

Factors influencing the use by radiation therapists of cancer symptom guides: a mixed-methods study

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ABSTRACT

Background Radiation therapists play an important role in helping patients to safely manage and triage potentially life-threatening symptoms. The purpose of the present study was to assess factors influencing the use by radiation therapists of evidence-informed symptom practice guides for patients experiencing cancer treatment-related symptoms.

Methods In a mixed-methods descriptive study guided by the Knowledge-to-Action framework, interviews and a barriers survey were conducted. Two independent reviewers conducted a content analysis of interview transcripts. Barriers survey data were analyzed using frequency distributions and univariate descriptive statistics. Open-ended data from the surveys underwent content analysis and were triangulated with interview findings.

Results Of 90 radiation therapists approached, 58 completed the survey (64%), and 14 were interviewed. Of the 98% who reported providing symptom management to patients undergoing radiation treatment, 53% used evidence-informed practice guidelines. Radiation therapists had moderate moral norms (4.6 of 7) and beliefs about the consequences of using costars (pan-Canadian Oncology Symptom Triage and Remote Support) practice guides (4.8), but neutral intention (3.4) and beliefs about their own capabilities (3.9). Environmental barriers included lack of time (2.0), lack of access (2.5), and neutral organizational support (3.0). Radiation therapists identified a need for training (5.5). Common unique barriers to practice guide use were lack of time during radiation treatments, unclear fit with scope of practice, disparate focus on site-specific symptoms, and lack of medication knowledge.

Conclusions The symptom practice guides were perceived by the radiation therapists to benefit patients, enhance their own knowledge of symptom management, and promote consistent practice. Additional work is required to identify the scope of practice of radiation therapists within the interprofessional team.

Key Words Symptom management, radiation therapists, radiographers, clinical practice guidelines

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BACKGROUND

Minimizing the cancer symptom burden and its subsequent effect on functional status is an important treatment goal for people receiving radiation therapy¹. Radiation therapists (RTs), one of five specialties of medical radiation technologists, are the first line of contact for patients undergoing radiation treatment. They are responsible for managing patient-reported symptoms and appropriately referring patients to other members of

the health care team². Monitoring a patient's symptoms during radiation treatment is essential to minimize hospital admissions and can facilitate prompt detection and management of acute or potentially life-threatening symptoms³⁻⁵. Patients undergoing radiation for cancer often receive daily treatments, and care provided by RTs has been shown to have the greatest influence on the patient experience during treatment^{6,7}.

A recent Canadian study investigating the attitudes of oncology professionals toward systematic symptom

management revealed that 81% of RTs believe that symptom management is within their scope of practice; however, only 29% of RTs regularly look at the Edmonton Symptom Assessment System scores reported by their patients⁸. Earlier studies investigating the involvement of RTs in symptom management have been limited to screening for pain, supportive care needs, skin toxicity, or anxiety, without consideration of symptom management^{9–11}. Moreover, studies exploring the information needs of RTs have focused on anxiety, skin reactions, depression, and pain^{12–15}. Although symptom-specific guidelines and symptom management tools are available, little is known about the use of those tools by RTs in clinical practice. Previous work has shown that a more systematic approach is required to determine how clinical practice guideline evidence could be integrated into the RT workflow^{16,17}.

Symptom Practice Guides

Although numerous clinical practice guidelines for oncology symptom management are available, most are not formatted for use in practice. With funding from the Canadian Partnership Against Cancer and members from 8 Canadian provinces, the pan-Canadian Oncology Symptom Triage and Remote Support (COSTARS) project was initiated to improve cancer symptom management for people living at home. The group used the CAN-IMPLEMENT methodology¹⁸ to develop 15 evidence-informed symptom practice guides. The process involved conducting a systematic review to identify relevant clinical practice guidelines, appraising guideline quality, establishing a user-friendly template for the practice guides, validating the practice guides with users, and using plain language to facilitate use of the guides with patients¹⁹. The COSTARS practice guides instruct health professionals to

- a) assess symptom severity;
- b) triage patients for symptom management based on the highest severity, and for non-severe symptoms,
- c) review medications being used for the symptom,
- d) review self-care strategies, and
- e) document the plan agreed upon with the patient.

