTs expressed the need to be respected as part of the RT team, while the need to engage in research and to attend congresses together was communicated especially by the ROs. One RO complained that RTTs do not stay current with new technology within their field. ASTRO suggested a “lifelong learning

programme” for the interdisciplinary RT team, which could ultimately improve patient care.⁴

RTTs expressed the need to increase their understanding of a patient’s clinical condition, psychosocial needs and improve their understanding of planning objectives while doing RT treatment planning, as well as to improve patient care on the treatment machine as suggested by Chera et al.⁸¹ The OIS is a tool used by all members of the RT team to share clinical information, communicate on treatment matters, and facilitate RT treatment planning and treatment delivery as discussed in section 5.3.⁸³ According to participants, the OIS is not used optimally by all members of the RT team. One RO perceived that clinical information of a patient is not related to RTTs, while the need for RTTs to pay attention to each individual patient’s planning objectives was communicated by another RO. The increased sharing of clinical information would therefore benefit both disciplines. As stated in the literature review chapter, the effective sharing of information between members of the radiation oncology team is essential to mitigate errors in RT.^{4, 25, 33}

Clear policies and procedures within a department was a further need expressed by the two disciplines. These are guidelines regarding the management and treatment of patients within a department, which need to be standardised in order to minimise confusion and possible errors during the course of a patient’s RT.⁴ Some participants identified issues such as side effect management, where standard policies and procedures were not present in the department, and each RO had their own procedure for side effect management, with which the RTT’s were unfamiliar. Interdisciplinary collaboration is proposed by Barazzuol et al. for effective side effect management of patients on RT.⁸⁸

5.7. Conclusion

In reflection of the findings of this study, and contrasted to the “Continuum of team health care practice models”²³, it seems that part of the ROs and RTTs communication fits the parallel practice model. Communication in collaborative practice is apparent but somewhat limited in that this seems to take place once a problem is experienced by either discipline. Coordinated practice occurs to a certain extent but is hampered by the lack of sharing of clinical information with the RTTs. When considering interdisciplinary practice in the truest sense of its definition, this aspect is somewhat lacking. The perceptions of RTTs and ROs towards their interdisciplinary collaboration indicated numerous factors that hindered the collaborative and interdisciplinary practice between the two disciplines.

CHAPTER 6

CONCLUSION

6.1. Introduction

This chapter presents the summary of the main findings as discussed in Chapter Five. It outlines the main findings and their significance to the field of RT. Thereafter, the strengths and weaknesses of the study are unpacked, as well as suggestions for possible further study. Recommendations based on findings of this study are presented for the possible improvement of the current status quo.

6.2. Summary of main findings and recommendations for interdisciplinary collaboration between RTTs and ROs

The HPCSA scope of practice states that the RTT serves to assist the RO¹⁴ and work under their instruction to create the framework for the hierarchical association between the RO and the RTT.¹⁴ From the inductive qualitative analysis of the transcribed interviews, the researcher noticed that RTTs are perceived to be ancillary members of the RT team, emphasising the somewhat hierarchical perceived state of affairs. Consideration needs to be given to the rewording of the RTTs scope of practice to indicate that the association between the RO and the RTT is a collaborative one, thereby moving away from the existing hierarchical notion.

As identified, there is a degree of consultative practice, especially in the area of treatment planning, where there is a sharing of knowledge. In order for this area to be improved, a concerted effort needs to be made by both parties to incorporate routine discussions related to the patients' cases. This consultation could be in

person or via electronic communication platform where the ROs and RTTs get to interact in real time.

The coordinated practice can be improved by the ROs and RTTs finding ways to share the patients' clinical histories. This information sharing can be further reinforced through scheduled patient discussion meetings. This was a recommendation made by the participants of this study in their call for daily or weekly discussions to address the micro-matters in order to improve the care of the current patients on treatment. ASTRO recommends that all members of the interdisciplinary team need to be informed of and have full access to the full clinical background of their patients.⁴ Studies confirm that frequent meetings in radiation therapy not only increase the closeness of the interdisciplinary team, but ensure the improved patient care.^{4, 81}

The current modes of communication via electronic communication platforms, such as e-mails, WhatsApp, and the OIS, must not be lost as these are convenient and effective. However, the use of these modes has been identified as being a source of miscommunication and misinterpretation. The professionals need to consider carefully as how they word their communication when using these platforms, so as to avoid this potential pitfall.

