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Raising awareness about physical activity's role in reducing cancer risk: qualitative interviews with immigrant women and community agency managers

Sharon Iziduh[1], Smita Dhakal[1], Riana Sihota[1], Xinyang Ye[1], Christine M Friedenreich[2], Nazilla Khanlou[3], Catherine M Sabiston[4], Jenna Smith-Turchyn[5], Jennifer R Tomasone[6] and Anna R Gagliardi[1,7*]

Abstract

Objectives To explore how to reach immigrant women through community agencies to raise awareness of the role of physical activity (PA) in reducing cancer risk.

Study design Qualitative description.

Methods We conducted semi-structured telephone interviews with immigrant women and community agency managers to discuss the ideal design of an education session on PA and cancer risk, and identified themes using content analysis.

Results Participants included 22 women (6 African or Caribbean Black, 4 Chinese, 3 Filipino, 5 Indian, 4 Pakistani) and 16 agency managers from across Canada. Women were not familiar with Canada's PA guidelines, and few were aware that PA reduces the risk of cancer. All expressed interest in education about PA and cancer. Diverse women and managers expressed similar preferences for education session design including content (e.g. PA amount/type), format (e.g. in person preferred but virtual more practical), personnel (external expert plus agency staff), cultural tailoring (e.g. translated supplemental take home information) and reinforcing (e.g. follow-up with participants) strategies. Women and managers identified few barriers to participating in education sessions, chiefly, that women lacked time due to work and family responsibilities; and noted several enablers of participation (e.g. emphasize social aspect, provide gift cards or recreation centre passes).

Conclusions We generated insight on the ideal characteristics of a community-based education session that could raise awareness among immigrant women of the importance of PA in reducing cancer risk. Further research is needed to assess the feasibility and impact of PA education sessions designed based on these findings.

Keywords Physical activity, Cancer, Prevention, Immigrant women, Education, Qualitative interviews

*Correspondence:
Anna R Gagliardi
anna.gagliardi@uhn.ca
[1]University Health Network, 200 Elizabeth Street, Toronto, ON M5G2C4, Canada
[2]University of Calgary, 2500 University Drive NW, Calgary, AB T2N1N4, Canada
[3]York University, 4700 Keele St, Toronto, ON M3J1P3, Canada
[4]University of Toronto, Toronto, ON M5S1A1, Canada
[5]McMaster University, 1280 Main St W, Hamilton, ON L8S4K1, Canada
[6]Queen's University, 99 University Ave, Kingston, ON M5V3K2, Canada
[7]Toronto General Hospital Research Institute, 200 Elizabeth Street, Toronto, ON 13EN-228, M5G2C4, Canada

Introduction

Physical activity (PA) has long been associated with numerous health benefits including reduced mortality, cardiovascular disease, hypertension, type 2 diabetes, anxiety, depression and dementia; and improved bone health, cognition, quality of life and physical function [1]. PA can also reduce the risk of 13 types of cancer: bladder, breast, blood (myeloma, myeloid leukemia), colon, endometrial, esophageal, head and neck, kidney, liver, lung, rectal and stomach [2, 3]. The ComPARe study revealed that 26,200 cancer cases in Canada could be prevented by 2042 if more Canadians were active [4]. PA is defined as bodily movement via skeletal muscles, a broader concept than exercise, which is planned, structured and repetitive [5]. Canada's new 24-hour Movement Guidelines state that PA can be achieved in various ways (e.g. daily tasks, exercise, sport, recreation), in different environments (e.g. home, work, community) and contexts (e.g. leisure, household, transportation, occupation) [6].

Promotion of PA is particularly crucial for high-risk groups. By 2036, immigrants and their Canadian-born children will comprise nearly 50% of Canada's population, most commonly Asians from China, Philippines, India and Pakistan, and African and Caribbean Blacks [7]. Cancer risk among immigrants increases with additional years in Canada [8]. Canadian population-level data showed that immigrant women, particularly newcomers (<10 years in Canada), have far lower PA rates compared with immigrant men and non-immigrants [9]. Determinants may include gender roles (self-care not prioritized), culture (PA not typical) and socioeconomic (low-paying/multiple jobs) factors [10, 11].

