The Breast 44 (2019) 101–107

Contents lists available at ScienceDirect

The Breast

journal homepage: www.elsevier.com/brst

Original article

Taking the pulse of multidisciplinary cancer conferences for breast cancer care in Canada: A stocktake of current practice

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ARTICLE INFO

Article history:
Received 12 September 2018
Received in revised form
15 January 2019
Accepted 24 January 2019
Available online 25 January 2019

Keywords:
Multidisciplinary care
Patient care team
Inter-professional relations
Breast neoplasm
Neoplasm/diagnosis
Neoplasm/therapy
Cross-sectional study
Quality improvement
Canada
Young women

ABSTRACT

Aim: International guidelines highlight the importance of implementation supports and quality monitoring of multidisciplinary care for breast cancer. In Canada, Ontario has standards for formal multidisciplinary cancer conferences (MCCs), but other provinces/territories do not. This study aimed to stocktake MCCs for breast cancer in Canadian sites participating in the RUBY cohort study (Reducing the Burden of Breast Cancer in Young Women) to better understand variations in multidisciplinary care across Canada and to add to the international literature.
Methods: A cross-sectional survey was conducted with surgeons and surgical oncologists representing 34 clinical centres participating in RUBY. Questions were grouped according to: type of multidisciplinary care, implementation, function, practice, participation and presentation, operation, and demographics, and included a mix of Likert-based, tick box and open-ended questions.
Results: Twenty-two responses (65%) were received. 91% of respondents reported that formal MCCs are part of regular practice. However, variation exists in the supports in place for ongoing implementation of MCCs, the understanding of the functions of MCCs, and the patients presented for discussion. Results also suggest less formalized processes for MCC in provinces without practice standards.
Conclusions: Response differences between Ontario and elsewhere suggest that standards for MCC and supports for their implementation make a positive difference in their operation. However, ongoing operational challenges and issues with attendance exist for all sites and suggest that along with development of practice standards, incentives for participation and further education on benefits and function of MCC may support uptake of MCCs in clinical practice.

1. Background

For patients with breast cancer, multidisciplinary care teams at a minimum include a surgeon, radiologist, pathologist, and radiation and medical oncologists [1]. Ideally, teams also involve plastic surgeons, genetic counsellors, a nurse, and supportive care clinicians such as psychologist and social worker [2]. However, the approach to how multidisciplinary care is delivered in clinical practice varies. Multidisciplinary cancer conferences (MCCs) involve regularly scheduled meetings with prospective discussion of appropriate diagnostic tests/treatments for patients [3]. Multidisciplinary clinics enable the patient to see 2–3 healthcare providers from different specialties concurrently [4]. Informal multidisciplinary care processes include multidisciplinary assessment, involving referral between specialists for opinions, and *ad hoc* discussions, such as 'corridor consults' between health professionals.

Evidence shows that multidisciplinary care supports health professional interaction [5], increases guideline concordant care [6], provides a platform for professional education [7], and opportunities to identify patients eligible for clinical trials [8,9]. For patients, multidisciplinary care reduces time to intervention [4], and is associated with improved survival [10,11]. Given these benefits, international guidelines recommend multidisciplinary care for

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https://doi.org/10.1016/j.breast.2019.01.007
0960-9776/

cancer patients [12]. In the UK, a push to standardization in multidisciplinary care with specialist teams began with the Calman-Hine report in 1995. Long-term implantation of practice showed uneven implementation with more beneficial outcomes in sites adhering more closely to the guidelines [13–15]. In Canada, Cancer Care Ontario (CCO) released the Multidisciplinary Cancer Conference Standards in 2006 for formal MCCs [16]. The standards were developed based on review and compilation of international evidence and best practice guidelines in the multidisciplinary care of breast cancer through use of MCCs. They serve to guide implementation and operation of MCCs, including their function, format, team composition, roles and responsibilities, terms of reference and patient cases to be presented [3]. Standards for MCCs do not exist elsewhere in Canada.

