

## Original Article

# Promoting radiation therapy research: understanding perspectives, transforming culture

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## Abstract

**Purpose:** To identify the challenges and opportunities that prevent Radiation Therapist (RT) led research at our clinic. Insight gained from this process may lead to strategies which can encourage and support RT research. In this way we can ensure evidence-based practises are promoted by RTs as well as enhancing the professional profile of RTs in the research domain.

**Methods:** A qualitative approach was chosen for this study. Five focus group sessions were conducted to discuss issues related to research participation within our department. Sessions were audio-recorded and transcribed. Thematic analysis occurred whereby overarching themes were identified, content categories were developed, and summaries were written from these categories. Pre-dominant themes were later presented to the entire radiation therapy department for member checking. Answers to a series of questions were obtained anonymously through the use of iClickers™ (MacMillan MPS, Gordonsville, VA). Further, an open group discussion followed focusing on three key areas (departmental, personal and professional). Initiatives or opportunities that could be implemented to increase research activities were discussed and recorded by a designated note-taker.

**Results:** Nineteen RTs participated in five focus group sessions. The over-arching themes identified were definition of research, involvement in research and the barriers to conducting research. Member checking confirmed these major themes.

**Conclusion:** We identified the challenges faced by RTs in the areas of research and development at our centre. This information has given us a greater understanding of the culture of our department and the attitudes to research activities from all groups within it. We aim to use these insights to set-up a framework of support to facilitate increased initiatives. Alongside this support RTs will have a clear understanding of their responsibilities to the organisation that facilitates their research. We anticipate these developments will lead to greater job satisfaction for RTs, increased staff morale and most importantly, the improvement of the overall quality of services we deliver to our patients.

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## Keywords

research; radiation therapy; culture transformation; barriers; opportunities

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## INTRODUCTION

In 1972 Cochrane wrote about the need for evidence-based medicine<sup>1</sup> and its widespread acceptance in health care has led to the need for professions to engage in research. The importance of being involved in research has been acknowledged by Radiation Therapists (RTs) themselves.<sup>2</sup> Professional organisations have published documents emphasizing the need for research in establishing radiation therapy as a profession.<sup>3,4</sup> Conducting research is seen as one of the methods of developing the image of RTs from a vocational profession, whose work is applying the knowledge acquired by other health professional groups to the expert, whose skills and knowledge are acquired through advances in technologies, more independent practise and educational development.<sup>5</sup> The expectation of RTs to employ evidence-based practises comes not only from the government level of the healthcare system<sup>6</sup> but also from patients themselves. The personal benefits to RTs who involve themselves in research activities have also been recognised. They can use this avenue to pursue further career options beyond treatment delivery and planning.

Despite the stated importance of research in a radiation therapy department, to date, there have been few published studies conducted to determine both the perceived and real challenges that RTs face in carrying out research within their department. Catton et al. (1999) asked RTs, *'What are we waiting for?'* in their study which concluded that therapists are internally motivated and believe that research benefits patients.<sup>7</sup> A follow-up study conducted by Higgins et al. (2009), also suggested that RTs are interested and support research despite the hurdles involved.<sup>8</sup>

At our institution, support exists for participation of RTs in research; however there remains a lack of participation by RTs to initiate and participate in research activities. The objective of this study was to identify the challenges that prevent RT led research, as well as the opportunities that encourage it. It was anticipated that this knowledge would assist in

identifying strategies, which could encourage and support RT research. By doing so we aimed to develop evidence-based practises, as well as to enhance the professional profile of RTs in the research domain within our clinic.

## METHODS AND PROCEDURES

A qualitative approach was considered most suitable for this project, because of the exploratory nature of the research. Focus groups were chosen as the primary method for data collection, because of their capacity to foster exchange of ideas during the data collection session. To enhance rigor, the investigators, who also held research roles in the department, documented their own perspectives on RT research prior to the data collection phase. This process of reflection identified their opinions and biases on the topic under investigation. These reflective pieces were not accessible to other staff members, but served as a method of self awareness by the investigators of their own attitudes and experiences regarding research activity during their employment in the department. This step was considered valuable in the methods process to reduce bias.

