The Nature of Interprofessional Collaboration between Radiation Therapists and Radiation Oncologists in The South African Setting

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ABSTRACT: This study aims to explore the nature of interprofessional collaboration between radiation therapists (RTTs) and radiation oncologists (ROs) during radiation therapy (RT), with the shared goal of treating patients with radiation. Generally, there seems to be a lack of studies describing the nature of interprofessional collaboration between RTTs and ROs. The present study adopts an exploratory descriptive qualitative research design. The setting is the private and public RT departments situated in the Tshwane municipal area, Gauteng, South Africa. A variation is noted between the Health Professions Council of South Africa (HPCSA) scope of practice for RTTs, published in 1979, and the new scope circulated for comment in 2021. Practising RTTs and ROs have been invited to take part in semi-structured interviews by using expert purposive sampling. Ten radiation therapists and seven radiation oncologists were interviewed, and data analysis included content and thematic analysis. Two main themes emerging from the data were the dual purpose of collaborative communication and grappling with the collaborative communication divide. The findings indicate team structure issues, the fact that the two disciplines mostly work in separate locations, and the status of current communication being dominated by intermediaries are perceived by the participants to hinder collaborative communication between the two professional groups.

KEYWORDS: interprofessional collaboration, radiation oncologists, radiation therapists, radiation therapy, radiation

Introduction

The principles underpinning the practice of interprofessional collaboration are a familiar concept in the field of radiation oncology (Valentini et al., 2020). It has been identified that the predominant collaboration within the interprofessional radiation therapy team is between radiation oncologists (ROs) and radiation therapists (RTTs) (Lam et al., 2015). In the South African context, the Health Professions Council of South Africa's (HPCSA's) scope of practice for RTTs (HPCSA, 1979), 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. This scope implies a hierarchal relationship dynamic between the RTT and the RO, and that the RTT has to comply with the authority of the RO with respect to patient care.

In the newly promulgated 2021 scope of practice, the RTT's role is described as practising as an independent health care worker, working in close collaboration with various members of the oncology team (HPCSA, 2021). This is a shift in the wording in the 1979 scope of practice, where the wording includes assisting, reporting to, and acting in accordance with instructions from the RO. Although some South African Radiation Oncology centres purport that ROs and RTTs work in a close and interprofessional way to ensure the best possible treatment for the patient (IconSA, 2021; Lifehealthcare, 2021; Netcare, 2021), we have attempted to determine whether there was a transition from the hierachical model, as implied in the 1979 scope of RTT practice, and the new scope of practice introduced in 2021. Subsequently, our aim has been to explore and uncover the nature of the usual and expected characteristics of the interprofessional collaboration between RTTs and ROs in the South African setting (Cambridge Dictionary, 2024). A review of relevant literature, followed by a description of the data collection using semi-structured interviews with the RTTs and ROs on their interprofessional collaboration, as well as the analytical approach used, will be explained in this article. Selective extracts from the participants' interviews representing themes and subthemes are then presented. The Discussion section consolidates the themes and subthemes demonstrating the nature of the current interprofessional collaboration between the two disciplines.

Literature Review

Collaboration is a broad term that is commonly used when considering research, clinical practice, and health professions education (Green and Johnson, 2015). Interprofessional collaboration in clinical health care practice is mutlifacted and includes shared responsibilities, decision-making, health care philosophy, values, planning, and interventions (D'amour et al., 2005). Relational, procedural, organisationational, and contextual factors broadly influence the quality of the particular interprofessional collaboration for the purpose of patient-centred health care (Reeves et al., 2017). Key characteristics such as collegial relationships, open and honest communication, mutual trust and respect, and common goals are foundational to interprofessional collaborative relations between team members (Sangaleti et al., 2017).

The American Society of Radiation Oncology (ASTRO) presents a model for interprofessional collaboration in radiation oncology within the framework for quality radiation therapy (RT) care (ASTRO, 2019). In order to orchestrate a number of clinical and technical activities in the field of radiation therapy, it is important that effective collaboration and clear communication is maintained in the RT team (Morley and Cashell, 2017). The RO and the RTT are responsible for the patient throughout the stages of the radiation treatment planning and treatment-delivery processes. Due to the overlap of RTT and RO responsibilities, interprofessional collaboration between the two disciplines is critical to the quality of holistic patient care (ASTRO, 2019). It is suggested that these team members work together in a non-authoritative manner toward a common goal (Morley and Cashell, 2017).