Results of research conducted recently as part of a pan-Canadian study (Reducing the Burden of Breast Cancer in Young Women [RUBY]) showed variability across sites in MCC frequency, attendance, referral patterns, and pre or post-treatment timing [17]. To better understand potential variation in MCC implementation and practice, this study aimed to stocktake multidisciplinary breast cancer care at sites across Canada recruiting patients for RUBY, a prospective multi-site cohort study aimed at improving outcomes for young women with breast cancer (YWBC). Given RUBY's focus on young women, this research included examination of processes in place for YWBC, as well as general processes in multidisciplinary care. Additionally, given that Ontario is the only province with standards, this study aimed to identify any differences in MCC practice within and outside of Ontario. The examination of multidisciplinary care and formal MCCs in Canada was also intended to address gaps in the literature on variability in multidisciplinary cancer care practice [18,19].

2. Methods

St Michael's Hospital Research Ethics Board (REB# 14–309C) provided ethical approval.

2.1. Participants

The cross-sectional survey included surgeons representing 34 RUBY study sites across Canada open at the time of the survey. Sites are located in the provinces of Ontario ($n = 14$), British Columbia ($n = 6$), Quebec ($n = 5$), Alberta, Manitoba, New Brunswick, Newfoundland & Labrador, Nova Scotia, Saskatchewan and the Yukon ($n = 1$ for each). RUBY sites represent the majority of breast cancer surgical treatment centres in their respective regions. They include various private practice, in-hospital group surgical clinics, with or without associated breast diagnostic imaging services, formal diagnostic/surgical breast centres and programs within cancer centres. Site recruitment considered geography, cancer volume, provider interest, and the presence of a known breast surgery clinic, and efforts to include a variety of practice settings including community, academic, urban, and rural.

2.2. Materials

The survey was based on the CCO MCC standards, consultation with medical experts, and previous research, including an international questionnaire-based study on multidisciplinary care practice [17,19]. Questions were developed by the lead author and reviewed for face and content validity by surgical oncologists and a general surgeon who regularly attend MCC. The survey was piloted for comprehension and function among the survey team. Survey questions (Table 2) were categorized according to: Type of multidisciplinary care; Implementation of MCC; Function of MCC; Practice of MCC; Participation & Presentation at MCC; Operation of MCC; and Demographics. Branching survey logic linked respondents to questions appropriate to the type of multidisciplinary care operating at their site. Participants with multiple forms of multidisciplinary care that included formal MCCs received questions on MCCs only. Response options included categorical, Likert, tick box, and open-ended questions. All surveys were completed through Survey Monkey.®

2.3. Procedure

An email containing the e-survey link was sent to RUBY site leads. The survey was open between August and October 2017. During that time, three reminder emails were sent.

2.4. Data analysis

Frequency counts and mean scores were tabulated for numerical questions. Due to small sample sizes, visual inspection was used to compare response summaries from respondents in Ontario ($n = 11$) and elsewhere ($n = 9$). Qualitative analysis of open-ended questions involved an inductive approach, in which data were reviewed iteratively to identify themes [20].

3. Results

3.1. Response rate & sample characteristics

Twenty-four surveys were returned. Two incomplete surveys were discarded. The final sample included 22 respondents (65% response rate) with good representation across RUBY sites (see Table 1).

3.2. Types of multidisciplinary care

Most sites had formal MCCs (n = 20, 91%), as well as additional forms of multidisciplinary care ($n = 14$; 61%), with the most common being *ad hoc* discussion (Fig. 1). Ontario sites had higher representation of all forms of multidisciplinary care. Other provinces had fewer multidisciplinary clinics or assessment (Table 2).

3.3. MCC implementation

Thirteen respondents (65%) were aware of **guidelines** for MCCs and nine of these spontaneously referenced CCO standards; others mentioned disease-specific or international guidelines. Seven respondents reported supports **for initial** implementation, which included IT support ($n = 6$), meeting room ($n = 6$), administrative

Table 1
Sample characteristics.

($N = 22$)		*N* (%)
Province/Territory[a]	Ontario	12 (54.6%)
	British Columbia	3 (13.6%)
	Alberta	2 (9.1%)
	Manitoba	1 (4.6%)
	Saskatchewan	1 (4.6%)
	Yukon	1 (4.6%)
	Newfoundland & Labrador	1 (4.6%)
Site	Rural	2 (9.1%)
	Urban	20 (91.0%)
Profession	Surgeon	18 (81.8%)
	Surgical Oncologist	4 (18.2%)

[a] Not included in the RUBY cohort: Northwest Territories, Nunavut, Prince Edward Island. No responses received from Quebec or New Brunswick.