In order to improve the quality of the interdisciplinary collaborative efforts between the RTT and the RO during RT, the establishment of quality management teams is recommended.⁸⁴ Hartmann et al. suggest that a task team existing of representatives from each member of the interdisciplinary team be formed to focus on the quality management of an RT department.⁸⁰ The IAEA also advocates for the formation of total quality management teams in radiation therapy.⁸⁹ It is recognised that the formation of such teams has the outcome of improving personal morale and increasing departmental coherence through the collaborative focus on quality improvement in radiation therapy practice.⁸⁴

6.3. Strengths of the study

This study provides a focused optic of the RTT and RO interdisciplinary dynamic which has not yet been described in the literature. The findings of this study provide unique insights into the Tshwane, Gauteng RTT, and RO interdisciplinary dynamic.

The study highlights the need for the RTTs and ROs to move beyond the framework of their relationship that is defined by their scopes of practice and to focus developing a professional association that is structured along the principles of interdisciplinary collaboration.

An additional strength was obtaining perceptions from both sides of the interdisciplinary collaborative relationship, where studies that were done in the past was often only amongst allied workers or amongst RTTs.

6.4. Limitations of the study

This study was only focused in one city in South Africa. Including more participants from more cities in in South Africa, could provide more insight and descriptive information into the interdisciplinary collaborative relationship between the RTT and the RO. Additionally, including focus group data would enrich the data significantly.

The researcher acknowledges the bias that may exist due to the fact that she (the researcher) is a practising RTT within the field of RT in Tshwane, Gauteng.

Further research to advance the understanding of the interdisciplinary collaboration between the RTTs and ROs in the broader South African setting is needed. This might be done though a quantitative study that compares the interdisciplinary

collaboration against the benchmark recommendations for interdisciplinary collaboration.

6.5. Conclusion

This study aimed to fill a gap within literature regarding the perceptions of RTTs and ROs on their interdisciplinary collaborative efforts when caring for the RT patient. The perceptions from each participant helped bring about a description of an aspect of RT, which was not described before. It further paves the way for improvements and further research that can be brought about for safer and more effective patient care within the field of RT in the Tshwane area.

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8. Addenda

Addendum A: Letter from the editor.

PRO EDIT PTY LTD
PO BOX 23081, CLAREMONT CAPE TOWN 7735

EDITING CERTIFICATE

Date: 2024/04/18

This serves to confirm that the document entitled:

**Perceptions of Radiation Therapists and Radiation Oncologists
towards their interdisciplinary collaboration**

by

MARLENE COETZEE

has been language edited on behalf of its author.

Genevieve Wood
PhD candidate
Wits University

Addendum B: Consent from hospital manager to conduct research on a Netcare premises.



Netcare Unitas Hospital

Tel: +27 (0) 12 677 8000
Fax: +27 (0) 12 664 8225
Clifton Avenue, Lyttelton, Centurion, South Africa
PO Box 15123, Lyttelton, Centurion, 0140, South Africa
www.netcare.co.za

Instructions: Please copy content onto hospital/site/division letter head

LETTER CONFIRMING KNOWLEDGE OF NON-TRIAL RESEARCH TO BE CONDUCTED IN THIS NETCARE FACILITY

Dear Marlene Coetzee (Name of applicant)

Re Perceptions of radiation therapists and radiation oncologists towards their interprofessional collaboration during radiation therapy in Tshwane, South Africa (Title of research)

We hereby confirm knowledge of the above named research application to be made to the Netcare Research Operations Committee and in principle agree to the research application for Netcare Unitas Hospital/site/division, subject to the following:

1. That the data collection may not commence prior to receipt of FINAL APPROVAL from the Netcare Research Operations Committee.
2. A copy of the research report will be provided to the Netcare Research Operations Committee once it is finally approved by the tertiary institution, or once complete.
3. Netcare has the right to implement any recommendations from the research.
4. That the Hospital/Site/Division Management reserves the right to withdraw the approval for research at any time during the process, should the research prove to be detrimental to the subjects / Netcare or should the researcher not comply with the conditions of approval.