Using a systematic process guided by the Knowledge-to-Action framework²⁰, the COSTARS practice guides were implemented in a number of oncology programs that were providing telephone and homecare support by nurses to patients with cancer^{21–23,a}. Practice guide adaptations were subsequently tailored to each setting, and strategies were implemented to increase sustained use (for example, integrating the guides into orientation for new hires)²⁴. In previous studies, nurses, patients, and family members identified the need for the practice guides to be used consistently across health professionals and organizations^{21,22,25}.

Radiation therapy leaders at one of the earlier implementation sites identified the need for improved symptom

management and suggested investigating the use of COSTARS to ensure consistency between RTs and nurses. A subsequent chart audit conducted at that site in January 2017 revealed that only 14% of patients receiving radiation therapy for cancer who had reported symptom severity of 4 or greater on the Edmonton Symptom Assessment System²⁶ had a documented symptom management intervention by an RT. For the documented interventions, it was difficult to establish whether the RTs had used clinical symptom practice guides during the interaction. The chart audit results and radiation therapy leadership team confirmed the knowledge–practice gap and the need for the present study.

The overall aim of the study was to determine barriers and facilitators to the use of evidence-informed symptom practice guides when symptom assessment, triage, and guidance in self-care are being provided to adults with cancer receiving radiation therapy.

METHODS

Design

A descriptive mixed-methods study was conducted, using a survey and semi-structured interviews. A mixed-methods approach was adopted because of the versatility it provides for investigating complex health care processes²⁷. Furthermore, triangulation of qualitative and quantitative data provided a more detailed understanding of the factors influencing the use of symptom practice guides by RTs²⁸.

The Action cycle of the Knowledge-to-Action framework guided the study²⁰. The Action cycle was activated by the problem identified by the knowledge users (that is, the RT leadership team and the chart audit results). The knowledge users were engaged in developing the formal proposal for the study and served as equal partners on the research team. According to the Knowledge-to-Action framework, successful uptake of evidence is more likely if the knowledge is tailored to the local context, if appropriate interventions are selected to overcome known barriers, and if outcomes are monitored²⁹. The knowledge translation tools for the study were the COSTARS practice guides. The Ottawa Health Science Network Research Ethics Board approved the study.

Setting and Participants

The study was conducted in the radiation therapy department of a large cancer centre in eastern Ontario. The radiation medicine program is the single provider of radiation therapy for patients in the region and provides, on average, 6000 radiation treatments per month. Care is provided by 90 RTs and 14 radiation-specialized registered nurses working at two sites. One site is the main radiation department, with 11 treatment units; the ancillary site has 3 treatment units. Service is provided in both Canadian official languages (English and French). Major components of the RT's role are to plan and administer scheduled radiation treatments; to perform quality assurance checks; to assess the patient's condition before, during, and after treatment; and to provide patients with advice on how to minimize possible treatment side effects².

For the interviews, a purposeful sampling strategy was deployed to reach managers, supervisors, educators, and

^a Grant D, Sabourin T. Oncology nurses changing telephone triage practice through the implementation of COSTARS. Presented at the Canadian Association of Nurses in Oncology/Association canadienne des infirmières en oncologie Annual Conference; Gatineau, QC; 28 October 2017.

frontline RTs. All RTs who provide direct care to patients were invited to complete the survey. The excluded RTs worked in the dosimetry department or were on a leave of absence.

Procedures

Interviews were conducted during February–March 2017. Potential respondents were invited to participate by a recruitment advertisement posted in staff areas and circulated by e-mail from the manager of the radiation department (the latter method being the usual mode of communication with staff). All RTs who indicated an interest in participating in an interview were included. Using a semi-structured interview guide, the interviewer explored current practice for providing symptom support, factors potentially likely to influence RT use of practice guides, need for local adaptations of the practice guides, and strategies to support use of the practice guides. Audio-taped interviews were transcribed.

