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Priority strategies to reduce socio-gendered inequities in access to person-centred osteoarthritis care: Delphi survey

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ABSTRACT

Objectives Osteoarthritis (OA) prevalence, severity and related comorbid conditions are greater among women compared with men, but women, particularly racialised women, are less likely than men to access OA care. We aimed to prioritise strategies needed to reduce inequities in OA management.

Design Delphi survey of 28 strategies derived from primary research retained if at least 80% of respondents rated 6 or 7 on a 7-point Likert scale.

Setting Online.

Participants 35 women of diverse ethno-cultural groups and 29 healthcare professionals of various specialties from across Canada.

Results Of the 28 initial and 3 newly suggested strategies, 27 achieved consensus to retain: 20 in round 1 and 7 in round 2. Respondents retained 7 patient-level, 7 clinician-level and 13 system-level strategies. Women and professionals agreed on all but one patient-level strategy (eg, consider patients' cultural needs and economic circumstances) and all clinician-level strategies (eg, inquire about OA management needs and preferences). Some discrepancies emerged for system-level strategies that were more highly rated by women (eg, implement OA-specific clinics). Comments revealed general support among professionals for system-level strategies provided that additional funding or expanded scope of practice was targeted to only formally trained professionals and did not reduce funding for professionals who already managed OA.

Conclusions We identified multilevel strategies that could be implemented by healthcare professionals, organisations or systems to mitigate inequities and improve OA care for diverse women.

STRENGTHS AND LIMITATIONS OF THIS STUDY

- ⇒ We employed rigorous methods, complied with research standards for conducting and reporting Delphi studies, and identified strategies from multiple sources (published research, guidelines, policies and interviews with diverse women and professionals of differing specialties) through primary research.
- ⇒ We actively engaged a 13-member advisory group of diverse women in planning and executing this study.
- ⇒ Strategies were rated by a larger number of respondents than is typical of most Delphi studies to ensure that participants reflected the varied perspectives of diverse women and professionals from across Canada; and we employed a high threshold to yield strong consensus.
- ⇒ As volunteers, the participants may have a particular interest in OA, thus their views may be biased.
- ⇒ Because we focused on ethno-culturally diverse Canadian women, the prioritised strategies may not be relevant to those from other disadvantaged groups, or to women or professionals in settings outside of Canada with differing health systems.

INTRODUCTION

Osteoarthritis (OA) is the most common type of arthritis with >527.8 million cases in 2019, most often affecting hands, hips and knees.[1] OA arises from joint degradation including changes to cartilage and bone, manifesting with inflammation and pain and disrupting the activities of daily living and quality of life.[2] Clinical guidelines recommend early or 'first-line' intervention, which may include education, self-management, physical activity and weight loss. Other interventions include pharmacological and non-pharmacological pain control, heat and/or therapeutic cooling, braces/orthoses or cognitive behavioural therapy.[3 4] OA can worsen over time, and is often associated with comorbid conditions such as depression, diabetes and heart disease. Joint replacement may be required if OA progresses to end-stage disease.[3–5] Clearly, OA exerts a profound detrimental impact on the function and well-being of persons worldwide.

Women are disproportionately impacted by OA. Prevalence, severity and OA-related comorbid conditions are greater among women compared with men.[1 6] However, women are less likely than men to be diagnosed with OA, prescribed or advised of first-line therapies, or counselled in self-management.[7 8] Such inequities are even more pronounced among racialised or immigrant women,[9 10] who face numerous gendered, cultural and socioeconomic barriers of access to OA care and self-management including household or family priorities, unfamiliar with strategies to optimise health such as physical activity, and limited time or funds for self-care due to low-paying or multiple forms of employment.[11]