Interventions to facilitate PA, largely exercise programs, have not been consistently effective and did not consider gender or ethnicity/culture in PA design, recruitment or sub-analyses [12]. A systematic review of PA barriers among South Asian women found they lacked knowledge of PA benefits, and optimal amounts and forms of PA [13]. Instead of exercise programs, interventions are needed further upstream to create awareness about the important role of PA in preventing cancer and the range of ways to achieve it through daily routines, as outlined in Canada's 24-hour Movement Guidelines [6]. Mounting research underscores the value of community-based health promotion when targeting immigrant groups [14]. Research in Canada with East and South Asian immigrant women showed that health promotion must be "culturally safe", which they described as available through familiar community settings [15, 16].

The overall aim of this study was to explore how to design a community-based education session about PA and cancer for immigrant women. The objective was to interview immigrant women and community agency managers about the ideal design of such a program so that, in future research, we could evaluate its uptake and impact.

Methods

Approach

To explore views about education session design, we used qualitative description [17, 18]. This approach does not generate or test theory, but is commonly used to develop or improve clinical or behavioural interventions based on key informant input. We complied with standards for reporting qualitative research and enhancing rigor [19]. We acquired ethics approval through the University Health Network Research Ethics Board. The research team included five researchers (expertise in qualitative research, immigrant health, intervention design, cancer prevention, PA, psychosocial determinants of PA and PA promotion), four immigrant women (Filipino, Chinese, Pakistani, African Black) and four community agencies that offer immigrant settlement services. All contributed to research design and planning, interview question development, data analysis, and interpretation of the findings. All participants provided informed consent prior to interviews and received a $50 e-gift card following interviews. There was no prior relationship between the researchers and participants.

Sampling and recruitment

We used maximum variation sampling to recruit immigrant women and community agency managers [17]. Eligible women were adults aged 18+, newcomer immigrants in Canada 10 years or less, of ethno-cultural groups most common in Canada: Chinese, Filipino, Indian, Pakistani, and African and Caribbean Blacks [7], who could communicate in English. We targeted newcomers to promote PA before adoption of North American lifestyle could diminish the "healthy immigrant effect" and contribute to rising rates of cancer with more years in Canada [8]. Eligible community agency representatives were adults aged 18+in the role of managers overseeing, planning or delivering educational activities at organizations offering immigrant settlement services from across Canada. We identified community agencies by searching Google for "immigrant settlement Canada", and extracted names and contact information for managers from agency web sites. We contacted managers by email to introduce the study. Upon interviewing managers, we asked them to help us recruit women by sharing study information that we provided, which directed interested women to contact the study coordinator. We aimed to recruit 18 women, 3 of each of the aforementioned 6 ethno-cultural groups, and 18 managers. We established informational saturation, when no further unique themes emerge, through discussion with the research team, to confirm sufficient sampling [17].

Data collection

We conducted semi-structured telephone interviews between May 6 and July 20, 2022. For training purposes, ARG (PhD, Senior Scientist/Professor) conducted the first two women and manager interviews while staff listened, then ARG listened to two interviews conducted by each staff member: SI (study coordinator, interviewed African and Caribbean Black women), SD (graduate student, interviewed Indian and Pakistani women), AY (graduate student, interviewed Chinese and Filipino women) and RS (graduate student, interviewed managers). ARG met with staff after each interview to discuss interview technique. Thereafter, staff conducted all interviews, with weekly review by ARG. The interview guide included similar questions for women and managers, informed by study objectives, and advice from immigrant women and community agency manager members of the research team (Supplementary File 1): ideal education session design, how to ensure education was culturally safe, and enablers and barriers of participating in education sessions. We also asked women about their knowledge of and participation in PA, and perceived benefits or harms of education about PA and cancer. Interviews ranging from 20 to 55 min were audio-recorded and transcribed.