A barriers survey in English and French was sent to all 90 RT staff members who provide symptom support to patients receiving radiation therapy. Potential respondents received an e-mail from the manager of the radiation department that included an invitation letter and link to the online survey. Hardcopy versions of the survey were made available upon request. The survey package e-mail and hard copy included a cover letter, sample symptom practice guides (fatigue and diarrhea), and access to the survey. Based on the Dillman tailored design method³⁰, reminders were sent to all potential respondents at 2, 4, and 5 weeks for a total of four contacts. The survey included 17 statements that measured attitudes toward the symptom practice guides; knowledge, skills, and competence in using practice guides when providing symptom support; willingness to use the guides; patient factors influencing use of the guides; and environmental factors influencing use. The survey incorporated the 12-item Continuing Professional Development Reaction Questionnaire, which is informed by the Theory of Planned Behavior. Each item is rated on a scale of 1 [most negative response (strongly disagree, never, extremely difficult)] to 7 [most positive response (strongly agree, always, extremely easy)]. The questionnaire has well-recognized face validity and was demonstrated to have good internal consistency (Cronbach alpha: 0.77–0.85³¹; 0.87 in the present study).

Additionally, RTs were asked to specify 3 common symptoms that clients receiving radiation therapy report to them and to rate their own confidence in managing those symptoms on an 11-point scale (0 = not confident at all, 10 = extremely confident).

Data Analysis

Qualitative data from the interviews were analyzed using directed content analysis³² and were guided by the Ottawa Model of Research Use³³. Themes for barriers and facilitators were organized into innovation (symptom practice guides), potential adopter (RTs), and practice environment (patients and organization). Data were independently analyzed and coded by two reviewers. Analysis of quantitative data was conducted using the IBM SPSS Statistics software application (version 24; IBM, Armonk, NY, U.S.A.) and

was guided by the Continuing Professional Development Reaction Questionnaire manual³¹. Open-ended survey data were analyzed using directed content analysis and were subsequently triangulated with data obtained from the interviews.

Rigour and Trustworthiness

To ensure appropriate standards of rigour for the quantitative and qualitative data analyses, separate analysis techniques were used for each dataset³⁴. Semi-structured interviews were particularly useful in facilitating access to the subjective experience of participants during unscripted probing and enhanced the trustworthiness of the results³⁵. Credibility of the findings was enhanced by transcribing the audio recordings verbatim, by developing an audit trail, and by member checking³⁴. Data triangulation across datasets was conducted to allow for a better understanding of the phenomenon and to increase the trustworthiness of the results²⁸.

RESULTS

Of 90 RTs, 14 consented to participate in interviews. Interview participants had a range of time in their current position (1 year to more than 10 years), various employment statuses (full time, part time, casual), a range of ages (<29 to >50), various educational status (college diploma, university degrees), and were primarily female. The barriers survey was distributed to 90 RTs and was completed by 58 (response rate: 64.4%). Of the 66 submitted surveys, 5 were removed (2 duplicates, 3 blank), and 3 contained almost no data and no responses to the demographic questions. The typical RT survey respondent was a female with an undergraduate university degree, working full-time for more than 10 years in their current position (Table 1).

Current Symptom Management

Of the 58 respondents, 57 (98%) reported that they provide symptom management support to patients with cancer, and 91% reported always or most of the time knowing when it is best to triage symptoms to another member of the health team. The RTs reported often reviewing information such as the Edmonton Symptom Assessment System score for the patient before that patient entered the treatment room, prompting them “to ask certain questions” to address symptoms. Of the participating RTs, 31 (53%) reported using symptom management guides from Cancer Care Ontario ($n = 18$) and patient pamphlets ($n = 13$). Participants who reported using symptom practice guidelines indicated that the guidelines were used primarily as a reference or during orientation to their role. Use of symptom management guides through an app on a smartphone was reported by 1 RT, and integration of the guides into documentation was reported by 9 RTs.