We lack knowledge of the strategies needed to reduce these inequities or enhance access to and quality of OA care for diverse disadvantaged women because prior research largely focused on describing compliance with OA management guidelines or identifying barriers of compliance.[12–15] A review of research conducted before 2010 identified only 10 studies of strategies to overcome inequities in OA care experienced by disadvantaged groups,[16] and an updated review identified only 11 such studies published from 2010 to 2022.[17] In both reviews, few studies focused solely on women. The earlier review included only one study that compared women with men,[16] and the updated review included only two studies focused on women only.[17] Strategies largely consisted of education or support for self-management for persons affected by OA. This may overcome patient-level barriers such as lack of knowledge about OA or self-management, but are unlikely to address additional known barriers at the healthcare professional (eg, OA not considered serious) or system level (eg, availability of support services) that contribute to gendered inequities in access to and quality of OA care.[14 15] Furthermore, research shows that self-management programmes have minimal, non-sustained impact on patient OA knowledge, self-efficacy, behaviour and symptoms[18] unless self-management is facilitated by physicians via person-centred approaches including ongoing counselling, tailored action plans and referral to other sources of OA management or support.[19 20] However, research involving healthcare professionals in five countries identified challenges to person-centred OA care: healthcare professionals lack knowledge of how to manage OA, their personal beliefs differ from guideline recommendations and they perceive that patients have unrealistic expectations.[21]

Given the prevalence and profound impact of OA,[1–5] evidence of gendered inequities in OA care and lack of insight on how to reduce inequities caused by multilevel factors,[6–11] the overall aim of this study was to generate consensus on the strategies needed to mitigate challenges contributing to inequities. The specific objective was to engage diverse women and healthcare professionals in prioritising multilevel strategies that may improve OA care for diverse women. Those strategies could be adopted and promoted by healthcare organisations or systems to assist diverse women in accessing early interdisciplinary care, and support healthcare professionals in achieving person-centred OA care.

METHODS

Approach

To identify priority strategies, we employed the Delphi technique, a widely used method for establishing consensus on healthcare recommendations, indicators or quality improvement approaches.[22–24] The Delphi technique involves surveying persons with lived experience or expertise in two or more rounds until consensus emerges. To optimise rigour, we complied with criteria for conducting online surveys and the Conducting and Reporting of Delphi Studies to optimise rigour[25 26]; and the research team, comprised a 13-member ethno-culturally diverse women's advisory group, healthcare professionals (family physician, rheumatologists, physiotherapist, pharmacist) and health services researchers with expertise in the topics of OA, person-centred care, equity and women's health, provided input at all stages over 2 years culminating in the Delphi survey. To minimise drop-out, we conducted two rounds.[22–24]

Sampling and recruitment

Delphi studies involve panels that range widely in number (median 17, range 3–418).[27] Because reliability increases with panel size,[28] and to capture the perspectives of diverse women and healthcare professionals from across Canada, we aimed to establish a panel of at least 40 members including at least 50% women. Because OA disproportionately affects women in general, and in particular, women of visible minorities, we included both Caucasian and ethno-culturally diverse women. Accordingly, we recruited women with OA aged 18+ years including those of the most common ethno-cultural immigrant groups in Canada (East Asian, South Asian, African or Caribbean Black)[29] through OA advocacy groups, referral from our women's advisory group, university cultural clubs, community health clinics and immigrant settlement agencies. We recruited healthcare professionals representing those who provide care or advice to persons with OA (family physicians, nurse practitioners, therapists, pharmacists) or oversee or study OA health services (managers, policymakers, researchers) through professional societies, family health teams, arthritis research or practice networks and academic organisations. These organisations shared study information on our behalf by verbal, print and email notification that directed interested persons to contact the study coordinator. We did not include rheumatologists who typically focus on rheumatoid arthritis.