Table 1 Characteristics of study participants

Women characteristics	***n***	**% of 22**
Age (years)		
<40	7	31.8
40–60	10	45.5
>60	5	22.7
Ethno-cultural group		
Black (African, Caribbean)	6	27.3
Chinese	4	18.2
Filipino	3	13.6
Indian	5	22.7
Pakistani	4	18.2
Number of years in Canada		
< 1	3	13.6
1–5	9	40.9
> 5	10	45.5
Total	**22**	
Manager/Agency characteristics	***n***	**% of 16**
Manager sex		
Female	15	93.8
Male	1	6.3
Community served		
Multicultural	14	87.5
Filipino	1	6.3
African or Caribbean	1	6.3
Location		
Ontario	11	68.8
Manitoba	1	6.3
Alberta	3	18.8
Nova Scotia	1	6.3
Women specific agency		
Yes	2	12.5
No	14	87.5
Total	**16**	

Data analysis

We conducted inductive thematic analysis through constant comparison and used Microsoft Office Word and Excel to manage data [17]. ARG independently coded the first two transcripts for interviews conducted by each staff member, and discussed coding technique with staff. ARG also created a preliminary codebook of themes and exemplar quotes (first level coding) across all interviews. Thereafter, staff coded subsequent interview transcripts to expand or merge themes in the codebook (second level coding). ARG met with all staff on a weekly basis to review, discuss and refine coding, and through discussion with staff, agreed that information saturation was achieved. We tabulated data (themes, quotes) and compared themes between women and managers, using summary statistics to describe participants and text to describe key themes. All research team members reviewed data to confirm informational saturation and clarity of themes.

Results

Participants

We interviewed 22 women and 16 managers (Table 1).

Supplementary File 2 includes all themes and quotes. Themes with select quotes are discussed here, organized by interview questions, noting any discrepancies between participant views. Overall, themes were similar within and between women and managers. Each quote features an anonymous participant identifier. For women, the identifier includes participant number, ethno-cultural group and age. For managers, the identifier includes participant number and whether the agency served multicultural or a specific population of immigrants.

PA knowledge and practice

Most women lacked awareness of guidelines for type and amount of PA, but many said they were active, most often by walking or household activities. Reasons for little or no PA included lack of time, resources or motivation from friends, family or colleagues.

> *The only physical activity that I do is just to walk to take my daughter to school (08 woman African aged 38).*
>
> *I'm living all by myself and I don't have anybody with me…So if somebody would ask me to do something that would motivate me (03 woman East Asian aged 32).*

PA education views

Most women were aware of the health benefits of PA, but not that PA can reduce cancer risk. They expressed interest in education about PA and cancer, and identified numerous associated benefits for themselves and family or friends: opportunity to meet other women and reduce isolation, encourage women to take some time from household responsibilities for self-care, increase physical activity, enhance physical appearance, and improve overall physical and mental health.

> *I would like to more about the benefits of physical activities so I can dedicate some time for doing physical activity and I'll get motivated (18 woman South Asian aged 33).*
> *When I know about this information I can tell my friend and my friend they tell someone (19 woman African aged 50).*

PA education design

Table 2 summarizes themes articulated by women and managers with exemplar quotes, revealing little difference in views within or across the two groups about the ideal design of PA education.

Content

Participants agreed that education sessions should address recommendations for the type and amount of PA; the benefits of PA including its influence on reducing cancer risk; and cancer risk factors, prevention and screening. Additional suggested topics included: how the healthcare system works, healthy eating, tips to motivate or overcome barriers of PA and local PA facilities or programs. A few women and managers also suggested holding separate sessions for younger and older immigrant women, or tailoring the content to age group.

Format

Participants preferred in-person education sessions for social interaction and group discussion, but many said they were accustomed to virtual meetings due to the COVID-19 pandemic and said it would be easier for more immigrant women to participate regardless of geography or if they had children at home. When asked about Internet access, views were mixed. Some women and managers said that few immigrant women had cell phones, computers or Internet access, or knew how to use this technology, while others said that most did. Participants agreed that education sessions should include both didactic and interactive components (e.g. visual aids, group discussion); engage small groups of 10 to 20 participants so that everyone can easily ask questions or participate in discussion; and require no more than one hour. They also recommending integrating PA education with other existing classes to reduce time commitments. Some women and managers advised multiple sessions as they perceived the topic to be complex, while others thought that that a single session was sufficient.

Personnel

Participants thought the instructor should be an external expert (e.g. healthcare professional or researcher) to enhance credibility. Others emphasized a train-the-trainer model, where agency staff familiar with the cultural communities they served could be trained to deliver the education session.