In a review of empirical studies undertaken on interprofessional collaboration in radiation oncology and RT processes. Research conducted in Ghana surveyed the modes of communication within a multidisciplinary radiation oncology team. It was reported that face-to-face communication was the dominant mode, followed by written communication, while the Digital Imaging and Communications in Medicine-mediated Oncology Information System (OIS) was the least used (Keyi et al., 2015). In contrast, a survey conducted in British Columbia revealed that the predominant mode of communication between RTTs and ROs regarding radiation therapy-related tasks was via the OIS (Lam et al., 2015). The main reasons for RTT collaboration with ROs were for matters related to questions that the patients had raised with them, what resolution needed to be found, and where treatment changes needed to be made (Lam et al., 2015). A further study conducted by Kyei in Ghana focused on RTTs' and ROs' perspectives on RTTs collaborating on pain management of patients receiving RT, where ROs were in support of RTTs monitoring and referring patients to them for pain management (Kyei, 2011). Mention was also made in this study that collaboration on practical RT planning and delivery tasks, as well as patient care, was unavoidably hampered due to RO workloads (Kyei, 2011).

Intense interprofessional collaboration accounts for increased job satisfaction and increased quality of care, as discovered in a study conducted in Central America and the Caribbean (Greatz et al., 2023). A cross-sectional survey reported on clinical experiences with interdisciplinary pediatric cancer care in low- and middle-income countries. The survey also assessed the day-to-day communication practices of interdisciplinary team members. Participants included nurses, members from medical subspecialities, oncologists, psychosocial care providers, surgeons, pathologists, radiologists, and ROs. The oncologists reported daily communication with nurses, with a representative percentage of 95%. The nurses, however, reported less communication with the oncologists, at 66%, indicating a difference in perception of interdisciplinary communication (Greatz et al., 2023).

Emerging from a qualitative study conducted in Chicago, USA, were views of the ROs, ONs, RTTs, MPs, radiation dosimetrists, and medical students on their interdisciplinary communication in radiation oncology. These professionals suggested interprofessional education opportunities as a means to improve interdisciplinary collaboration (Schultz et al., 2021). A survey conducted in Toronto, Canada, reported overwhelming support from ROs, RTTs, MPs, and ONs for interdisciplinary collaboration and interprofessional education in radiation oncology (Koo et al., 2014).

No studies could be located that focused on the nature of the distinctive interprofessional collaboration between RTTs and ROs.

Data and Methods

Data for the present study was collected through semi-structured interviews to gain the perspectives of RTTs and ROs regarding their interprofessional collaboration when delivering RT services in a region in Gauteng, South Africa. Purposive sampling was used to select the participants (Etikan et al., 2016).

Ethics approval was obtained from the Research Ethics committee at the Facullty of Health Sciences, University of Pretoria, for this exploratory descriptive qualitative study to be conducted.

Recruitment and interviews were conducted by the primary author of this article, who is an RTT with 15

Code	Gender	Years of experience	Public/private institution	Duration of interview (min)	Type of interview
RTT 1	Female	2.5	Private 1	28.17	WhatsApp call
RTT 2	Female	8	Private 2	16.14	WhatsApp video call
RTT 3	Female	3.5	Private 3	16.54	Face-to-face
RTT 4	Female	11	Private 3	28.07	WhatsApp call
RTT 5	Female	13	Private 3	16.04	Face-to-face
RTT 6	Male	10	Private 1	20.27	Face-to-face
RTT 7	Female	10	Private 1	15.21	Face-to-face
RTT 8	Female	14	Public	16.10	Face-to-face
RTT 9	Female	15	Private 1	13.16	Face-to-face
RTT 10	Female	10	Public	39	Face-to-face

Table 1: Radiation Therapist Participants

Code	Gender	Years of experience	Public/private institution	Duration of interview (min)	Type of interview
RO 1	Female	2.5	Public	15.17	WhatsApp video call
RO 2	Female	2	Private 3	17.59	WhatsApp call
RO 3	Female	9	Private 2	14.05	Face-to-face
RO 4	Female	12	Private 1 and public	23.34	Face-to-face
RO 5	Male	1	Private 1 and 3	16.03	Face-to-face
RO 6	Female	7	Public	13.79	Face-to-face
RO 7	Female	11	Private 1 and 3	17.38	Face-to-face

Table 2: Radiation Oncologist Participants

years' experience in private and public radiation therapy departments in the Gauteng province of South Africa. This experience enabled the researcher to understand the selected research landscape to navigate access to RT departments. Permission was granted by one public and three private radiation therapy departments to address groups of RTTs and ROs. The purpose of the research was explained and an invitation to participate in the study was made. RTTs and ROs who verbally volunteered to participate provided the researcher with e-mail addresses. These RTTs and ROs were e-mailed with research information and interview appointments were scheduled with those who positively responded to the e-mails.