We wish you success in your research.

Yours faithfully,

Signed by Hospital/Site/Division Management

08 June 2022
Date

HOSPITAL GENERAL MANAGER

(Specify designation)

Addendum C: Participation invitation letter

Participation invitation letter

Dear Invitee,

My name is Marlene Coetzee. I am a master's student in Radiation Therapy with the University of Pretoria. I am kindly requesting your participation in a master's study I am conducting namely: **Perceptions of Radiation Therapists and Radiation Oncologists towards their interdisciplinary collaboration.**

The intention is to explore the phenomenon of interdisciplinary collaboration between the disciplines of radiation oncologists and radiation therapists as it was, as far as I could determine, not formally described before.

The study will involve semi-structured interviews conducted by myself regarding your perception on the topic and will not take more than 30 minutes of your time.

Your participation will be voluntary, and you will have the option to withdraw at any time. Your identity will be kept anonymous, and no other identifying details will be disclosed.

Your valued participation in this study will form part of a completely new descriptive set of observations regarding the unique interdisciplinary collaboration specifically between the radiation therapist and the radiation oncologist.

If you are willing to support this study and contribute to future enhanced collaboration in radiation therapy, please reply to this e-mail and I will plan for a date and time for our interview at your convenience.

Thank you for your time.

Sincerely,

Marlene Coetzee

Addendum D: Ethics approval



Faculty of Health Sciences

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

- FWA 00002567. Approved dd 18 March 2022 and Expires 18 March 2027.
- IORG #: IORG0001762 OMB No. 0990-0278 Approved for use through August 31, 2023.

Faculty of Health Sciences **Research Ethics Committee**

18 May 2023

Approval Certificate Annual Renewal

Dear Mrs M Coetzee,

Ethics Reference No.: 64/2022 – Line 1

Title: Perceptions of radiation therapists and radiation oncologists towards their interprofessional collaboration in the radiation therapy setting

The **Annual Renewal** as supported by documents received between 2023-04-18 and 2023-05-17 for your research, was approved by the Faculty of Health Sciences Research Ethics Committee on 2023-05-17 as resolved by its quorate meeting.

Please note the following about your ethics approval:

- Renewal of ethics approval is valid for 1 year, subsequent annual renewal will become due on 2024-05-18.
- Please remember to use your protocol number (64/2022) on any documents or correspondence with the Research Ethics Committee regarding your research.
- Please note that the Research Ethics Committee may ask further questions, seek additional information, require further modification, monitor the conduct of your research, or suspend or withdraw ethics approval.

Ethics approval is subject to the following:

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

We wish you the best with your research.

Yours sincerely

On behalf of the FHS REC, Dr R Sommers

MBChB, MMed (Int), MPharmMed, PhD

Deputy Chairperson of the Faculty of Health Sciences Research Ethics Committee, University of Pretoria

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

Research Ethics Committee
Room 4-60, Level 4, Tswelopele Building
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Gezina 0031, South Africa
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Fakulteit Gesondheidswetenskappe
Lefapha la Ditsaense ka Maphelo

Addendum E: Informed consent form

ICD 5

PARTICIPANT'S INFORMATION & INFORMED CONSENT DOCUMENT FOR AN INDIVIDUAL IN-DEPTH INTERVIEW RESEARCH STUDY

Study title: Perceptions of Radiation Therapists and Radiation Oncologists towards their Interprofessional Collaboration in the Radiation Therapy setting.