Cultural tailoring

Participants thought that PA education should be delivered in English to support language training, provided that agency staff were present to translate if needed and/or women were provided with translated information to help them follow along. Women and managers thought it would be beneficial for the instructor to be of similar culture to understand cultural norms and serve as a role model. Participants suggested several strategies to acknowledge and respect cultural differences: avoid blame for lack of PA or labelling cultural foods as unhealthy, avoid details about body parts, cancer may be a taboo topic so do not speak about it at length or in great detail, respect non-Westernized forms of healing (e.g. alternative medicine, prayers), suggest a variety of PA that might be acceptable to them, use culturally-relevant examples such as pictures or videos of women dressed in clothing customary to their culture, and assure women of a safe space where they can meet other newcomers like them.

Reinforcing strategies

Women and managers said the participants should be given take-home material in English and their own language to summarize PA education session information and provide links to additional sources of information. Some women suggested following up with education session participants by telephone to answer questions and monitor PA. Several women and managers also recommended public health campaigns (e.g. traditional and social media; in pharmacies, grocery stores and shopping malls) to broadly raise awareness about the importance of PA in reducing cancer risk.

Education participation

Women and managers said the main factor that might influence participation in PA education was lack of time due to work and family responsibilities. Other factors included concerns about privacy, lack of confidence in English language, having no one to accompany them,

Table 2 Themes and quotes about education session design

Theme	Women	Managers
CONTENT		
Physical activity recommendations	How many hours it will be and what they're going to be doing (02 woman South Asian aged 34)	Women should be given information on what kind of physical activity they can do on a regular basis (02 manager Filipino agency)
Benefits of physical activity	Educating them on what other benefits they could get from incorporating physical activity in their daily activities (22 woman African aged 24)	List the benefits of physical activity and how is good for your health… How beneficial it is to prevent cancer or any other disease (11 manager multicultural agency)
Cancer risk factors, prevention and screening	When we have knowledge of preventative measures, when you educate them, they will take precautionary measures (13 woman Caribbean aged 49)	We need to educate them; what cancer is? What are the kinds? What are the ones that hit women most often? If they have family history, how can they be affected by that? (05 manager multicultural agency)
Tips to motivate or overcome barriers of physical activity	Push them to doing certain things that they wouldn't do on a regular basis (21 woman South Asian aged 27)	Really concrete tips about how to build exercise into daily lives (14 manager multicultural agency)
Role of healthy eating	And also about their diet. If you eat a lot of meat and drink wine its very bad habits and also increase your risk to get cancer (01 woman East Asian aged 42)	What are some of the ways in which cancer can be prevented? For example, healthy foods, healthy lifestyle (08 manager multicultural agency)
Local physical activity facilities or programs	There are classes near them at recreation centres, or tennis courts in nearby area or there's a school nearby, there is a park. Information of where they can easily access the resources that they need to get that physical activity in would really help (17 woman South Asian aged 27)	It's mostly winter and cold so you may not be as physically active outside but what are the resources in the community where you can go inside, like a walking track or a gym (03 manager multicultural agency)
Tailored or separate sessions by age group	Definitely think there should be a separate senior's class and a separate youth class because I don't think the exercises that a 20 year old to be able to perform is same from the exercises that a 75 year old feel comfortable doing (22 woman African aged 24)	Depending on the age, I will organize in that way because each age group have different challenges depending on their body at that time of in their life (06 manager multicultural agency)
FORMAT		
In person sessions	Personal interaction will be the best way to educate immigrant women, because when we are in-person, we get to listen to different stories, you get to connect to other people, we get to motivate each other (03 woman East Asian aged 32)	It is beneficial to have in-person because that also does combat that sense of isolation and depression within the community (13 manager Afro-Caribbean agency)
Virtual sessions	Most of the ladies will be busy with taking care of their kids and household…So virtual meeting more people will definitely join (18 woman South Asian aged 33)	Lots of people also have childcare challenges, they can't get out of the house (10 manager multicultural agency)
Access to or knowledge of Internet	NO Not all immigrant women have access and ability to use the internet (13 woman Caribbean aged 49) YES 100%, especially during the pandemic. They know how to use WhatsApp and YouTube, they watch their home country movies. Even my mom, she's not educated, she cannot speak more than three words of English, but she knows how to turn on YouTube (14 woman South Asian aged 42)	NO Five people in the same household, no more than one device. Who's gonna get the cell phone? It's never the mother, it's the father will get the cell, children in high school with get the cell phone. Mothers are always the last. And most of them don't have a computer. They may have a higher chance of get a phone than computers (04 manager multicultural agency) YES I would say the majority do now…because we were in a pandemic, they had to learn, if nothing else, to use their cell phones (09 manager multicultural agency)
Blend of didactic and interactive	If no attraction or no something, only we have to listen, these things prevent us to go (05 woman South Asian age 52)	An interactive workshop where you ask them questions, there is a little game in it, there are some videos. So there are different elements to keep them engaged (16 manager multicultural agency)
Include some in-class physical activity	So having an information session including those 10–15 min of exercise (14 woman South Asian aged 42)	If you can have some instruction, I'll bet people will like it. If you just talk about it, I don't think that will make people to know how they should do (01 manager multicultural agency)
Small groups of 10 to 20 people	I believe not more than a group of 20 at one time because then you would not be able to really focus on everybody or if they have questions (17 woman South Asian aged 27)	We also try to limit our groups to 10 to 12 women, nothing more than that, because anything over that, it's difficult for you to provide one-on-one support (07 manager multicultural agency)
No more than one hour in length	I think within one hour is fine. If too long, maybe they don't have the schedule (01 woman East Asian aged 42)	One hour is excellent. It's too long, people they cannot concentrate that long (01 manager multicultural agency)