The RTs reported that the symptoms they most commonly encounter are associated with the patient’s disease site and the type of treatment machine. According to the RTs, the symptoms that patients most commonly reported (Figure 1) were fatigue, skin reactions or dermatitis, diarrhea, pain, and nausea or vomiting (or both). The least common symptom reported was anxiety. The RTs felt

TABLE 1 Characteristics of the 58 survey participants

Characteristic	Value ^a [n (%)]
Length of time in current position	
<2 Years	7 (12.1)
3–5 Years	5 (8.6)
6–10 Years	11 (19.0)
>10 Years	35 (60.3)
Employment status	
Full-time	44 (75.9)
Regular part-time	7 (12.1)
Casual	7 (12.1)
Age range	
<29 Years	9 (15.8)
30–39 Years	15 (26.3)
40–49 Years	19 (33.3)
≥50 Years	14 (24.1)
Sex	
Female	40 (70.2)
Male	17 (29.8)
Education programs completed ^b	
College diploma	31 (53.4)
Undergraduate degree	38 (65.5)
Graduate degree	5 (8.6)
Length of time in the profession	
<5 Years	10 (17.2)
6–10 Years	10 (17.2)
11–15 Years	15 (25.9)
>15 Years	23 (39.7)

^a Percentages might not always total to 100% because of missing data.

^b More than 1 response permitted.

least confident in managing pain, anxiety, breathlessness, mouth sores or stomatitis, appetite loss, and difficulty swallowing. They felt most confident in managing constipation, fatigue, nausea and vomiting, diarrhea, bowel problems, and skin reactions.

Barriers and Facilitators

In the survey and interviews, barriers and facilitators to the use of the symptom practice guides by the RTs were identified at the levels of practice guide, radiation therapist, patient, and organization. One RT perceived no barriers to using the symptom practice guides.

Factors at the Practice Guide Level

Perceived barriers (Table II) were the symptom practice guides not being radiation site-specific, being long and complex, and being in a paper-based format that would not be easy to incorporate into the workflow. In the open survey question, 7% of respondents indicated that the guides were long or overwhelming, and 2% described them as not being user-friendly.

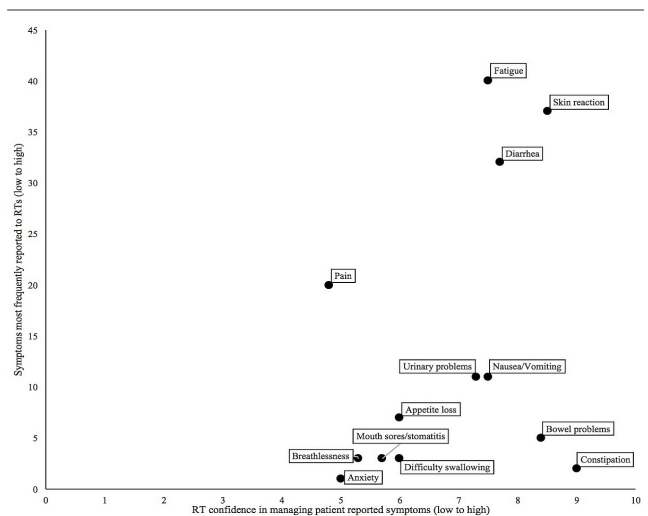


FIGURE 1 Most common symptoms of patients receiving radiation therapy and the confidence of medical radiation therapists (RTs) in managing those symptoms.

The RTs perceived the following factors to be facilitators of using the guides: comprehensive and evidence-based content; ease of documentation; provision of conversation prompts for a more efficient assessment; and user-friendly or easy-to-follow presentation, especially the quick reference to indicate symptom severity and triggers for escalation to nursing. The availability of the guides in French when providing care to Francophone patients was perceived as another facilitator.

Factors at the RT Level

The RTs had neutral beliefs about their capabilities (mean: 3.9 ± 1.1) and conveyed neutral intention (mean: 3.4 ± 1.4) for use of the symptom practice guides (Table III). They perceived a general lack of social influence among their peers to encourage them to use the guides (mean: 1.8 ± 1.1). Other perceived barriers at the RT level included limited fit with RT scope of practice, disparate focus of treatment intervention (that is, delivery of radiation treatment versus symptom management), limited medication knowledge, lack of awareness of the symptom practice guides (31% open survey response), resistance to change, and lack of symptom management knowledge (19%). Other barriers included preferred use of other guides (7%—for example, in-house patient pamphlets), fit with current workflow (5%), and a focus on throughput and efficiency (5%).