Principal Investigator: Marlene Coetzee

Supervisor: Germaine Lovric

Co-supervisor: Julius Thambura

Institution: University of Pretoria

DAYTIME AND AFTER-HOURS TELEPHONE NUMBER(S):

Daytime number/s: 0823233682

Afterhours number:0823233682

DATE AND TIME OF FIRST INFORMED CONSENT DISCUSSION:

date	month	year

:
Time

Dear Dr. /Mr. / Mrs.

1) INTRODUCTION

You are invited to volunteer for a research study. I am doing this research for a Master's in Radiography: Radiation Therapy degree purposes at the University of Pretoria. This document gives information about the study to help you decide if you would like to participate. Before you agree to take part in this study, you should fully understand what is involved. If you have any questions, which are not fully explained in this document, do not hesitate to ask the investigator. You should not agree to take part unless you are completely happy about what we will be discussing during the interview.

2) THE NATURE AND PURPOSE OF THIS STUDY

The aim of this study is to explore the interdisciplinary collaboration between the radiation therapist and the radiation oncologist during the process of radiation therapy.

By doing so I wish to learn more about the perceptions of radiation oncologists and radiation therapists with regards to their interdisciplinary collaboration during radiation therapy.

You will be interviewed online by the researcher at a time that is convenient for you.

3) THE PROCEDURES THAT WILL BE FOLLOWED AND WHAT WILL BE EXPECTED FROM YOU, THE PARTICIPANTS

If you agree to participate, you will be asked to participate in an individual interview which will take about 30 minutes. The individual interview will be a one-on-one meeting between the two of us. I will ask you several questions about the research topic. This study involves answering some questions such as your perception on the nature of your experience with the interdisciplinary collaboration between the radiation therapist and radiation oncologist.

With your permission, the interview will be recorded on a recording device to ensure that no information is missed.

4) RISKS AND DISCOMFORTS INVOLVED?

During the interview you may find that some questions are sensitive; for instance, questions about disclosing difficulties you experienced with interdisciplinary collaboration between the radiation oncologist and the radiation therapist.

5) POSSIBLE BENEFITS OF THE STUDY

You will not benefit directly by being part of this study. But your participation is important for us to better understand the interdisciplinary collaboration specifically between the radiation therapist and radiation oncologist.

This study aims to shed light on the unique interdisciplinary collaborative relationship between the RTT and the RO during the process of RT in the setting of Tshwane, Gauteng, South Africa.

6) COMPENSATION

You will not be paid to take part in the study. There are no costs involved for you to be part of the study.

7) VOLUNTARY PARTICIPATION

The decision to take part in the study is yours and yours alone. You do not have to take part if you do not want to. You can also stop at any time during the interview without giving a reason. If you refuse to take part in the study, this will not affect you in any way. You will still receive standard care and treatment for your illness.

8) ETHICAL APPROVAL

This study was submitted to the Research Ethics Committee of the Faculty of Health Sciences at the University of Pretoria, Medical Campus, Tswelopele Building, Level 4-59, telephone numbers 012 356 3084 / 012 356 3085 and written approval has been given by that committee. The study will follow the Declaration of Helsinki (last update: October 2013), which guides doctors on how to do research in people. The researcher can give you a copy of the Declaration if you wish to read it.

9) INFORMATION ON WHO TO CONTACT

If you have any questions about this study, you should contact my research supervisors:

Mrs. G. Lovric – gmathurine@up.ac.za or

Mr. J. Thambura – Julius.thambura@up.ac.za:

10) CONFIDENTIALITY

We will not record your name anywhere and no one will be able to connect you to the answers you give. Your answers will be linked to a fictitious code number, or a pseudonym (another name) and we will refer to you in this way in the data, any publication, report or other research output.

All records from this study will be regarded as confidential. Results will be published in medical journals or presented at conferences in such a way that it will not be possible for people to know that you were part of the study.