Table 2 (continued)

Theme	Women	Managers
Multiple versus single session	Multiple enforcement might be required and not in one session (16 woman South Asian aged 37) One class because we need to make something easy. We can learn quickly (19 woman African aged 50)	Someone with a lower level of English, it would have to go over a couple of sessions because it be just too much information to digest all at once. But for someone with a higher level of English, one session maybe enough (09 manager multicultural agency)
Blend with existing classes	So I think it might be more sustainable to incorporate it into already existing programming (22 woman African aged 24)	Gathering groups of women is really hard these days because they're already in different groups so we try to utilize the already formed groups that they're coming to (11 manager multicultural agency)
PERSONNEL		
External expert	People that have the skills, that have the knowledge, that can pass it across. Experts, those are knowledgeable, who have studied about it (04 woman African aged 49)	Someone has to have the credential on the topic so you can really believe (06 manager multicultural agency)
Agency staff	< agency staff person>, she knows the immigrant people and it will be easy for us to communicate because we know each other (19 woman African aged 50)	Somebody's who's not used to working with immigrants and newcomers doesn't understand the nuances of how to use language and how to explain things (11 manager multicultural agency)
CULTURAL TAILORING		
English language	English is better and you can add some translators (15 woman East Asian aged 49)	[We] always ask that the most simplified English be used, and if other information is available in another language, that we can provide afterwards (09 manager multicultural agency)
Instructor of similar culture	It should be someone that's representative of them. People who look like them, speak like them. I feel like they might be more comfortable and it might be easier for them to relate to what exercise could be like for them (22 woman African aged 24)	If they see someone of their background or their colour, they definitely would feel more comfortable listening or having that conversation (13 manager Afro-Caribbean agency)
Respect cultural differences	Each and every immigrant has a different story, different lifestyle, different religion and cultural background and [physical activity] can be not something that they are used to or a taboo to them. The safest way is to give information which is something very basic (03 woman East Asian aged 32)	A lot of culture, they don't like to talk about the breast. If your information session just tailored that you prevent the cancer and don't talk about the severe disease of cancer, I believe they will accept (01 manager multicultural agency)
Reach out via shelters or leaders in the community	Women [can] be reached in shelters. We have large number of women. The [religious] leader could help to reach out to them, the best way to present it. We could find majority of women in religious groups (04 woman African aged 49)	I work with community leaders because they have the best relationships with the people and can encourage them the most, and they can also give you information about what's appropriate and what's not (15 manager multicultural agency)
Assure women of a safe space	Ensure them that it is a safe space, and even if there are concerns, they can bring it up (17 woman South Asian aged 27)	Maybe advertising it as a safe space or a way to meet other newcomer women is always enticing (08 manager multicultural agency)
REINFORCING STRATEGIES		
Take home material	Something you can take home to read and understand better (08 woman African aged 38)	Kits that they can take away that has information, especially in their language and then in English because it is important for them to learn the term, that they can do on their own time (07 manager multicultural agency)
Follow-up or monitoring	It's better you follow-up the person. Just to say hi, what's up, what's happening, things like that. Maybe they can open you that they need some help again (10 woman East Asian aged 39)	---
Public health campaign	You can deliver flyers door-to-door, you can provide it by the media, newspaper, Internet (13 woman Caribbean aged 49) Maybe in nearby < drug store chain > or the grocery store (17 woman South Asian aged 27)	So there are certain cultural groups use the social media platforms. That is the best way to reach everyone in their cultural group (04 manager multi)

little interest in the topic, and distance of the venue or lack of transportation.