The RTs agreed that using the symptom practice guides was appropriate in the practice environment (mean: 4.6 ± 1.1). Other facilitators to using the practice guides included a belief that they built RT knowledge and capacity in symptom management, that they served as a resource, that they promoted consistent practice, and that increased familiarity or comfort with the guides would promote their incorporation into practice. The practice guides were perceived as supporting the scope of the RTs in providing symptom management and would encourage them to troubleshoot before escalating referral of the patient to other members of the interprofessional team (mostly the radiation oncology nurses).

Factors at the Patient Level

The RTs identified a number of barriers to using the symptom practice guides at the patient level (Table IV). Perceived barriers included a concern that patients might be reluctant to discuss symptoms (3% open survey question), a concern that communication and comprehension might be limited with some patients (2%), a belief that use of the guides

might lead to lengthier or less efficient use of treatment time, and a belief that use of the guides might exacerbate discomfort (for example, full bladder) for patients having specific treatments (2%). The RTs agreed that using the symptom practice guides would be beneficial for patients (mean: 4.8 ± 1.1) and that patient versions of the guides might facilitate use (3%).

TABLE II Factors at the practice guide level perceived to influence use by medical radiation therapists (RTs) of symptom practice guides

Theme	Example quotes from the interviews or the open survey question
Long and overwhelming	■ <i>Barrier:</i> "This would be way too long. There's no way that I would ever do this with a patient in the [treatment] room." ■ <i>Facilitator:</i> "You don't have to ask them every question.... If we can do it properly and just make it a couple questions."
Site-specific symptoms	■ <i>Barrier:</i> "Something specific [is needed] for each site, so if ... we're treating the pelvis: do you have diarrhea? Breast patients: do you have a skin reaction?"
User-friendly or not?	■ <i>Facilitator:</i> "They're very straightforward; they're very easy to follow." ■ <i>Barrier:</i> "It's too detailed."
Eases documentation	■ <i>Facilitator:</i> "Make it easier for the therapists on the floor is to have within Mosaik a little tick box type of scenario that ... they could very quickly acknowledge that they've asked the question and what advice they've given maybe for each symptom."
Paper-based format	■ <i>Barrier:</i> "To be able to whip out the papers necessary to assess a patient as we're getting them set up on the treatment bed would be very difficult for sure.... We're not carrying papers around very often."
Comprehensive and evidence-based	■ <i>Facilitator:</i> "They're very detailed.... There's more in here than there is in some of our booklets."
Bilingual	■ <i>Facilitator:</i> "In French, so language won't be a problem."

TABLE III Factors at the medical radiation therapist (RT) level perceived to influence use of practice guides

Theme	Example quotes from the interviews or the open survey question
RT scope of practice	■ <i>Barrier:</i> "Dietary requirements, and things, it's not my scope of practice." ■ <i>Facilitator:</i> "Therapists like clear guidelines. They like to know ... so what is a, b, c? I think [COSTaRS], that's certainly going to support their practice." ■ <i>Facilitator:</i> "Some of these self-care strategies and things would be good to be able to use."
Focus of practice (site-specific symptoms)	■ <i>Barrier:</i> "Therapists focus mainly on the side effects that are from the radiation, and they might advise them on strategies whether it's for skin, for mucositis, for diet."
Medication knowledge	■ <i>Barrier:</i> "Not versed in all medications available." ■ <i>Barrier:</i> "I have nothing to do with medication, like when patients ask me about their meds, so I tell them 'I push buttons; I don't do drugs. Go and see a nurse.'"
Awareness	■ <i>Barrier:</i> "I didn't know they [the guides] existed." ■ <i>Facilitator:</i> "Wow. This is really impressive.... Where are these, and why can't we get to use these."
Escalation to other members of the interprofessional team	■ <i>Facilitator:</i> "If the symptoms or side effects are either too 'heavy' to ... manage at the treatment unit and/or that the intervention is beyond the scope of a radiation therapist, the therapist would then ask the patient to go to the nursing station."
Resistance to change	■ <i>Barrier:</i> "Some people just don't like change.... I'm not sure if it has to do with complacency with their job."
Guides as a reminder	■ <i>Facilitator:</i> "I'd like to see this [the symptom practice guide]. It helps, because ... sometimes you forget things just over the years."
Lack of symptom management knowledge	■ <i>Barrier:</i> "Lack of in-depth knowledge of all symptoms."
Use of other guides	■ <i>Barrier:</i> "We have our own patient pamphlets in-house."
Unsure of fit with current workflow	■ <i>Barrier:</i> "I would be asking the patient as I'm walking them into the room, and then they're going to be lying on the bed. And then they have to keep still while we're setting them up for the radiation treatment. So, I don't want to ... be having conversations like this."
Focus on efficiency	■ <i>Barrier:</i> "Seems more involved than needed to quickly assess and refer."