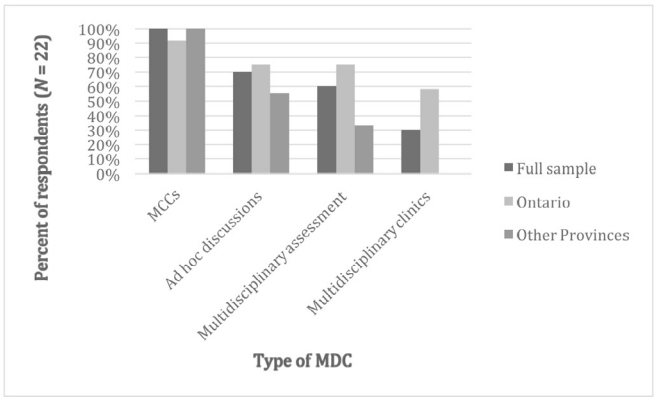

Fig. 1. Types of multidisciplinary care (MDC).

support ($n = 5$), reimbursement for staff time ($n = 3$), and provision for time to meet/scheduling support ($n = 3$). **Tools/resources to facilitate ongoing MCCs** were reported as staff support (e.g., meeting chairperson) ($n = 16$) audio-visual connections ($n = 15$), email forums ($n = 6$), and checklists ($n = 4$). Eighteen respondents (90%) reported **MCCs devoted to breast cancer.**

Compared to other provinces, more respondents from Ontario were aware of guidelines for MCCs and reported more supports for MCC implementation and ongoing staffing support (Table 2).

3.4. MCC function

Participants selected the functions of MCCs, including primary, secondary or no function, based on a list taken from the CCO standards [3] (Table 3). Most participants agreed on the primary functions of MCCs as defined by the standards (e.g., ensuring diagnostic tests are discussed). However, contrary to the guidelines, some participants indicated that secondary functions were **not a function** of MCCs: contributing to regional linkages ($n = 9$; 45%); supporting referrals ($n = 7$; 35%); contribute to standardized patient management protocols ($n = 5$; 25%); and support timely consultation ($n = 5$; 25%) (Fig. 2). More participants outside Ontario indicated that supporting regional linkages, standardized patient

Table 2
Responses to key stocktake questions by total sample and Ontario versus Other provinces.