The records from your participation may be reviewed by people responsible for making sure that research is done properly, including members of the Research Ethics Committee. All these people are required to keep your identity confidential. Otherwise, records that identify you will be available only to people working on the study, unless you give permission for other people to see the records.

All hard copy information will be kept in a locked facility at the Department of Radiography at the University of Pretoria, for a minimum of 5 years and only the research team will have access to this information.

11) CONSENT TO PARTICIPATE IN THIS STUDY

- I confirm that the person requesting my consent to take part in this study has told me about the nature and process, any risks or discomforts, and the benefits of the study.
- I have also received, read and understood the above written information about the study.
- I have had adequate time to ask questions and I have no objections to participate in this study.

- I am aware that the information obtained in the study, including personal details, will be anonymously processed and presented in the reporting of results.
- I understand that I will not be penalized in any way should I wish to stop taking part in the study and my withdrawal will not affect my treatment and care.
- I am participating willingly.
- I have received a signed copy of this informed consent agreement.

Participant's name (Please print)

Date

Participant's signature

Date

Researcher's name (Please print)

Date

Researcher's signature

Date

I understand that the interviews will be audio taped. I give consent that it may be audio taped.

YES / NO

Addendum F: Interview guide.

Interviews will be audio recorded using the recording application on MS Teams.

Date: Time:

Research code: Participant Name:

Radiation Oncologist / Radiation Therapist

Department GOVERNMENT or PRIVATE PRACTICE

Place of Interview:

Years of Experience in Radiation Oncology or Radiation Therapy:

Before each interview:

- Check that the computer recording device is on and operational.
- Thank the participant for agreeing to participate.
- Verbally discuss signed consent.
- Briefly discuss the research question.
- Check that recording has started.

Interview Questions:

The researcher will be using the three-phase interview as suggested by Fox.⁴⁸

Phase 1: Background.

Please can you tell me a bit about your professional journey of how you have come to be where you are in your profession at the moment?

Phase 2: Detail of perceptions

The radiation oncologist and the radiation therapist in radiation oncology and radiation therapy are two important role players in the radiation therapy setting.

1. Please can you share with me of what is your philosophy / beliefs of what the professional collaboration between the radiation oncologist and radiation therapist should be like?
2. Please can you describe for me what takes place in your daily working engagement between the radiation oncologist / or radiation therapists.
3. Please can you share your thoughts and feelings of how you experience your professional collaboration between the radiation oncologist and radiation therapist?

Phase 3: Prompt questions.

Prompt questions will be used by the researcher when an answer is not elaborative.

Most frequently asked prompt questions:

1. Are there anything else that you would like to see in in your ideal professional collaboration between the two disciplines?
2. Any other experiences you can think of?

Duration of the interview:minutes

Addendum G: Scope of practice of medicine

STAATSKOERANT, 19 OKTOBER 2007

No. 30374 3

GOVERNMENT NOTICES

DEPARTMENT OF HEALTH

No. R. 968

19 October 2007

HEALTH PROFESSIONS COUNCIL OF SOUTH AFRICA

REGULATIONS DEFINING THE SCOPE OF THE PROFESSION OF MEDICINE

The Minister of Health intends, in terms of section 33(1), read together with section 61(2) of the Health Professions Act, 1974 (Act No. 56 of 1974), and on the recommendation of the Health Professions Council of South Africa, to make the regulations in the Schedule.

Interested persons are invited to submit any substantiated comments or representations on the proposed regulations to the Director-General: Health, Private Bag X828, Pretoria, 0001 (for the attention of the Director: Human Resource Stakeholder Relations and Management), within one month of the date of publication of this notice.

SCHEDULE

Definitions

1. In these regulations "the Act" shall mean the Health Professions Act, 1974 (Act No. 56 of 1974), and any expression to which a meaning has been assigned in the Act shall bear such meaning, and, unless inconsistent with the context -

"**board**" means the Medical and Dental Professions Board established in terms of section 15(1) of the Act;

"**medicine**" means the profession of a person registered as a medical practitioner or an intern in medicine in terms of the Act;

"**section**" means a section of the Act.