Survey development

We identified strategies through our prior research including a review of published research, content analysis of OA guidelines and policies and qualitative interviews with diverse women and healthcare professionals.[17 30–32] To derive strategies that populated the survey, from the aforementioned primary research,[17 30–32] we collated recommended strategies, and to these, added additional unique recommendations informed by determinants (eg, enablers or barriers of equitable access to OA care) framed as recommendations (online supplemental appendix 1). We organised strategies as patient-level (offered to persons with OA to improve knowledge, confidence, behaviour, OA symptoms or quality of life); clinician-level (offered to clinicians to improve OA knowledge, skills or behaviour) or system-level (developed or offered by healthcare organisations or government to improve access to or quality of OA care, advice or support). The research team reviewed the strategies to refine wording. We created a round 1 online survey in Research Electronic Data Capture prompting panellists to rate the importance of each strategy on a 7-point Likert scale (1 strongly disagree, 7 strongly agree), comment on the relevance or wording of each strategy if desired and suggest additional strategies not already included in the survey.

Data collection and analysis

We emailed a link to the survey along with instructions to panellists on 13 February 2023, and emailed reminders at 1, 2 and 3 weeks.[25 26] Although the original Delphi technique defined consensus as agreement by at least two-thirds of panellists,[26 27] we used 80% to generate strong consensus. We prepared a report of round 1 Likert scale response frequencies and comments for each strategy including those retained (rated by at least 80% of panellists as 6 or 7), discarded (rated by at least 80% of panellists as 1 or 2) or with no consensus (all others), along with newly suggested unique strategies. We emailed panellists the report and a link to the round 2 survey of strategies that did not achieve consensus and those newly suggested on 6 April 2023 with a reminder at 1, 2 and 3 weeks. We similarly analysed and summarised the round 2 results.

Patient and public involvement

A 13-member ethno-culturally diverse group of women with OA contributed to study planning and execution.

RESULTS

Panellists

A total of 35 women and 29 professionals completed the round 1 survey. Of those, 84.4% (32 women, 22 professionals) completed the round 2 survey (table 1).

Delphi results

Online supplemental appendix 2 details the strategies that panellists agreed to retain or discard, and those that did not achieve consensus in rounds 1 and 2. Figure 1 summarises the number of strategies retained, discarded or with no consensus in each round. Of the 28 initial and 3 newly suggested strategies, 27 achieved consensus to retain: 20 in round 1 and 7 in round 2. Notably, consensus was high both within (eg, similar across women by ethno-cultural group) and between groups (eg, similar between women and healthcare professionals).

Prioritised strategies

Participants achieved strong (≥80.0%) consensus to retain 7 patient-level, 7 clinician-level and 13 system-level strategies (table 2). Of those, four patient-level, three clinician-level and two system-level strategies achieved consensus among 90.0% or more of participants.

Comparison by group

Online supplemental appendix 2 compares ratings between women and professionals and online supplemental appendix 3 shows all comments offered by respondents about strategies.

Patient-level strategies

Women and professionals differed in the rating of a single strategy. Professionals (93.1%) agreed to retain: involve interpreters (family or professional) to translate spoken language during healthcare appointments. Women did not (71.4%), but overall, the strategy was retained in round 1. Comments did not clarify this discrepancy, as only two women said that translators could help those with English as a second language to understand their

Table 1 Characteristics of panellists who completed round 1 survey

		Round 1		Round 2	
Group	**Subgroup**	**N**	**%**	**N**	**%**
Women n=35 round 1; n=32 round 2	White	11	31.4	10	31.3
	East Asian (Chinese, Filipino)	10	28.6	10	31.3
	South Asian (Indian, Pakistani)	8	22.9	7	21.9
	Black (African, Caribbean)	6	17.1	5	15.6
Healthcare professionals n=29 round 1; n=22 round 2	Therapist (chiropractor, physiotherapist, occupational therapist)	15	51.7	13	59.1
	Healthcare leaders (manager, policymaker)	5	17.2	1	4.6
	Primary care clinician (family physician, nurse practitioner)	5	17.2	4	18.2
	Community pharmacist	2	6.9	2	9.1
	Researcher	2	6.9	2	9.1