Stocktake Domain	Survey question (and response)	Total Sample ($N = 20$)	Ontario ($n = 11$)	Other Provinces ($n = 9$)[a]
Type of MDC		–	See Fig. 1	–
Implementation	Are you aware of guidelines for multidisciplinary cancer care in your area? (Yes)	12 (60%)	11 (100%)	1 (11%)
	Were any supports for MCC provided at your site? (Yes)	6 (30%)	5 (55%)	1 (11%)
	Do you have MCCs devoted to breast cancer? (Yes)	18 (90%)	10 (90%)	8 (89%)
	Are there special processes or considerations for the care of YWBC at your site? (Yes)	7 (35%)	6 (55%)	1 (11%)
	Has any specific training/education for the care of YWBC been provided? (Yes)	2 (10%)	1 (9%)	1 (11%)
Function	Do you consider the following to be a function of MCC at your site? (Yes[b])			
	• Discuss diagnostic tests	18 (90%)	11 (100%)	7 (78%)
	• Discuss treatment options	20 (100%)	11 (100%)	9 (100%)
	• Make treatment recommendations	20 (100%)	11 (100%)	9 (100%)
	• Forum for continuing medical education	18 (90%)	10 (91%)	8 (89%)
	• Contribute to quality care activities	16 (80%)	9 (82%)	7 (78%)
	• Contribute to standardized patient management	15 (75%)	10 (91%)	5 (56%)
	• Contribute to research and participation in clinical trials	16 (80%)	10 (91%)	6 (67%)
	• Contribute to linkages among regions	11 (55%)	7 (54%)	4 (56%)
	• Support referrals	13 (65%)	8 (73%)	5 (56%)
	• Support timely consultation	15 (75%)	9 (82%)	6 (67%)
Practice	How frequent are MCCs at your site? (Weekly)	13 (65%)	5 (45%)	8 (89%)
	Typically, how long are MCCs at your site? (Minutes)	58 ($SD = 9.9$)	59 ($SD = 11.9$)	57 ($SD = 6.5$)
	At what point in the care pathway do MCCs typically occur? (Pre and post-operative)	17 (85%)	11 (100%)	6 (67%)
	Are coordinator & chairperson roles part of your MCCs? (Yes)	16 (80%)	11 (100%)	5 (56%)
	Who records results of MCCs?			
	• Presenting clinician	7 (35%)	2 (27%)	4 (44%)
	• Chairperson	9 (45%)	6 (55%)	3 (33%)
	What happens to the MCC results?	14 (70%)	8 (72%)	6 (67%)
	• Uploaded to patient file			
	• Discussed with patient	15 (75%)	10 (90%)	5 (56%)
	• Discussed with relevant clinician	11 (55%)	6 (55%)	5 (56%)
	Are the conclusions from the MCC considered as recommended treatment plans? (Yes)	17 (85%)	9 (81%)	8 (89%)
Participation & presentation	Is attendance at meetings recorded? (Yes)	19 (20%)	11 (100%)	5 (56%)
	Of those who you think should attend the MCCs, how frequently do they attend?	$M = 4.3$	$M = 4.3$	$M = 3.9$
	(1, none of the time to 5 all of the time)	($SD = 0.7$)	($SD = 0.6$)	($SD = 0.7$)
	Is the input of all members well received/listened to? (Yes)	20 (100%)	11 (100%)	9 (100%)
	Do all attendees have the opportunity to contribute appropriately? (Yes)	20 (100%)	11 (100%)	9 (100%)
	Are all breast cancer patients discussed at MCCs? (Yes)	2 (10%)	2 (18%)	0 (0%)
	Are all YWBC discussed at MCCs? (Yes)	5 (28%)	3 (33%)	2 (22%)
	What is the approximate proportion of YWBC discussed at MCCs? (%; # of respondents)	13 (45%)	57% (6)	35% (7)
	Do you consider all YWBC to be complex cases? (Yes)	11 (55%)	8 (67%)	5 (50%)
Operation	How satisfied are you with the general functioning of MCCs at your site?	$M = 3.8$	$M = 4.36$	$M = 3.1$
	(1, not satisfied to 5 very satisfied)	($SD = 1.2$)	($SD = 0.6$)	($SD = 1.4$)
	How satisfied are you with the functioning of MCC for YWBC at your site?	$M = 3.6$	$M = 4.0$	$M = 3.0$
	(1, not satisfied to 5 very satisfied)	($SD = 1.3$)	($SD = 1.0$)	($SD = 1.5$)
	Are there any processes in place for regular audit of MCCs at your site? (Yes)	6 (30%)	5 (45%)	1 (11%)

Note: MCC, multidisciplinary cancer conference.
[a] Other provinces = British Columbia ($n = 3$), Alberta ($n = 2$), Manitoba ($n = 1$), Saskatchewan ($n = 1$), Yukon ($n = 1$), Newfoundland & Labrador ($n = 1$).
[b] For ease of presentation, 'Yes' responses include those who indicated MCC function as 'primary' or 'secondary'.

Table 3
Cancer control Ontario's MCC standards: Primary and secondary functions of MCC.

MCC Function	
Primary	Ensure that all appropriate **diagnostic tests**, all suitable **treatment options** and the most appropriate **treatment recommendations** are generated for each cancer patient discussed prospectively in a multidisciplinary forum.
Secondary	Provide a forum for the **continuing education** of medical staff and health professionals
	Contribute to patient care **quality improvement** activities and practice audit
	Contribute to the development of **standardized patient management** protocols
	Contribute to innovation, research and participation in **clinical trials**
	Contribute to **linkages among regions** to ensure **appropriate referrals** and **timely consultation** to optimize patient care

Note: Reproduced from Cancer Control Ontario's Multidisciplinary Cancer Conference (MCC) Standards.