Factors at the Organizational Level

The RTs indicated low agreement about having time to use the symptom practice guides (mean: 2.0 ± 1.4 ; Table v); the main barrier in that regard was perceived to be treatment scheduling (15-minute blocks). In the open survey question, 64% of respondents indicated lack of time as a barrier. The RTs were also neutral in their rating of organizational support for use of the symptom practice guides (mean: 3.0 ± 1.7). Other identified barriers included lack of access to the COSTARS symptom practice guides (29% in open survey question); perceived lack of resources, including

physical space and human resources (16%); and conflicting workplace priorities, particularly with regard to changes in technology. Concern was also expressed about paper copies and incompatibility with electronic documentation.

The RTs agreed that additional training would improve their ability to use the symptom practice guides (mean: 5.5 ± 1.4 ; 16% in open survey question). Other organizational factors identified to promote use of the practice guides included improved access to the COSTARS symptom practice guides; changes in the current staffing model to support a dedicated person responsible for symptom management;

TABLE IV Factors at the patient level perceived to influence use by medical radiation therapists of practice guides

Theme	Example quotes from the interviews or the open survey question
Patient reluctant to discuss symptoms	■ <i>Barrier:</i> "Some patients are very stoic. They don't like to discuss things."
Patient discomfort or comfort, or health status	■ <i>Barrier:</i> "Patient knows the goal is to have treatment.... If they're holding a full bladder, they're not hearing a word I say."
Positive benefits to the patient	■ <i>Facilitator:</i> "If you can prove that it will benefit the patients, I think you'll have the buy-in. We all want our patients to have the least number of symptoms and be able to manage the symptoms."
Efficiency of treatment time	■ <i>Barrier:</i> "They understand that ... we're fast.... 'I know you don't have time to do this.'" ■ <i>Barrier:</i> "The patients always comment how efficient we are ... doing the treatment."
Patient use of the guide (patient version)	■ <i>Facilitator:</i> "I could see the patient filling it and saying 'Okay, give me a minute, I can review it after.'" ■ <i>Facilitator:</i> "What would be better would be to have a cue card or a card that, for fatigue, here are some self-care strategies, and we could give them that, and they can try it."
Communication challenges	■ <i>Barrier:</i> "Only available in English and French." ■ <i>Barrier:</i> "Vision and literacy."

TABLE V Factors at the organizational level perceived to influence use by medical radiation therapists of practice guides