The interviews were conducted face-to-face or on the WhatsApp Messenger internet platform using the video call option, dependent on participant preference, and at a time convenient to them. Informed consent was obtained prior to commencement of the interview, where the prospective participant signed the form in the presence of the interviewer or electronically using the Adobe online signature tool. Ten RTTs and seven ROs were interviewed. Each participant's personal details, place of work, and name were kept anonymous throughout the study. Tables 1 and 2 provide details of participant demographics.

The open-ended questions posed during the interviews had three main focuses, as proposed by Fox (Fox, 2006): (i) what the participants thought the idea for interprofessional collaboration between the RT and the RO should be; (ii) a description of the current interprofessional collaboration that takes place; and (iii) how they experienced their interprofessional collaboration as well as their opinions and feelings thereof. Each interview was recorded using the voice recording application on an Apple iPhone. All interviews were transcribed verbatim by the company "Way with Words". The average length of each interview was 20 min. The researcher replayed the recordings to both verify the accuracy of the transcriptions and to begin familiarization with and immersion in the interview content that was required for qualitative data analysis (Braun and Clarke, 2006).

Analytical Framework

The Atlas Ti version 23 software program was used to manage analysis of the transcriptions. Braun and Clarke's (2006) practical six-phase approach to thematic analysis was followed to thematize the data. In the first cycle of analysis, initial codes were generated while making analytical memos (Saldaña 2009). In the second cycle of analysis, categories were developed, from which themes were developed through inductive analysis. Step 3 involved refinement of the codes, categories, and themes, while going back and forth between the identified codes, categories, and themes. These were presented to the supervisor in step 4, and regular discussions between the

researcher and the supervisor improved designation of the codes to the categories and themes until consensus was reached. Step 5 involved finalization of the themes with the generation of the definitions for each theme. The Atlas.Ti program also facilitated linking of participants' quotes to the codes that were embedded in the categories and the subsequent themes. The quotes could easily be referenced to the participants when exemplars were used in step 6 to support the categories within the subthemes and the overarching themes.

The researcher ensured rigour by accepting that each participant experienced their own reality as the truth and demonstrated these multiple subjective realities as close as possible to what was meant by each participant (Guba, 1981). In order to create a reliable study, credibility and reliability was ensured by data triangulation (Noble and Heale, 2019). By comparing the perceptions from both disciplines on their interprofessional collaboration, the researcher produced two sets of data that described the interprofessional collaborative relationship from two viewpoints (Noble and Heale, 2019).

Data Analysis

Two themes emerged from the inductive analysis of RO and RTT reflections on their interprofessional collaborations experiences, namely, (i) "the dual purpose of collaborative communication" and (ii) "grappling with the reality of the collaborative communication dyadic."

The Dual Purpose of Collaborative Communication

The participants saw communication for their collaboration as falling into two categories, i.e., the communication that takes place during the radiation treatment process and the communication during structured professional knowledge sharing in interprofessional meetings, conferences, collaborative research.

Collaboration in The Radiation Treatment Process

Both RTTs and ROs recognized that the patient is at the core of the RT process, and by extension their own collaboration, where they work collectively toward the patient's physical and mental well-being. This core value was acknowledged by RTT 1 and RO 1:

1. "*The patient should always be the centre focus of the treatment.*" (RTT 1)
2. *"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."* (RO 1)

The RO initializes the RT process by communicating the patient's prescriptions with the RTT. Discussions tend to be held between RTTs and ROs on the specifics of intended patient treatment planning when patient cases are complicated or unusual. RTT 6 indicated:

3. *"So, the doctor would generally chat to us about what area we're treating. What prescription, what radiation dose they're giving. We do have some patients where we must discuss positioning of the patient with the doctor before we scan. Because it may, may be treating in an awkward area."* (RTT 6)

The ROs acknowledged close collaboration with RTTs during the dosimetric treatment planning process, and were somewhat reliant on the RTTs' expertise:

4. *"So, every day I will closely work with the radiotherapist 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."* (RO 1)