Scope of the profession

2. The following acts are hereby specified by the board under section 33 as acts, which, for the purposes of the Act, shall be deemed to be acts pertaining to the medical profession:

- (1) The physical examination of any person;
- (2) Performance of procedures and/or the prescribing of medicines and managing the health of a patient (prevention, treatment and rehabilitation);
- (3) Advising any person on his or her physical state;
- (4) On the ground of information provided by any person or obtained from him or her in any manner whatsoever –
 - (a) diagnosing such person's physical state;
 - (b) advising such person on his or her physical state;
 - (c) administering, selling or prescribing for such person any medicine or treatment;
- (5) Prescribing, administering or providing any medicine, substance or thing; or
- (6) Any other act specially pertaining to the medical profession based on the education and training of medical practitioners as approved by the board from time to time.

3. The provisions of regulation 2 shall not be construed as prohibiting the performance of the acts specified therein by

- (a) any person registered under any legislation regulating health care providers from performing such acts in accordance with the provisions of such legislation;
- (b) an intern working at an institution recognized by the council from performing any function or issuing any certificate or other document which in terms of any law, other than this Act, may be or is required to be performed or issued by a medical practitioner, whether described in such law as a medical practitioner or by any other name or designation, or describing himself or herself as a medical practitioner in connection with the performance of any such function or the issuing of any such certificate or document;
- (c) a student intern under the supervision of a medical practitioner in the course of his or her training;
- (d) a dentist in the course of performing any act falling within the scope of dentistry or from using any name, title, description or symbol normally associated with his or her profession; or

- (e) any person in the course of bona fide research at any institution approved for that purpose by the Minister.

Registration a prerequisite to practice

4. Any person who wishes to perform any of the acts prescribed in regulation 2 shall apply in the prescribed manner to the board for registration as a medical practitioner and submit proof of having complied with the prescribed requirements for such registration.


MINISTER OF HEALTH

Addendum H: Scope of practice for radiographers.

HEALTH PROFESSIONS ACT 56 OF 1974

REGULATIONS DEFINING THE SCOPE OF THE PROFESSION OF RADIOGRAPHY

Published under Government Notice R2326 in *Government Gazette* 5349 of 3 December 1976 and amended by”

GN R820	RG 2779	20/4/79
GN R2556	GG 13588	25/10/91
GN R1018	GG 18170	1/8/97

The Minister of Health, on the recommendation of the South African Medical and Dental Council, hereby makes the following regulations in terms of [section 33](#) (1) of the Medical, Dental and Supplementary Health Service Professions Act, 1974 (Act 56 of 1974):

The following acts are hereby specified as acts which shall for the purposes of the Act be deemed to be acts pertaining to the profession of radiography.

1. DIAGNOSTIC

- (1) *Imaging* - by which is understood the production and recording of images of anatomical regions and physiological functions by means of radiation media and other non-ionising modalities for diagnostic purposes.
[Subreg. (1) amended by GN R1018/97]

The following diagnostic procedures are considered as falling in this category:

- (a) *X-rays* - i.e. all diagnostic X-ray procedures performed at the request of a registered medical practitioner or dentist.
[Para. (a) amended by GN R1018/97]
- (b)
[Para. (b) deleted by GN R2556/91]
- (c) *Ultrasonic radiation* - i.e. all ultrasonic imaging procedures performed at the request of a medical practitioner.
- (d) *Heat waves* - i.e. all the thermographic imaging procedures performed at the request of a medical practitioner.
- (e) *Magnetic resonance imaging* - performed at the request of a registered medical practitioner or dentist.
[Para. (e) inserted by GN R1018/97]
- (2) *Radiation protection* - by which is understood the application of radiation protection measures to patients, staff and general public in accordance with rules and

recommendations laid down by the International Committee for Radiological Protection and the Department of Health.