Theme	Example quotes from the interviews or the open survey question
Lack of time because of treatment scheduling	■ <i>Barrier:</i> "We have bookings every 15 minutes.... We can't waste that time in the treatment room." ■ <i>Barrier:</i> "We're usually either allotted 15 or 20 minutes per patient. And most of the time it's the setting up, the actual treatment and everything is done within that time, appointment time. And then I have another patient right after."
Lack of resources (space and staffing)	■ <i>Barrier:</i> "We don't have a private place if we're supposed to be doing this ongoing." ■ <i>Facilitator:</i> "If we had to use them, we would have to have another position created for someone to do this."
Access to guides	■ <i>Barrier:</i> "I don't know where to find them [COSTARS]." ■ <i>Facilitator:</i> "Having a common area where they're all found.... Having them readily available on the machine."
Competing priorities	■ <i>Barrier:</i> "The technology's constantly changing."
Training or education	■ <i>Facilitator:</i> "I would like a little bit more ... education.... What the questions mean and what I'm expected to answer? Who do I go to?"
Fit with documentation	■ <i>Facilitator:</i> "Having it on the computer would also be beneficial." ■ <i>Facilitator:</i> "It could be embedded within their documentation tool, so as they speak to the patient, they can document it."
Change management	■ <i>Facilitator:</i> "You could roll out sort of a grouping ... of the guides for certain symptoms on a couple of treatment machines. And try to get some champion therapists to ... get it going among their units. It might be a way to get a buy-in." ■ <i>Facilitator:</i> "Clear expectations for everybody is huge." ■ <i>Facilitator:</i> "I think just starting with a core group of people to roll it out small. Because if you roll it out big ... you get a lot of negative."

incorporation into electronic documentation; and solid change-management strategies, including a clear organizational mandate and leadership support for systematic implementation of the symptom practice guides. Of the participants, 12% openly identified change-management strategies as a facilitator.

DISCUSSION

In this study, we examined the perceptions of RTs concerning factors influencing the use of practice guides for cancer symptom management in radiation therapy. Overall, the symptom practice guides were perceived as being of benefit to patients. They were described as useful for enhancing RT capacity and knowledge of symptom management, and for promoting consistency in practice among RTs. The RT-identified barriers to use, such as the length and complexity of the symptom practice guides and the perceived length of time required to use the guides, were largely consistent with findings from earlier studies with nurses^{22,25,36}. However, the RTs identified a number of unique barriers that could have a significant effect on the potential use of the guides in their practice. Those barriers included concerns about the extent of the RT scope of practice with respect to symptom management, lack of medication knowledge, and focus on site-specific symptoms relevant to the anatomic area receiving radiation treatment.

The distinct role that RTs have in caring for patients with cancer is reflected in their request for site-specific symptom management guides, similar to current in-house patient pamphlets about radiation treatment. Although that finding is somewhat predictable, it might highlight the level of uncertainty that RTs have with respect to how far the RT role extends in providing support to patients experiencing more wide-ranging or systemic symptom issues, particularly in the context of multimodality treatments and the team environment. Interprofessional collaboration in radiation oncology is essential to patient care, particularly as the complexity of treatment increases³⁷. And yet, little literature has focused on interprofessional collaboration in radiation oncology compared with other health care areas³⁸. Trepidation about unnecessary hand-offs, overlap with the nursing role, duplication of assessment, and repeated information are vital considerations to the patient experience³⁷. Participants repeatedly referenced escalation to nursing for symptoms that they considered to be out of their scope of practice, particularly in matters of pain and medication use. The RT role in pain management is an important issue. Other studies have endorsed RTs moving beyond traditional delegation to physicians and nurses and adopting an interprofessional approach to pain management so as to better serve patients and address issues of inadequate pain management¹³. Providing clarity of expectations and the tools necessary to address symptoms beyond localized site-specific symptoms might facilitate interprofessional approaches to symptom management. When escalation to other members of the interprofessional team is required, the incorporation of algorithms for escalation into the guides could support increased use of the guides, promote consistent RT practice, and enable the RTs to practice within the full scope of their role as it pertains to

symptom management. Such algorithms might also serve to prevent premature escalation to other professions and improve the patient experience.

The environment in which RTs work is highly complex, involving continual multitasking and the need to bridge the chasm between patients undergoing often uncomfortable and fear-provoking treatments and the operation of revolutionary technologies. Given that complexity, RTs articulated the need for the symptom practice guides to fit cohesively into their workflow and within their current electronic documentation systems. Any perceived threat to efficiency was a barrier to the use of the symptom practice guides. The focus on efficiency and access to care was clearly seen at the level of the frontline radiation therapy staff and at the organizational level. With increasing referral volumes and current pressure for timely access to radiation treatments³⁹, RTs in the study consistently spoke about the pressure of time and the need to adhere to and respect the strict treatment scheduling. The RTs also noted that delays to treatment or prolonged treatment time might in fact increase discomfort for patients undergoing certain treatments; use of the symptom practice guides was viewed as potentially contributing to that unintended consequence.