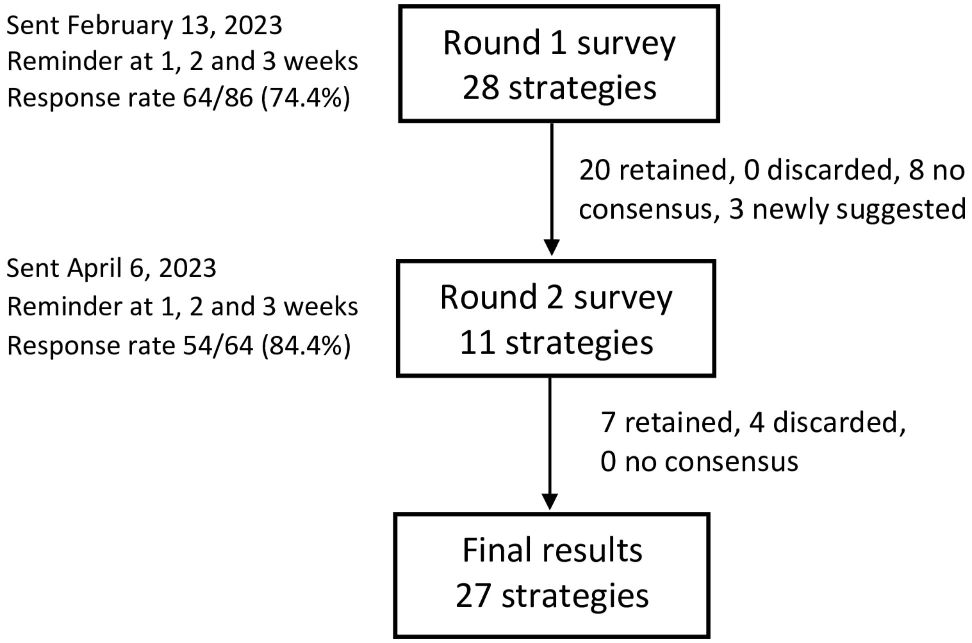

Figure 1 Delphi summary.

diagnosis, and two professionals said that translators were integral to culturally safe care but not widely accessible, particularly in primary care.

> As an immigrant, English not my first language. Translation is very important to avoid misunderstand in medical issue (woman)
>
> Family interpreters often miss words and meaning and do not provide full translation (healthcare professional)

Clinician-level strategies

Women and professionals agreed to retain all six strategies in round 1.

System-level strategies

Women and professionals differed in the rating of five strategies. Women (85.7%) agreed to retain: allow persons with OA to self-refer to clinics or self-management programmes. Professionals did not (75.9%), but overall, the strategy was retained in round 1. Comments from two women clarified that, once diagnosed with OA, they should be able to self-refer, which could reduce the length of time they wait for services, thereby lessening pain or other issues. Comments from two professionals suggested they were not opposed to self-referral, but highlighted the need for dedicated government funding of healthcare human resources to support the potentially increased volume of self-referred patients, noting this should not replace or reduce funding for professionals who routinely manage OA.

> Would be strongly agree for patients who have already been diagnosed with OA…Why do we need to be re-referred every 6–12 months. It's not like the OA is suddenly go away or be cured. Self-referral could allow shorter wait times for OA patients and less time with pain or other issues (woman)
>
> Funding is always an issue. Self-referrals should be promoted but not at the expense of the health care professionals that deal with this… ie, the government should have special funding for these self-referral programs (healthcare professional)

Women in round 1 (82.9%) and round 2 (90.6%) agreed to retain: expand the scope of practice of professionals (eg, physiotherapists, occupational therapists, pharmacists) so that they can refer persons with OA for tests or services. Professionals did not (round one 72.4%, round two 54.6%), and the strategy was discarded. Comments from five professionals emphasised that this strategy should only be considered if professional colleges provided formal training in OA to avoid inappropriate testing.