### Participants

After Research Ethics Board approval, a department wide invitation e-mail was sent to all RTs; of the 135 eligible RTs, a total of 19 volunteered to participate in a focus group session. Eligible participants were all RTs employed at our institution. These sessions took place from July to August 2009, within the radiation therapy department.

### Procedure

Following informed consent, participants were asked to complete a demographics questionnaire. Years of clinical experience, highest level of education, roles held during their career, research involvement and future interest in research was recorded. Five focus group sessions were conducted and moderated by an external facilitator who was not an RT, allowing participants to feel comfortable and talk candidly

about the topic under investigation. The focus group sessions varied in attendees from three to five RTs depending on scheduling and availability of the volunteers. The investigators did not attend the focus group sessions. A discussion guide was developed by the investigators to ensure that the direction of each focus group remained consistent (Appendix 1). The discussion guide consisted of open-ended questions, to encourage discussion on issues related to research participation. Probes were used to clarify issues or obtain more detail. At the end of each session, the facilitator debriefed with the principal investigators to gauge responses. As a result, the discussion guide was revised after the first two sessions to facilitate the discussions. These revisions were minor and consisted of re-wording of the questions to clarify the language. The focus groups were audio-recorded and transcribed; their duration was between 60 and 90 minutes.

## Data analysis

### *Phase 1: Focus groups*

The interview transcripts were subjected to a standard content and theme analysis by the principal investigators under the mentorship of a nurse researcher, who was experienced in qualitative research methods. Initial analysis was carried out on one transcript picked at random from the five focus group transcripts. Content categories were identified by each investigator independently. This process involved highlighting significant comments and assigning a preliminary code with written notes in the margins of the transcripts themselves. After individual analysis, discussions were then carried out between the investigators regarding the identified codes and their significance. Definitions of the codes were agreed upon so that consistency was maintained in the analysis. The remaining transcripts were analysed independently using these agreed definitions. Further content categories were developed from the coded text following subsequent discussion amongst the investigators. Saturation was reached when there were no new categories identified within the transcript texts. Summaries were written from the material within these final categories. Significant

comments were chosen directly from the text to illustrate identified themes and give a voice to the participants themselves. The process of analysis was carried out manually due to the small amount of data to be analysed.

### *Phase 2: Member checking*

Two one-hour sessions were held to facilitate 'member checking' and forty seven RTs attended. Pre-dominant themes were presented to RTs via these two sessions. This process of 'member checking' was considered necessary to validate the investigators analysis and add rigor to the methods. Questions regarding research (which were developed from the focus group data) were posed to the RTs and answers were obtained anonymously through the use of iClickers™ (MacMillan MPS, Gordonsville, VA). (N.B. not all questions were answered by all the RTs.)

Following the question period an open group discussion was led by the nurse mentor who was involved in the project focusing on three key areas (departmental, personal and professional barriers to research activities) to discuss initiatives or opportunities that could be implemented to increase research activities. The discussions were recorded by a designated note-taker who was not an RT.

## RESULTS

### Participant population

Focus group participant demographics and characteristics are presented in Table 1. Nineteen RTs participated in the focus groups, but two participants did not complete the preliminary questionnaire. Ages ranged from 24 years to 49 years, 14 were female and five were male. Fifty per cent had 10 years or less experience. The majority held a degree in a health sciences field, with three at the master's level, and two with diplomas in radiation therapy. Seven participants had no previous involvement in research and two of these expressed no interest in conducting research. From the analysis, several themes emerged that were significant.