They reflected that more collaboration takes place between them during the treatment planning phase of RT than during the treatment phase of RT. Challenges are often encountered by the RTTs in the treatment units regarding accessing ROs when they need to discuss a patient's case. Direct contact with the RO often needs to occur through an intermediary. This involves either a general practitioner, the RO's receptionist, or social media:

5. *"So, we actually collaborate more with the GPs than we do with oncologist while we're working on machine. Of course, if you're in planning you will collaborate more with oncologists."* (RTT 5)

The interprofessional collaboration between ROs and RTTs regarding patient treatment delivery tends to occur when the RTTs have specific concerns regarding the condition of the patient who is receiving radiation treatment. RTT 1 explained how this role as patient advocate with the RO is fulfilled where it is shared:

6. *"Please evaluate the patient. If there are any side effects that the patient experiences and that you feel is abnormal, you will contact the doctor and say that you are worried about patient, can you please evaluate the patient?"* (RTT 1 addressing the RO).

ROs acknowledged that RTTs collaborate with them on this level when they contact the RTTs asking for advice when a patient is not doing well:

7. *"If they need advice on a patient or if someone has a problem, they will contact me and ask me for*

advice, and maybe make an appointment for the patient to see me." (RO 3)

Such collaboration takes place in a milieu where the ROs and the RTTs mostly work in separate locations or in different parts of the same building, making routine face-to-face collaboration impractical. Attempts are made to overcome these "time" and "space" factors through trying to reach out to each other via a messaging electronic platform or telephonically:

8. *"So, we mostly use, especially in private practice, we mostly use WhatsApp messages, or you would phone that doctor."* (RTT 1)

In some instances, WhatsApp groups are created for particular communication. RTT 4 explained:

9. *"We have a WhatsApp group where the radiation therapist and radiation oncologists are on. We only discuss planning matters on that group."*

This group communication is perceived by the RTTs and the ROs to be convenient as it allows the ROs to perform their collaborative functions at a distance. This opinion was confirmed by RO 6, who said:

10. *"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. As opposed to having to dedicate time to go to planning. But I do feel some things get lost in translation."* (RO 6)

This remote form of communication causes frustrations as there is an expectation of an immediate response. RO 7 was particularly vocal on this matter:

11. *"So, they (the RRTs) want volumes, and they want something to be approved. So, yes, it's nice going remote, but it's also frustrating and because they have an expectation that we (the ROs) are remote, and we need to approve their claims immediately."* (RO 7)

The RO's ability to perform radiation therapy-related tasks remotely is facilitated by the OIS. Online-mediated communication results in the parties never meeting face to face which may lead to misunderstandings. RTT 1 explained their experience:

12. *"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 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."* (RTT 1)

Immediacy of communication has been shown to occur when the two disciplines are located in the same area:

13. *"So, they (the RTTs) will phone me. Phone me or maybe talk to me in the passage. Or come to my office."* (RO 3)

However, some ROs complained about the demands for having to respond immediately to electronic communication:

14. *"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."* (RO 6)

Collaboration in Sharing Knowledge and Skills

The need for formal professional knoweledge and skill-sharing platforms in the form of interprofessional meetings, seminars and congress attendance has been identified. RTTs reported that they feel excluded from interprofessional collaborations that the ROs have with other health care professionals. This is evident in the following quote by RTT 4, where seemingly there have been scheduled meetings between the ROs and RTTs in a particular practice that had ceased, but the ROs continued to collaborate with others in the interprofessional and multidisciplinary team:

15. *"So, something they always did in the past was to have weekly meetings with the radiation oncologist and the radiation therapist. I think it's also because 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 Private Hospital 3, so we are not always included in that meeting."* (RTT 4)

In contrast, in the public sector, these meetings are facilitated by the head of department:

16. "*Then once a week or twice a week, the, a group of doctors and the radiotherapists and the physicists get together and they look through difficult plans to discuss."* (RO 4)

There appears to be a lack of RTT understanding of the medical-driven perspective of the RO:

17. *"And I found that on the physicists' and the radiotherapists' side, they were not on par. So, I wanted to do something, and they didn't even understand what I was trying to ask."* (RO 4)

RTTs are of the opinion that ROs lack understanding of the technical-driven perspective of the RTT in radiation planning and delivery:

18. *"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."* (RTT 3)

The lack of sharing of patients' clinical information by the ROs with the RTTs can create dissatisfaction. RTT 8 stated:

19. *"It's, it's very easy 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. In the ideal world it would be where we know exactly which date a patient is going for chemo. What the doctor's decision was when they consulted the patient the previous day, whereas we don't have privy on the doctor's notes."* (RTT 8)

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

20. *"Sometimes the clinical isn't related to the therapist."* (RO 2)

This apparent lack of appreciation for the other's role and the unmet expectations appeared to create a divide.