[Subreg. (2) amended by GN R1018/97]

- (3) *Medicine control* - by which is understood assistance to a radiologist or medical practitioner in the control and administration of contrast media or medicines as required for such diagnostic procedures.
- (4) *Patient care* - by which is understood all aspects of patient care associated with the practice of radiography.
[Subreg. (4) amended by GN R1018/97]
- (5) *Use of equipment* - by which is understood the use and care of such equipment and accessories as may be required to carry out these diagnostic procedures.
- (6) *Quality assurance* - by which is understood assistance with the quality control of equipment, accessories and procedures associated with the practice of radiography.
[Subreg. (6) inserted by GN R1018/97]
- (7) *Design of imaging departments and imaging installations* - by which is understood assistance in the planning and design of imaging departments and installations.
[Subreg. (7) inserted by GN R1018/97]

2. THERAPEUTIC

- (1) *Administration of treatment.*

To administer treatment to patients accurately using ionizing radiation, according to the prescription of the radiotherapist.

- (2) *Care of patients.*

- (a) To assist the radiotherapist or medical practitioner in medical procedures associated with the practice of radiotherapy and to have at hand all such medicines and equipment as are prescribed by the radiotherapist or medical practitioner,
- (b) To care for the patient during localisation, planning and therapeutic procedures; to note any adverse change in the patient's condition and to report this to the radiotherapist or medical practitioner immediately; to advise and instruct the patient regarding skin care, diet and general health, in accordance with the instructions of the radiotherapist or medical practitioner.

- (3) *Localisation of tumours and treatment planning.*

To assist the radiotherapist in procedures for the localisation of tumours and surrounding tissues; to carry out planning of patient treatments under the direction of the radiotherapist.

(4) *Therapeutic radioactive isotopes.*

To assist in the storage, handling and administration of therapeutic radioactive isotopes (sealed and unsealed), under the direction of the radiotherapist.

(5) *Radiation protection.*

To ensure that the relevant sections of the National Code of Practice governing the Medical Uses of Ionizing Radiation are observed.

(6) *Equipment.*

- (a) To ensure to the best of his/her knowledge that equipment in his/her care is in good mechanical order and to report any suspected malfunction to the holder of the licence or his/her deputy.
- (b) To put forward suggestions regarding modifications and additions to existing equipment, the purchase, design or construction of new equipment, and the design or construction of new equipment, and the design and lay-out of new or altered premises.

(7) *Keeping of patients' records.*

To keep accurate records of procedures and treatments for the purpose of medical, statistical and legal requirements.

(8) *Other uses of ionizing radiation.*

To utilise ionizing radiation for irradiating any material for clinical or research purposes, under the direction of the radiotherapist.

(9) *Quality assurance.*

To assist with quality control of accessories, techniques and procedures associated with the practice of radiotherapy, and to assist medical physicists in the quality control of equipment associated with the practice of radiotherapy.

[Subreg. (9) inserted by GN R1018/97]

NUCLEAR MEDICINE

- (1) *Imaging* - By which is understood the production and recording of images of anatomical regions physiological functions by means of radiation media for diagnostic purposes.

The following diagnostic procedures are considered to fall into this category:

- (a) *Gamma rays* - i.e. all radionuclide imaging procedures performed at the request of a medical practitioner and carried out under the supervision of the holder of the authority or a local committee authorised by the Atomic Energy Board to use radionuclides in medical practice.
 - (b) *Ultrasonic radiation* - ie. diagnostic ultrasound procedures in so far as they are necessary to complement item (a) above.
 - (c) *Infra-red radiation* - ie. thermographic procedures in so far as they are necessary to complement item (a) above.
- (2) *Non-imaging procedures* - By which is understood all *in vitro* and *in vivo* techniques which are used for the elucidation of physiological functions or biochemical processes by means of radionuclides and which are not included in category (1).

In this instance, radionuclides include both gamma and beta emitters.