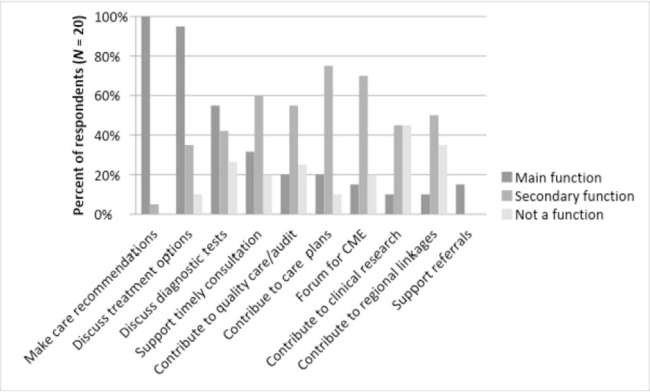

Fig. 2. Perceived functions of multidisciplinary cancer conferences.

management, and participation in research/clinical trials were 'not a function' of MCC (Table 2).

3.5. MCC practice

Participants reported the **frequency of MCCs** as weekly ($n = 13$, 60%), every two weeks ($n = 5$, 25%), or twice weekly or monthly ($n = 1$ each). Most respondents ($n = 17$, 85%) reported the **timing of MCC** as both pre and post-operative.

Reported typical attendance at MCC included surgeons, radiation oncologists, radiologist, pathologists and medical oncologists. Attendance was less common by geneticists, physiotherapists, social workers, imaging technicians, plastic/reconstructive surgeons and fertility specialists, and nurses attended only 50% of the time (Fig. 3). Reportedly, practitioner representation at MCCs could be improved with greater attendance by surgeons ($n = 5$), medical oncologists ($n = 5$), plastics ($n = 4$), pathologists ($n = 3$), radiologists ($n = 3$), and radiation oncologists ($n = 2$). All respondents indicated that **input from MCC attendees** is well received, listened to, and that all attendees have the opportunity to contribute appropriately.

Compared to Ontario-based respondents, others more frequently indicated that MCCs occurred on a weekly basis (89% vs 45%), but were less often held *both* pre and post-operatively. Furthermore, fewer participants from outside Ontario reported that a dedicated chairperson was part of the MCC, and/or that MCC results were discussed with patients (Table 2).

3.6. MCC participation and presentation

Considering **cases brought forward,** two participants (10%) reported that *all* breast cancer patients are discussed at MCC, five (20%) reported that *all YWBC* are discussed, and the remaining