Grappling with the Reality of The Collaborative Communication Dyadic

In an environment where there are gaps in interprofessional collaboration regarding patient matters and the sharing of knoweledge and skills, professionals attempt to find reasons why their collaboration is somewhat thwarted. A number of perceptions were shared.

Professionals spoke about the structure of their collaborative association as being hierachial. RO 2 states:

21. *"I also think that in the private sector, sometimes, there's this hierarchical kind of thing where oncologist has the final whatever."* (RO 2)

RTT 6 attempted to explain further:

22. *"You do get doctors that are always going to be on that level where you have the superiority. And it hinders the collaboration between the therapist and the doctor."*

However, more than one RO based in the public sector expressed displeasure that RTTs tend to usurp the RO's decision-making role:

23. *"But then at the same time I sometimes feel like in government the opposite happened. And then things are huge where, you as an oncologist you are like, but this [is] 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."* (RO 2)

Additionally, the RTTs felt unrecognized and unappreciated for the contribution that they could make to the collaborative communication dyadic. When the researcher asked a participant, who forgot to mention in the preliminary interview that she had a Master's degree, she answered:

24. *"I forgot about that because no one recognizes it."* (RTT 7)

RTTs have resorted to a negative stance to engage in collaboration beyond the mandatory tasks because they feel inadequately recognized for their professional worth, and made reference to their remuneration:

25. *"Because to be honest, I don't think we get paid enough to . . . take more responsibility."* (RTT 7)

At times the RTTs further sensed that they were unable to raise questions and communicate freely regarding patient cases. RTT 1 recounted an event that occurred while she was a student, where RTTs were reluctant to approach the RO. She observed that her qualified RTT mentors did not feel comfortable consulting with a patient's RO about the deteriorating condition of their patient:

26. *"But it was bad for me that no one wanted to say something for fear of the doctor and me as a student I must stand up and say something. That gave me a bit of a fright."* (RTT 1)

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.

RTT 1 voiced a "roadmap" for ideal collaborative communication for patient care in radiation therapy. Embedded in this suggested plan is a call from RTTs for mutual respect, where concerns that RTTs raise are heard without fear of reprisal:

27. *"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." (RTT 1)

The idea of regular patient-related communication was also raised by RO 5, who stated:

28. *"Um, I think more from the. . . I think the day-to-day things. Um, 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."* (RO 5)

A few ROs recognized the importance of including RTTs in their weekly interdisciplinary meeting, as they perceive their input to be valuable:

29. *"We should have, every month, every week we have meeting 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."* (RO 2)

Likewise, RTT 5 expressed the need to be included as a valuable member of the interprofessional team:

30. *"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."* (RTT 5)

In order to overcome and improve diminished collaborative communication, both participant groups agreed that being physically present during collaboration was a catalyst for interdisciplinary collaboration between RTTs and ROs when it concerned the patient's radiation treatment. Here, RO 2 explains the rationale for in-person communication over remote communication:

31. *"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."* (RO 2)

RTT 1 also agreed that face-to-face communication is the ideal mode for RTT-RO communication as it minimizes miscommunication in the RT process:

32. *"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."* (RTT 1)

Discussion

Interprofessional collaboration is presented as the benchmark for teamwork in RT (ASTRO, 2019; Hendee and Herman, 2011; Morley and Cashell, 2017). In the present study both RTTs and the ROs agreed that collaboration, which involved the entire RT team working together and communicating effectively, was needed for quality patient care. Beyond this shared philosophy, professional interactions are imposed upon by the respective scopes of practices that shift as the RT process progresses.

The radiation treatment process commences with the RO providing the RTT with a written radiation treatment prescription for each patient (ASTRO, 2019). The RTTs are then allowed to initiate radiation treatment planning by independently performing the computed tomography localization procedure (ASTRO, 2019). The RO is required to identify the patient's tumour/s and regions that need to be treated and the RTT continues dosimetric treatment planning. Treatment planning or dosimetric treatment planning is the optimization of radiation treatment beams using specialized software and the patient's computed tomography scan, in such a way that the prescribed dose is delivered to the tumour and the surrounding organs at risk are spared (ASTRO, 2019). The RO evaluates and approves the treatment plan for acceptability for patient treatment.