### *Definition of research*

A definition of 'research' was not provided to the participants. This allowed the participants to

**Table 1.** Participant demographics/characteristics.

Background	N (%)
<b>Sex</b>	
Male	3 (17)
Female	14 (82)
<b>Years of clinical Experience</b>	
0–4 years	4 (24)
5–10 years	4 (24)
10+ years	9 (53)
<b>Previous research involvement</b>	
Yes	12 (79)
No	5 (29)
<b>Interest in research involvement</b>	
Yes	15 (88)
No	2 (12)

define the subject for themselves during their discussions. Their definitions of research varied from quality improvement initiatives, to formal research studies investigating new techniques or interventions through to ‘Googling<sup>TM</sup> something that you haven’t seen before... to find out about it’. Participants’ discussions regarding the definitions of research extended into defining the purpose of conducting research. The majority of participants connected research to the desire for improvement in the services they provide to patients, ‘...how else are you going to further the care of your patients if you don’t do the research’.

#### *Involvement in research*

The role of research in the daily life of RTs was discussed and varying levels of involvement were recognised. Involvement ranged from those RTs who had dedicated research roles, to those who become involved voluntarily (often working in their own time), to those whose daily practise in treatment planning and delivery involves following research protocols and procedures. This wide view of participation means that some therapists are unaware of their involvement in research. As one participant stated:

*‘... day to day if they’re not assigned to a research role either part time or full time or if they’re not working specifically with someone on a project, then I don’t think the individual sees themselves as working in*

*research and I think that’s too bad. Because they could very well be doing it and not realize it, that their contributions, treating the patients, are a very big part of research.’*

Describing the various levels of involvement in research also led the participants to describe a wide range of activities related to research. For example, RTs who are gathering data, producing treatment plans, and following protocols during treatment delivery were seen as engaged in research activity at one end of the spectrum. At the other end of the spectrum, there is the RT-led research with the RT as the principal investigator.

*‘Currently right now I think that the role is more of a collaborator than an initiator. I think you carry on and move and progress in ways that the doctors and nurses are progressing that we need to take a more active role and initiating our own research.’*

Participants also expressed their ideas about the reasons RTs involve themselves in research. The majority of participants connected RT research involvement to the desire for improvement in the services they provided to patients.

Some identified the personal growth of the individual therapist as a motivating factor; some RTs saw research as one of the avenues they could use to help transition into another role. Research adds to one’s portfolio, helps to build up a CV and assists if a person wants to move ahead and have the knowledge and skills set to do so.

*‘... So we kind of build other skills that you would need to move on beyond radiotherapy or within radiotherapy.’*

#### *Barriers to research*

Several departmental barriers were identified that discouraged or prevented RTs from participating in research activities. These included culture, time, support, education and training and individual motivation.

*Barriers related to culture:* Although participants recognised that departmental attitudes were

changing, they felt there still needed to be further change in the culture in order to reduce obstacles to RTs' involvement in research. The department overall was perceived as not being open to changes and that type of culture *'de-motivates people from trying to change stuff'*. There was also a perception that not every role is equally valued. This idea was reinforced by comments that RTs experiences differed considerably with respect to support for their research activities.

*'I can't say there are barriers (for me) because I am doing research and they give me the time I need so I haven't seen barriers. I have been given time to attend conferences and that sort of thing.'*

*Barriers related to time:* Lack of time was another barrier that was described frequently throughout the focus group sessions. RTs who do not have dedicated research roles know they have to be committed to work on research related activities in their own time. As one participant states:

*'I think time is a big issue just because you basically do it (research) outside your work time.'*

Shift work, as well as the regular occurrence of overtime was mentioned as having a negative impact on engaging in research activities. Staff shortages also contributed to less supported time available during the work day. Supported professional development opportunities such as time away to attend conferences to present research projects or keep current with research trends were mentioned as problematic for RTs. Finally, personal commitments outside of the scheduled work day were seen as an obstacle. Some RTs may not have the flexibility or time to engage in research activities because of family and other responsibilities. As one participant stated:

*'...we do have a younger team here, like young couples with kids and maybe being too consumed with outside work they don't have enough time to allocate to research.'*

*Barriers related to support:* Support from colleagues was discussed. The time taken by some

staff to engage in research activities gave extra work to others RTs. This can lead to feelings of guilt by those RTs who engage in research and feelings of being unsupported by their colleagues.