- (3) *Radiation protection* - By which is understood the application of radiation protection measures to patients, staff and the general public in accordance with the rules and recommendations laid down by the International Committee for Radiological Protection and the Department of Health.
[Subreg. (3) amended by GN R1018/97]
- (4) *Medicine control* - By which is understood assistance to medical practitioners in possession of a licence (authority) for the medical use of radionuclides in the control and administration of radionuclides, contrast media or medicines as required for the procedures of nuclear medicine.
- (5) *Patient care* - By which is understood assistance to a medical practitioner in medical procedures associated with the practice of nuclear medicine.
- (6) *Use of equipment* - By which is understood the use and care of such equipment and accessories as may be required to carry out these diagnostic procedures.
- (7) *Therapeutic radioactive nuclides* - To assist in the storage, handling and administration of therapeutic nuclides (sealed and unsealed), under the direction of the radiotherapist.
- (8) *Other uses of ionising radiation* - To utilise ionising radiation from the above sources for irradiating any material for clinical or research purposes under the direction of the holder of the authority or a local committee authorised by the Department of Health to use radionuclides in medical practice.
[Subreg. (8) amended by GN R1018/97]
- (9) *Quality assurance* - by which is understood assistance with quality control of accessories, techniques and procedures associated with the practice of nuclear

medicine and assisting medical physicists in the quality control of equipment associated with the practice of nuclear medicine.

[Subreg. (9) inserted by GN R1018/97]

[Reg. 3 added by GN R820/79]

4. **ULTRASOUND**

- (1) *Imaging* - by which is understood all ultrasound procedures for the production and recording of images of anatomical regions and physiological functions by means of ultrasound for diagnostic purposes.
- (2) *Patient care* - by which is understood assistance in ultrasound procedures associated with the practice of ultrasound.
- (3) *Medical control* - by which is understood assistance to a medical practitioner in the control and administration of pharmacological solutions as required for ultrasound procedures.
- (4) *Use of equipment* - by which is understood the use and care of such equipment and accessories as may be required to carry out ultrasound procedures.
- (5) *Keeping of patients' records* - by which is understood the keeping of accurate records or recorded data for the purpose of medical, statistical and legal requirements.
- (6) *Quality assurance* - by which is understood assistance with quality control of accessories, techniques and procedures associated with the practice of ultrasound.

[Reg. 4 inserted by GN R1018/97]

Addendum I: Plagiarism document

ANNEXURE B – Declaration of originality

DECLARATION OF ORIGINALITY

UNIVERSITY OF PRETORIA

Health Sciences: Radiography

The Department of places great emphasis upon integrity and ethical conduct in the preparation of all written work submitted for academic evaluation.

Academics teach you about referencing techniques and how to avoid plagiarism; it is your responsibility to act on this knowledge. If you are at any stage uncertain as to what is required, you should speak to your lecturer before any written work is submitted.

You are guilty of plagiarism if you copy something from another author's work (e.g. a book, an article or a website) without acknowledging the source and pass it off as your own. In effect you are stealing something that belongs to someone else. This is not only the case when you copy work word-for-word (verbatim) but also when you submit someone else's work in a slightly altered form (paraphrase) or use a line of argument without acknowledging it.

Students who commit plagiarism will not be given any credit for plagiarised work. The matter may also be referred to the Disciplinary Committee (Students) for a ruling. Plagiarism is regarded as a serious contravention of the University's rules and can lead to expulsion from the University.

The declaration which follows must accompany all written work submitted while you are a student of the Department of
Radiography..... No written work will be accepted unless the declaration has been completed and submitted.

Full names and surname of student: **Marlene Coetzee**.....

Student number: **20038080**.....

Topic of work: **Perceptions of Radiation Therapists and Radiation Oncologists towards their Interprofessional Collaboration in the Radiation Therapy setting**.....

Declaration

1. I understand what plagiarism is and am aware of the University's policy in this regard.
2. I declare that this **dissertation**..... (e.g. essay, report, project, assignment, dissertation, thesis, etc) is my own original work. Where other people's work has been used (either from a printed source, Internet or any other source), this has been properly acknowledged and referenced in accordance with departmental requirements.


SIGNATURE

30.10.2021
DATE