> This strategy is of the highest priority, not only for the many without a primary care physician, but because OA patients engage on a regular basis with our pharmacist, physio therapist, etc (woman)
>
> I only recommend this if the healthcare profession has adequate training on everything OA…There are already enough professions which have adequate training in the matter in my opinion (healthcare professional)

While neither group in round 1 agreed to retain: increase diversity of healthcare professionals and policymakers (eg, more ethnically diverse or women providers), in round 2, women agreed to retain it (81.3%), professionals did not (68.2%) and the strategy was discarded. Comments did not reflect these ratings. Two women

Table 2 Strategies that achieved consensus to retain

Level	Strategy	Panellists who rated to retain (%)
Patient 7 of 8 strategies retained	Consider patients' cultural needs and economic circumstances when offering treatment, self-care advice and/or programmes (eg, language, cost of services from physiotherapists, chiropractors, dietitians, etc)	93.8
	Offer education sessions about OA and self-management to persons with OA (women-only, group, in-person and virtual, multiple languages, across Canada, free, at workplaces or community centres)	90.6
	Provide educational material about OA to persons with OA (brochures physicians can hand out, posters in community settings and online, in multiple languages, include culturally relevant information)	90.6
	Healthcare professionals that first learn about patients' OA concerns or symptoms should refer them for manual therapy (eg, physiotherapy, chiropractic therapy, occupational therapy)	90.6
	Involve interpreters (family or professional) to translate spoken language during healthcare appointments	81.3
	Have regular follow-up visits with patients to monitor progress (eg, following self-management advice, symptom control)	81.3
	Offer peer support groups for persons with OA to help with self-care (virtual and in-person, multiple languages)	81.3
Clinician 7 of 7 strategies retained	Healthcare professionals should engage patients by inquiring about OA management needs and preferences (suggested in round 1)	98.1
	Ensure that all healthcare professionals have a full picture of patients' health history via shared records	93.8
	Provide healthcare professionals with OA educational materials to give to patients	92.2
	Provide healthcare professionals with information or tools to help them diagnose and treat OA in persons from disadvantaged groups	89.1
	Provide healthcare professionals with training on bias and cultural sensitivity	87.5
	Provide healthcare professionals with timely access to interpreters	87.5
	Provide medical school education and education about how to diagnose and manage OA	85.9
System 13 of 16 strategies retained	Develop public spaces in all communities that promote physical activity (eg, bicycle/walking paths)	93.8
	Evaluate the equity of OA programmes or policies in healthcare organisations using existing tools (eg, surveys, measures, instruments) that are designed to assess equity of access to and quality of care among disadvantaged groups	90.7
	Implement OA-specific clinics or centres (eg, one-stop clinics where patients can access various healthcare professionals (family physicians, physiotherapists, chiropractors, social workers, etc))	89.1
	Engage diverse persons with OA, healthcare professionals to develop a Canadian OA strategy	89.1
	Engage diverse women and other disadvantaged groups in planning OA policies, strategies and programmes	87.0
	Advocate for and fund research on equitable access to and quality of OA care (suggested in round 1)	87.0
	Publicly fund services for OA management (eg, ensure that provincial health insurance covers services from physiotherapists, chiropractors, dietitians, etc)	85.9
	Implement primary care hubs in underserved areas for disadvantaged groups that include primary care physicians and nurses in community agencies	84.4
	Collect and share data about the health experiences of disadvantaged groups (eg, diverse women) to understand their specific OA needs and preferences	84.4
	Train lay health leaders or community health workers from disadvantaged communities to assist persons with OA in their community with OA self-management	84.4

Continued

Table 2 Continued

Level	Strategy	Panellists who rated to retain (%)
	Fund OA diagnosis and management (eg, primary care, manual therapy, exercise therapy, self-management education, etc) as part of home care services (suggested in round 1)	81.3
	Allow persons with OA to self-refer to clinics or self-management programmes (eg, patients do not need to rely on primary care provider for a referral)	81.3
	Offer health promotion campaigns to the public on how to prevent and manage OA in a variety of formats and settings including but not limited to social media, billboards, cultural media, shops, places of worship, etc	81.3

OA, osteoarthritis.

recommended hiring the best person for the job regardless of sex or ethnicity, and one professional emphatically agreed on the need for greater diversity in the healthcare workforce.