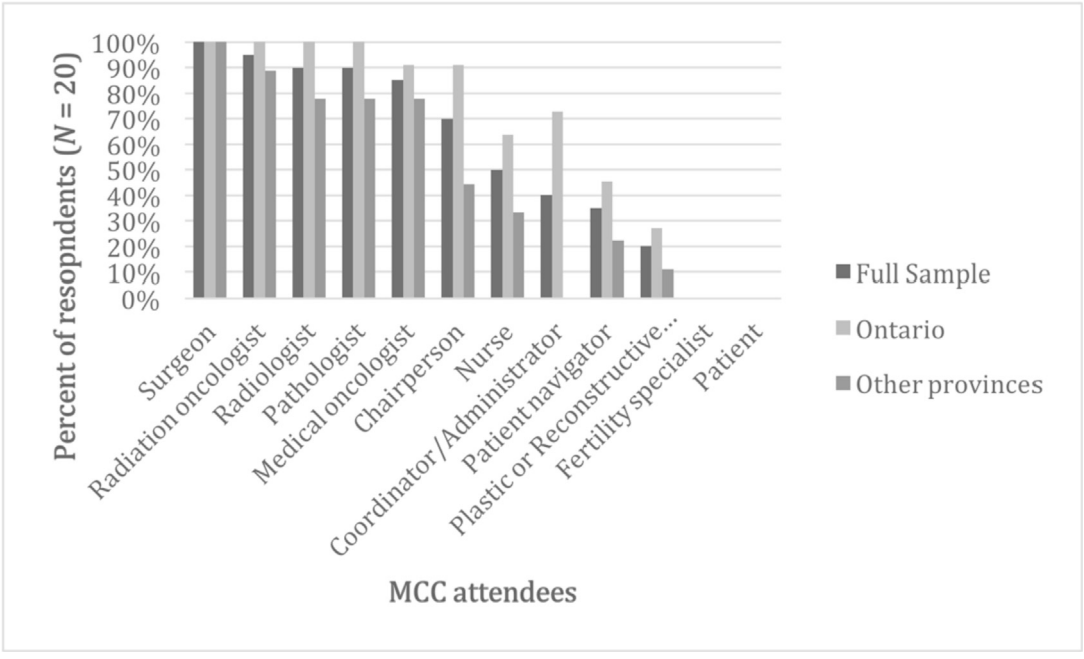

Fig. 3. Typical attendance at Multidisciplinary Cancer Conferences (MCC).

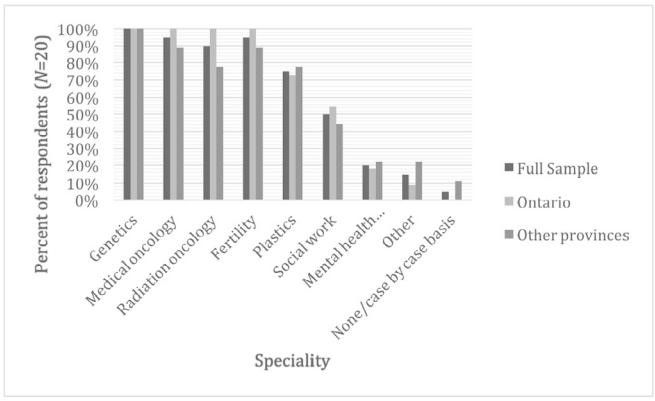

Fig. 4. Proportion and type of referrals typically made for young women with breast cancer.

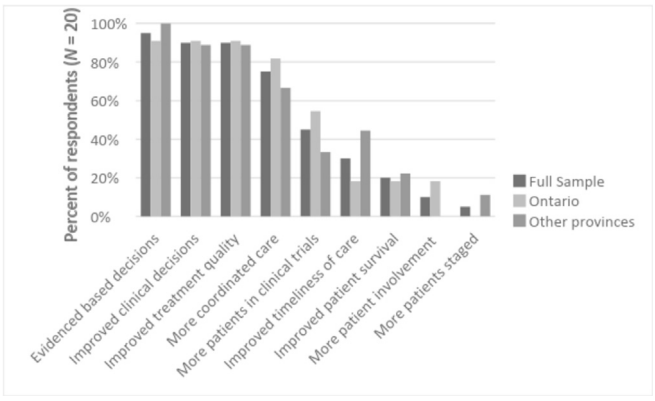

Fig. 6. Benefits of multidisciplinary cancer conferences (MCC).

reported that approximately 45% of cases of YWBC were presented. Thirteen participants (59%) considered YWBC to be complex cases, whereas, others viewed them as straightforward. Typical **referrals for YWBC** are to radiation and medical oncology, and fertility specialists. Referral to plastics and allied health professionals (e.g., social workers, nutritionists) are less common (Fig. 4).

Ontario respondents more frequently reported that meeting attendance was recorded and that a greater proportion of breast cancer patients were discussed. A greater proportion also considered YWBC as complex cases (Table 2) and reported more referrals for YWBC across most specialist categories.

3.7. MCC operation

Figs. 5 and 6 present the percentage of respondents reporting different **challenges and benefits of MCCs** respectively. Participants listed up to four **benefits of MCCs for YWBC**. The most common were improved timing and sequence of treatment, access to clinical trials, and referral to fertility specialists. Others included greater likelihood of neoadjuvant care and breast conserving therapy, greater confidence in care plan, and greater likelihood of genetics referral. Participants' mean **satisfaction ratings** were similar for the functioning of MCCs in general and the functioning of MCCs for YWBC.

Thirteen participants (65%) listed things that could **improve MCCs** at their sites; most commonly, “attendance” ($n = 13$). Other site-specific suggestions included better case presentation, administrative support, and discussion of community supports. To **improve MCCs for YWBC**, five of the 16 question respondents suggested the same improvements for MCCs in general. Other suggestions included fast-tracking referrals to plastics/fertility ($n = 4$) and increasing awareness of the ‘case’ ($n = 2$). Only six respondents (30%) indicated that there were processes in place for **regular audit** of MCCs at their site.