*'If you are participating in research and you are being given the time away from the machines to do it, there's a little bit of a professional jealousy that comes into it because you get time to do it'*

Lack of formal mentors for RTs, as well as technical support issues and lack of expertise in research skills (e.g., expertise in statistical methods and/or ethics board approval processes), which are all needed to carry out research projects were also mentioned as barriers. As one participant stated:

*'Lack of support can be frustrating ...it can demotivate you'*

Support issues prevent RTs from having the confidence to take the lead on research projects. They feel comfortable doing research within a multidisciplinary team but they do not feel they can be the principal investigator; *'I don't think you can direct yourself.'*

*Barriers related to education and training:* The lack of education and training in research was identified by several participants as a barrier to initiating or participating in research.

*'...the fear of engaging in research if you're not entirely sure how to go about it.'*

There was also a lack of awareness regarding resources within the institution for research project support. This was identified by all of the participants, even those who have engaged or are currently engaged in projects.

*'...it could sometimes be a lack of information too, like you might be entrusted to do research but you don't know where to go or who to go to or how to get the information. That's I think another barrier here that we're not given enough information and how to conduct that research and to be involved as a research therapist.'*



For those participants who have engaged in research, lack of training to follow the research through to publication was also mentioned.

*'But they're doing all the work, they're taking all the data, they're doing all the stats, they're presenting at professional conferences, but then it's not getting published. So what's the result, it looked like we weren't doing any research, but we were, we were doing tones of it'*

**Individual barriers:** There has been rapid expansion of new technologies and equipment within our department over the last few years. Focus group participants reported that learning how to utilise and incorporate these changes takes up the majority of therapists' *'mental space'* and may deter them from participating in research. As one participant commented:

*'I think sometimes when therapists are being, around newer technology, like let's say synergy or specialty rotations, I think you pick up a lot of your mental space, sometimes it's hard to think about doing research when you're trying to learn new technology at the same time.'*

Other issues mentioned were regarding personal reasons; internal politics (i.e.) a feeling of *'stepping on toes'*, and that your research might affect somebody else's *'like edging into a doctor's project and you might not want to go there'*. Finally, the pressure of coming up with a unique idea or interesting question was another personal barrier mentioned by participants.

*'...I don't consider myself very capable of coming up with interesting, unique, new questions. And so I kind of throw that barrier up for myself. Thinking no one will be interested, no one's going to want to hear about that. I think as well as centre based barriers, there are people like me who have individual barriers as well.'*

### **Phase 2: Member checking (N.B. not all attendees at the sessions answered all questions)**

Responses from the iClicker™ questions were congruent with the findings from the focus group sessions. Although 63% of respondents

(n = 32) felt that not all RTs should be involved in research activities, 69% (n = 32) felt that they (RTs) should be leading research. More than half (67%, n = 33) expressed interest in being a part of research activities at our institution. When asked if RTs felt supported by management in their desire to participate in research, 32% (n = 34) agreed with this statement. As time was one of the major barriers reported from the focus groups, participants were asked if protected time would be helpful. More than half of the participants (n = 37) agreed with this statement. Finally, 63% of participants felt that an educational session specific to research skills would be useful.

Further discussions included comments that RTs should be pro-active in their involvement in research and should take personal responsibility for these activities. There also seemed to be some resentment amongst the attendees regarding the attention that research had in the department; this explained the lack of peer support that focus group participants had mentioned regarding their previous research activities.

## **DISCUSSION**

The culture of a radiation therapy department influences the value that its members place on research activities. Healthcare managers are often focussed on service delivery, which provides their funding while the academic institutions which they are affiliated to emphasises scholarly activities. Rapid changes to RT educational training, which has placed it within a university-based environment, may explain why RTs are divided on the role of research within their profession.<sup>9</sup> These situations can be problematic for radiation therapy departments and for the profession itself. The establishment of a formal research programme at our centre along with creation of dedicated research roles for RTs contributed to the cultural changes which promote and value research. The findings of our study however indicated that further changes are necessary to promote research activities. RTs are more likely to participate in activities where they feel

valued. An annual awards process will highlight the value which the department places on research activities and create an awareness of the connection between improvements in service delivery, patient care and RT research activity.