> Just hire the best person for the job (woman)
>
> Absolutely. By 'ethnically diverse women' for 'ethnically diverse women', type of idea (healthcare professional)

Women agreed (91.4%) to retain: publicly fund services for OA management (eg, ensure that provincial health insurance covers services like physiotherapy), although they offered no related comments, while professionals did not (79.3%). Overall, the strategy was retained in round 1. Comments from two professionals agreed with this strategy provided funding was targeted to professionals trained in OA regardless of specialty.

> I love this idea! As long as the funding only goes to professionals who are adequately trained on OA (healthcare professional)

Women agreed (90.6%) to retain the strategy suggested in round 1: fund OA diagnosis and management (eg, primary care, manual therapy, exercise therapy, self-management education, etc) as part of home care services. Professionals did not (68.2%), but overall, the strategy was retained in round 2. Three women agreed with this strategy, particularly if delivered in a non-threatening manner by providers who speak their language, noting benefits for those with mobility issues and for ethno-culturally diverse women who may be looking after children and older parents, and not have time, money or knowledge to access outside services. Three professionals also agreed, particularly for older persons with mobility issues, many of whom do not have coverage for extended health benefits. In contrast, one professional said that affected persons should be encouraged to leave their home because physical activity is a best practice for OA management.

> Fund OA diagnosis and management (eg primary care, manual therapy, exercise therapy, self-management education, etc) as part of home care services—this is extremely important. Most seniors do not have extended health insurance and that presents as a huge barrier to getting the proper care and guidance (woman)
>
> Important as many of these folks will be more willing and able to be accessed via home care as they may be looking after children and older parents/multi-generational households and not have time, money or knowledge to access outside services (healthcare professionals)

DISCUSSION

Ethno-culturally diverse women with OA and healthcare professionals from across Canada achieved consensus on 27 of 31 strategies to support equitable access to person-centred care for women with OA including 7 patient-level, 7 clinician-level and 13 system-level strategies. Consensus was strong as we defined consensus as 80% or greater of all respondents rating strategies either 6 or 7 on a 7-point Likert scale, and of the 27 that achieved consensus, at least 90% of respondents agreed. Women and professionals agreed on all but one patient-level strategy and all clinician-level strategies. Some discrepancies emerged for five system-level strategies that were more highly rated by women. Analysis of comments revealed general support among professionals for these five system-level strategies provided that additional funding or expanded scope of practice was targeted to only formally trained professionals and did not reduce funding for professionals who already managed OA.

This research builds on and expands prior efforts to describe optimal OA health services. For example, an international Delphi study generated 70 capabilities of professionals who manage OA that largely reflected clinical management and included 5 items categorised as person-centred care that emphasised engaging persons with OA in their care but did not address inequities or intersectional factors such as gender or ethno-cultural group.[33] Of 173 respondents, 26 were consumers, but consumer characteristics were not reported.[33] An analysis of 6 international OA guidelines generated 46 clinical interventions to manage OA that were subsequently rated by 16 respondents from across Europe.[34] While items rated were referred to as patient-centred standards of care, they represented clinical management, and while the respondents included patients, the number and characteristics of patients was not reported.[34] A panel of 5 females and 5 males aged 52–80 years in the UK attended four meetings, and through ranking and discussion, generated 15 quality indicators of OA management in primary care.[35] The indicators refer to giving information, advice, support or referrals to self-manage OA, but none directly address inequities or intersectional factors, and the characteristics of participants were not reported.[35] While important to set standards of OA care, these initiatives did not identify concrete strategies needed to achieve equitable person-centred OA care, which may require healthcare reforms such as those identified in our study.[36] Furthermore, it is not clear if these initiatives engaged ethno-culturally diverse women and whether the outputs reflect their perspectives. Therefore, our study has generated unique insight on multilevel strategies that could mitigate challenges contributing to inequities, and improve access to and quality of OA care for diverse women.