Challenges in operation seemed to be more diverse and proportionately greater in provinces outside Ontario, with the most common being scheduling problems and low administrative support, whereas, at Ontario sites, the most common challenges were too many patients and lack of time (Table 2). Overall satisfaction ratings for the functioning of MCCs were higher at Ontario sites and Ontario-based respondents more frequently indicated that there were processes in place for MCC audit.

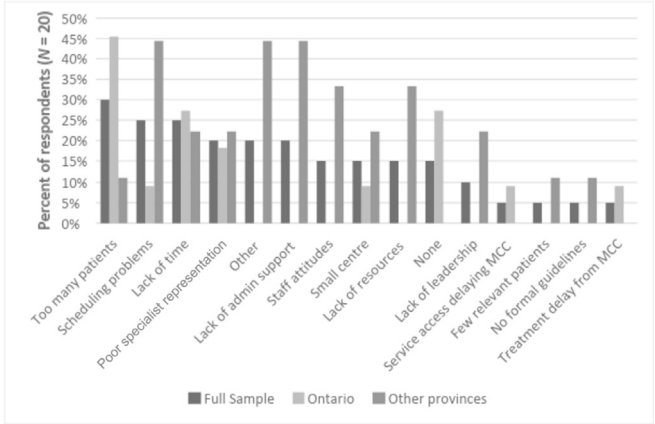

Fig. 5. Barriers to multidisciplinary cancer conferences (MCC).

4. Discussion

Internationally, multidisciplinary cancer care is considered best practice [21,22]. In Canada, Ontario is the only province with standards for the practice of MCCs. Until now, there has been no study on variations in MCC practice as a method of providing multidisciplinary care, or on the functioning of MCCs nationwide. This study took stock of multidisciplinary care in RUBY sites across Canada and adds to understanding of the impacts of practice standards on implementation and operation of MCC, as well as international variability in multidisciplinary care practice [19].

Overall, results reveal positive perceptions and practice of multidisciplinary cancer care, whether standards exist (Ontario) or not (other provinces/territories). MCCs were the most common multidisciplinary practice, and most respondents reported meeting weekly or every two weeks, both pre and post-operative MCCs, as well as appropriate supports to facilitate MCC functioning. Nevertheless, there were notable findings on differences between respondents' answers and the CCO standards concerning MCC functions, and suggestive differences in perceptions and practice between participants in Ontario and other provinces.

One of the key functions of MCC is to bring together a multidisciplinary team to advise on the care of the whole patient [23]. For breast cancer patients, surgeons, pathologists, radiologists, and radiation and medical oncologists are considered the foundation, but input from nurses, psychologists, plastic surgeons, fertility specialists and other practitioners is important, particularly for YWBC [3,24]. Although our results indicate that MCCs were generally well attended, findings also suggest that more (regular) attendance by surgeons, medical oncologists, radiologists, pathologists and plastic surgeons is needed. Findings also suggest that

nurses are not regularly attending meetings as recommended in the CCO standards, and the ideal practice of attendance by allied health professionals such as social workers and psychologists [2] was relatively uncommon. Absence of key specialists may affect treatment planning [11] and lack of participation by nurses may compromise holistic consideration of patient circumstance and preference for treatment [25,26]. Protected time and structured approaches to discussions may reduce these barriers to MCCs [27].

Another area where participants' responses diverged from the CCO Standards related to perceptions of MCC functions. Through MCC there is opportunity to support regional linkages, timely interventions, and referral processes and according to the Standards these are 'secondary' functions of MCC. However, as an example, more than a third of our sample indicated that supporting referrals was not a function of MCC. This gap in perceived referral functions may be problematic, particularly for patients who are likely to benefit from referrals beyond the core MCC team [24]. These findings suggest the need for fostering awareness of the spectrum of functions of MCCs in jurisdictions without standards.