At this juncture the patient is handed off to the RTT, who delivers the approved radiation treatment plan. Daily radiation treatments are verified for treatment setup accuracy and the patient is monitored by these RTTs for physical and psychological well-being. The RTT caring for the patient during their radiation treatment is required to refer the patient back to the RO when physical and/or psychological concerns are experienced by the patient. Boon et al. (2004) characterize this type of hand-off of professional responsibilities where health care professionals work within the same location, with each funtioning in their formally defined scope of practice, as parallel practice.

It is evident from the interviews that RTTs and ROs collaborate when problems are encountered, particularly in the treatment planning process or where the ROs are experiencing challenges with defining tumour volumes. The other point of collaboration occurs where the RTTs approach the ROs with concerns regarding the patient receiving radiation treatment (cf. section **Collaboration in the radiation treatment process**).

The professionals experience time contraints managing multiple responsibilities in different locations from each other, making regular face-to-face collaboration impractical. Communication between the RTTs and the ROs thus becomes mediated by intermediaries such as other health professionals or administrative personnel. Two-way synchronous communication via telephone or asynchrous communication via electronic messaging platforms and the OIS becomes a reality. Although convenient, asynchronous electronic communication creates a loss of interpersonal relations that becomes a barrier to interprofessional collaboration (Melby and Hellesø, 2014). Electronically mediated communication is also recognized as creating divides between professional groups (Lam et al., 2015). The RTTs in this study made reference to feeling unrecognized for their professional capabilities, while the ROs indicated that their professional workload burden was not acknowledged. The lack or loss of interpersonal professional relations could serve as a barrier for professionals to gain knoweledge of the professional roles and responsibilities of the team members, which is identified as a key competency for interprofessional collaboration (Macdonald et al., 2010).

The divide between professional groups was identified by some of the RTTs in that they felt excluded from existing local interprofessional education events. It was acknoweledged by both ROs and RTTs that inclusion of the RTTs within these events could strengthen their interprofessional educational collaboration. The promotion of such an initiative would have a positive effect on nurturing the collaborative team approach, improving the quality of care, and reducing errors (Zechariah et al., 2019). The RTTs reported feeling uncomfortable interacting with the ROs that they were not personally acquainted with. This experience of a divide in interprofessional collaboration was also felt by the RTTs, in that they felt excluded from access to the patients' full clinical history, which they believed would facilitate their clinical patient care in the delivery of radiation treatment—RTTs are in the unique position to be able to alert the ROs when a patient is not doing well by advocating for the patient (HPCSA, 2021; Van Beusekom et al., 2019). Sharing of relevant patient information is considered an important element in interprofessional collaboration to ensure quality and continuity of transition across the treatment process (Ho et al., 2023).

The divide between the professionals in this study may have its origins in the hierachial relationship that was alluded to by both ROs and RTTs. A "symptom" of hierachy was a report of an RTT having witnessed higher ranking RTTs being reluctant to raise matters of concern regarding patients and their radiation treatment. A non-questioning attitude was considered to be detreminental to patient safety in RT (ASTRO, 2019). Foronda et al. (2016) emphasize in an intergrative review that egos, a lack of confidence, and an absence of organizational and structural hierarchies hinder relationships and modes of communications in interprofessional collaboration. Interprofessional practice, where there is non-hierarchical colloboration to treat the patients in a holistic way, is referred to as intergrative practice (Boon et al., 2004).

The ROs and the RTTs in the present study were keen to improve interpersonal divides and share skills and knowledge to bring them together as teams for interprofessional collaboration. They identified the need for frequent sharing of clinical information in the form of regular discussions in interprofessional meetings.

Conclusion

The point of reference for interprofessional collaboration between ROs and RTTs is when their scopes of practice dictate their interaction. Clinical practice collaboration takes place during treatment planning or during treatment delivery when patient-related problems arise.

Interprofessional collaboration in the true sense is affected by asynchronous electronic media-based communication. Divides apparently existed between the ROs and RTTs in their understanding of the others' roles and responsibilities, sharing of knowledge and skills through collaborative education, and sharing of patient clinical information. These divides could be underpinned by the acknowledged hierarchical association that appears to exist. The establishment of platforms for regular formal interprofessional meetings to discuss patient cases and interprofessional education opportunities is perceptibly needed.

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