Leadership dynamics are also important in the evolution of workplace culture. 'Transformational leadership' has been cited as a move away from hierarchical structures to one that promotes an entrepreneurial spirit.<sup>10</sup> This creates a culture that recognizes all members as leaders and promotes power sharing.<sup>11</sup> These leaders can alter the prevailing culture and create an environment which integrates research into practice. Identifying RT leaders with research skills and experience within the institution can aid in the support and motivation of cultural change and increase RT driven research activities. The creation of mentoring roles which was stated as important by our focus group participants and is echoed in the literature as necessary to foster research will support this change in culture.<sup>12</sup>

Productive research environments have clear goals matched by the goals of the individuals within it. We did not define 'research' for our study participants and it was apparent that the concept was different depending on the clinical experience and education of our participants. In order for a research programme to develop and flourish, clear objectives and goals of the programme need to be defined and communicated to all stakeholders within it; their participation must be fostered regardless of their experience or educational background. A core research interest group of RTs will be established to lead research projects and create awareness of research opportunities that occur for RTs within the institution.

RTs stated need for support through time to engage in research activities, funding, and education to gain confidence in conducting research; these statements seemed congruent with other research that has been conducted on this topic both within radiation therapy and also from other professional groups.<sup>13,14</sup> Support must be a relationship between the

institution and the RTs whereby 'deliverables' such as clinical utility, practise changes, conference presentations, and published manuscripts are realistic expectations in return for support. An infrastructure to support these activities needs to be in place. Developing a support system benefits the researchers who have access to the system, and is also advantageous to the department in that an established support system allows for the forward planning and effective use of resources.

The rewards of overcoming barriers and promoting a research agenda are numerous. From the perspective of the individual, involvement in research activities strengthens autonomy by way of defining clinical practise, expanding the scope of practice and in turn advocating for the profession.<sup>15</sup> From the perspective of the profession, increased participation in clinical research promotes increased knowledge base to promote evidenced-based practise, development of evidence-based clinical practise guidelines and efficient and effective lifelong learners.<sup>16,17</sup>

## CONCLUSION

In recent years the role of RTs has evolved from one of service provider in a physician led healthcare environment to a technical and patient focused expert in a team-based workplace which promotes inter-disciplinary care. The development of expertise by RTs in areas such as imaging, treatment planning and delivery has created opportunities for specific therapist led research in areas essential to the treatment of cancer patients. These trends in radiation therapy were clearly identified by our study participants and have been reported by other RT researchers.

This project enabled us to identify and examine the challenges faced by RTs in the areas of research and development at our centre. This information has given us a greater understanding of the culture of our department and the attitudes to research activities from all groups within it. These insights will inform our decisions regarding the development of support

networks to facilitate increased research initiatives. Alongside this support RTs will have a clear understanding of their responsibilities to the organisation that facilitates their research. Our expectation is that the development of RT led research activities within our clinic will lead to greater job satisfaction for RTs themselves; it will contribute to increased staff morale and most importantly, will lead to the improvement of the overall quality of services we deliver to our patients.

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## APPENDIX 1

### Focus Group Facilitators Guide:

1. What role do you think research plays in the day to day life of radiation therapists?
2. Why do you think that certain Radiation Therapists get involved in research?
3. Are their barriers inherent within the OCC that prevents therapists from being involved in research projects?
4. Have you ever been involved with a research project at the OCC?
5. Has research become more important in radiation therapy? Why?
6. Would you welcome a more formal process for developing the ideas of radiation therapists into research projects?
7. Is there anything anyone would like to say/add to the comments that haven't already been covered?