These findings raise several implications. One obstacle to implementing these strategies may be the sheer number, necessitating a phased approach potentially informed by priority level. For instance, while 27 strategies achieved strong consensus (≥80%), 9 strategies achieved very high consensus (≥90%) including 4 patient-level, 3 clinician-level and 2 system-level strategies. Hence, healthcare organisations or governments with strained resources could proceed to first focus on these nine strategies as a means of launching beneficial change while undertaking planning that might enable implementation of additional strategies in the future. Yet another way to prioritise strategy implementation is to consider comments offered by respondents, which reflect relevance and feasibility.

Some strategies may be relatively straightforward to implement, for example, develop a national OA strategy. To do so, insight could be gained from prior initiatives. For example, Australia designated OA as health priority and established a national OA policy in 2002, but subsequent evaluation revealed only two examples of service redesign, and authors concluded that the lack of reformed service models and support for healthcare professionals hampered improvements.[37] Another study compared 41 national policies relevant to musculoskeletal health including OA, and generated 47 principles that could support the implementation of OA policy across 8 domains: service delivery, workforce, medicines and technologies, financing; data and information systems, leadership and governance; citizens, consumers and communities and research and innovation.[38]

Other prioritised strategies may be more challenging to implement due to resource implications, for example, allow persons with OA to self-refer may require the implementation of systems to accommodate such referrals and additional human resources to manage the volume. The same is true of including OA diagnosis and management in home care programmes, implementing primary care hubs or OA-specific centres, developing a built environment in all communities and publicly funding OA management for all. Some of these strategies may require the compilation of existing evidence or generation of new evidence to inform how they could be implemented.

Other strategies prioritised in this study inform ongoing research: conduct research on equitable access to and quality of OA care, and evaluate the equity of current OA policies and programmes. It will be essential to engage diverse persons with lived experience in planning healthcare policies and programmes; this has become a standard means of ensuring that health services reflect and address the clinical requirements, individual circumstances and personal preferences of diverse persons.[39] Considerable guidance has accumulated on the capacity and processes needed to engage diverse persons with lived experience in a meaningful way.[40–43]

This study has several strengths. We employed rigorous methods and complied with research standards for conducting and reporting Delphi studies.[22–26] We actively engaged a 13-member advisory group of diverse women in planning and executing this study. We identified strategies from multiple sources (published research, guidelines, policies, diverse women, professionals of differing specialties) through primary research.[17 30–32] Strategies were rated by a larger number of respondents than is typical of most Delphi studies to ensure that participants reflected varied perspectives of women and professionals from across Canada to generate national consensus, and because larger sample size has been shown to enhance reliability.[27 28] Prioritised strategies reflect strong consensus within and across groups of women and professionals, and because they are multilevel, stand to address barriers identified at the patient-level, clinician-level and system-level.[14 15 18–21] We must also mention potential study limitations. As volunteers, the participants may have a particular interest in OA, thus their views may be biased. Because we focused on ethno-culturally diverse women, the prioritised strategies may not be relevant to those from other disadvantaged groups. The prioritised strategies may not be relevant to women or professionals outside of Canada with differing health systems.

CONCLUSIONS

We identified 27 multilevel strategies (7 patient-level, 7 clinician-level and 13 system-level) that have the potential to mitigate inequities, and improve access to and quality of OA care for diverse women. If needed, implementation could be prioritised to strategies that achieved 90% or greater agreement, or based on respondent comments about relevance and feasibility. Further research may be needed to establish how best to implement these strategies.

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Patient and public involvement Patients and/or the public were involved in the design, or conduct, or reporting, or dissemination plans of this research. Refer to the 'Methods' section for further details.

Patient consent for publication Not applicable.

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Provenance and peer review Not commissioned; externally peer reviewed.

Data availability statement All data relevant to the study are included in the article or uploaded as supplementary information. All data generated and analysed during the current study are available in the manuscripts and its supplemental files.

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Correction notice: priority strategies to reduce socio-gendered inequities in access to person-centred osteoarthritis care: Delphi survey

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The above mentioned article is corrected since it was published. The second author is changed from “Angela Abenoja” to “Angelina Abbaticchio”.

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