There also appears to be variation across sites in consideration of patients presented for MCC and differences in opinion of what constitutes a complex case. Although there is considerable room for flexibility in patients presented to MCC in the CCO standards, international guidelines recommend that 90–100% of breast cancer patients be discussed at MCC [12,21]. This study indicates that patient presentation often occurs on a case-by-case basis. As a result, patients like YWBC who may have more complex clinical and psychosocial care needs, may miss out being discussed at MCC, which raises questions regarding equity of care access [13].

Responses from Ontario-based versus other participants show suggestive differences across MCC implementation, practice, presentation and operation. First, Ontario-based respondents were more aware of CCO standards - unsurprising given that the standards were developed in Ontario and apply to practitioners in that jurisdiction. More intriguing is the observation of differences in the everyday practice of MCCs, with more formalized approaches in Ontario. For example, information on the CCO website indicates that quality audit processes are in place for MCCs in Ontario, with 85–88% of sites compliant with the standards [28]. However, few sites outside of Ontario reported processes for regular practice audit. Research shows that more resource intensive practices such as quality audits can lag behind other aspects of good practice procedures [15] in multidisciplinary care.

There were also greater and more diverse challenges in operating MCCs in other provinces, which may be related, in part, to fewer procedural and practical supports for implementation [29], and fewer ongoing supports such as lack of dedicated MCC chair or administrator. It is notable that challenges in MCCs, including variable practice reported in this research mirror international reports and audits of multidisciplinary cancer care practice [7,26,30,31]. Finally, Ontario-based participants seemed to be more satisfied with the functioning of MCCs in their sites. Together, these findings suggest that formalizing and disseminating standards for MCCs may better support their implementation, practice and operation. The international literature show that introduction of guidelines and standardization of practice is associated with improved functioning of multidisciplinary care and patient outcomes [14,15,26], but also suggests that variability in practice exists irrespective of standards [13]. Both practice and policy approaches are recommended to address the multi-level barriers to effective MCC functioning and team-working [27].

4.1. Limitations

Findings represent a limited sample of surgeons and surgical oncologists at RUBY study sites, and there were more respondents from Ontario where MCC standards exist. Additionally, there was limited diversity in the sample with respect to the types of multidisciplinary care in practice, and rural versus urban location, so comparative analyses were not possible. Given that RUBY study leads are interested in the care of complex patients, our findings likely underestimate issues with MCC implementation and practice. Future research needs to include a larger sample beyond the RUBY study, which has emphasised the importance of MCC. These limitations aside, the research has provided the first systematic study of multidisciplinary care practice across Canadian sites and illuminated areas for improvement in the policy, implementation and practice of formal MCCs.

5. Conclusion

This research suggests that although MCCs are part of regular management of breast cancer patients across Canada, not all (young) breast cancer patients are discussed. There are also variations in how MCCs are conducted and supported particularly outside of Ontario. Furthermore, the understanding of the functions of MCCs vary across the country.

Differences in responses between participants from Ontario where standards for MCC exist and other-based respondents suggest that standards and support for MCC implementation contribute to positive differences in the operation of MCCs, such as case presentation rates, professional attendance and satisfaction with MCC. Together, findings suggest that greater governmental and organisational support for MCC via policy, education and infrastructure contribute to ensuring that quality standards are met, and a case could be made for implementing standards across all Canadian provinces. Challenges reported by *all* sites and ongoing issues with attendance and referral patterns suggest standards alone are not enough and that more education and incentive could support MCC.

Acknowledgements

We extend our thanks to the RUBY study principal investigators, site leads and research coordinators for their support of and participation in this research, as well as the women participating in the RUBY study. This research was supported by joint funding from the Canadian Institute of Health Research and the Canadian Breast Cancer Foundation (#139590).

List of abbreviations

CCO	Cancer Control Ontario
MCC	Multidisciplinary cancer conference
YWBC	Young Women with Breast Cancer
RUBY	Reducing the Burden of Breast Cancer in Young Women

Ethical approval

St Michael's Hospital Research Ethics Board (REB# 14–309C) provided ethical approval.

Declarations of interest

None.

Conflict of interest statement

None declared.

Funding

This research was by a joint grant from the Canadian Institute of Health Research and the Canadian Breast Cancer Foundation [#139590].

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