Consistent with prior studies, RTs highlighted the importance of being aware of the practice guides and receiving adequate training to use them^{22,24,36}. Earlier studies with nurses led to the creation of a workshop and online training module with video that focuses on role-play using the symptom practice guides⁴⁰. After the training, nurses reported increased confidence in providing symptom management²⁴. Given the fears of decreased efficiency, increased familiarity and comfort with the tools could serve to enhance rather than to diminish efficiency.

The RTs articulated the importance of a clear organizational mandate for use of the practice guides and for guidance about the alignment of the RT role in symptom management within the interprofessional team context. Strong leadership support and robust change-management strategies were viewed by the RTs as being essential facilitators to the adoption of the symptom practice guides. The perceived lack of organizational support for use of the practice guides in the radiation therapy department was identified as having a significant impact on potential future implementation. Leadership is instrumental in fostering a supportive environment for staff in the adoption and sustained use of evidence-based practice and in improving patient care and outcomes⁴¹.

Moving Forward

Findings from the present study provide a better understanding of the barriers faced by RTs in using evidence-based symptom practice guides. Given that RTs are the first line of contact for patients receiving radiation treatment (potentially experiencing treatment-related symptoms), it is imperative that the identified barriers be addressed to ensure that symptoms are assessed and triaged in a safe and timely manner for patients with cancer. Assessment before, during, and after treatment is a key component of the RT role and is incorporated into the College's Standards of Practice², and yet the reluctance of

the RTs to use the tools in the assessment process is evident in our findings. Further research is required to identify potential adaptations to the symptom practice guides and to the RT workflow that will allow implementation strategies to be adopted that can enhance the uptake of the symptom practice guides into routine RT practice.

Additional investigation is also warranted to ensure that RTs and nurses better understand each other's scope of practice and to clarify the RT role in symptom management within the interprofessional team context⁴². The present work will help to address some of the barriers identified by RTs in the study, particularly with respect to knowing which symptoms to triage to other members of the team and when to triage, so as to enhance appropriate, safe, and effective care for adults with cancer.

Strengths and Limitations

Data collection strategies gave all RTs providing cancer symptom management an opportunity to participate in the survey and the interviews. The following strengths and limitations should be considered:

- Although a patient or caregiver representative is a member of the research team, feedback from that individual was not collected.
- There was potential for response bias; however, RT-identified barriers and other findings were consistent when triangulated across data sources.
- Although the findings might be transferable to RTs in other cancer programs in Ontario, scope of RT practice is legislated provincially and might therefore not be transferable to other jurisdictions.

Reflections on the Value of Catalyst Project Funding

Our study aligns with the 2016–2021 strategic plan of the Ontario Institute for Cancer Research and Cancer Care Ontario's Cancer Plan; specifically, it fits within “knowledge translation strategies to address gaps at any stage from discovery to adoption” by addressing the identified know–do gap among RTs. It also focuses on “knowledge translation related to patient-centred care” by using the CoSTARS practice guides that were designed with plain language to support patients to engage in self-care strategies for managing symptoms. Study findings will be used to design interventions that will address the identified barriers and potentially result in a larger-scale implementation study.

CONCLUSIONS

Our study contributes to a better understanding of cancer symptom management as provided by RTs. The CoSTARS symptom practice guides have the potential to tighten the know–do gap by providing RTs with user-friendly, evidence-based tools to guide their practice⁴³. Although the tools were perceived as supporting RT symptom management for a range of symptoms, interventions are needed to overcome identified barriers to use of the guides in the practice environment. This study also contributes key evidence to inform implementation science specific to RTs as knowledge users.

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CONFLICT OF INTEREST DISCLOSURES

We have read and understood *Current Oncology's* policy on disclosing conflicts of interest, and we declare the following interests: at the time of the study, LB was Provincial Lead, Patient Reported Outcomes, Cancer Care Ontario. The remaining authors have no conflicts to disclose.

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