The time is valuable for us because most of them are working mothers (15 woman East Asian aged 49).

Fear of not knowing the English language, not feeling confident, not feeling comfortable to be out of the house or around people that they don't know (03 manager multicultural agency).

To promote participation in in-person sessions, women and managers said to offer refreshments, pay for transportation and allow women to bring children. Regardless of whether an in-person or virtual format were used, women and managers suggested advertising the social aspect of education sessions, and to offer small incentives (e.g. gift cards, passes to recreation centres, gifts for children).

> *A little food and tea and coffee, and socialize a bit and an opportunity for them to get out (15 manager multicultural agency).*
> *You will get a $20, $25 card or something like that which you can use at <name of grocery store>. Or maybe…some discount from the recreation centre only for woman (14 woman South Asian aged 42).*

Discussion

We interviewed 22 diverse immigrant women and 16 managers of community agencies from across Canada who provided insight on the ideal design of education sessions, offered through community agencies, on the role of PA in reducing cancer risk. This study found that women expressed interest in PA education, noting multiple potential benefits for themselves, and family or friends. Themes were consistent across ethno-cultural groups. Women and managers expressed similar preferences for the design of education sessions. Both groups said the main barrier to participating in PA education was lack of time due to work and family responsibilities, and offered strategies to encourage participation including cultural tailoring.

This research adds to a growing body of evidence on the need for and value of community-based health promotion to immigrant women, relevant internationally given ever-increasing rates of migration [20]. For example, our scoping review on person-centred care for immigrants identified only 5 studies specific to women, none on health promotion [21]. We conducted focus groups with 23 immigrant women aged 25 to 78 from 10 countries and found that physicians did not provide lifestyle counseling, which women desired [22]. In our review of PA promotion to immigrants, among a mere 9 studies, 7 offered community-based education sessions, which alone improved PA knowledge, confidence and behaviour, but only 3 focused on women [23]. Elsewhere, community health workers in Edmonton, Canada provided one-on-one or group pre- and post-natal support, system navigation for childcare service, and youth mental health support to immigrant families [24]. In Malmo, Sweden, interviews with 21 immigrant women about mental health and long-term pain revealed they desired group activities to provide mutual support [25]. Specific to PA, most research has focused on low PA rates among immigrant women or reasons for low PA rates. For example, focus groups with 16 South Asian immigrant women living in Western Australia [26] and a scoping review about Arab immigrants living in Western countries [27] both identified lack of time for PA due to other priorities such as family and household responsibilities, similar to our study. However, little research has examined interventions for promoting PA specifically to immigrant women [28]. Instead, PA promotion interventions have largely focused on offering exercise classes [29]. Therefore, our research is unique because it is not exercise-based, and services as the foundation for an intervention to increase awareness of the importance of PA through community agencies.

Several issues emerged with implications for future implementation of this intervention. A few participants suggested including information on healthy eating. This would necessitate longer or multiple sessions, but lack of time was noted as a barrier of participation. Instead, an option is to provide links to other sources of information in take home information, which was recommended by participants as a way to supplement the education sessions. Our participants disagreed on immigrant women's knowledge about and access to technology. This result is corroborated by prior research. Research involving Korean [30], Hispanic [31] and other women of diverse cultures [32] in the United States showed that most had mobile phones, but those with limited English language proficiency rarely used the Internet. Furthermore, immigrant women from 50 countries newly arrived in Australia preferred receiving health information through group meetings supplemented with take-home material, similar to the results of our study [33]. Until further research emerges to demonstrate routine access to and use of technology among immigrant women, interventions like ours should be offered in a range of formats. Implementation of this intervention may be influenced by the capacity of community agencies that are often non-profit organizations. The potential role of knowledge brokering by public health nurses has been recognized [34], but the investigation of community agencies such as immigrant settlement agencies as knowledge brokers of health promotion information is novel, and thus warrants further study. Limited prior research on what constitutes cultural safety in health promotion identified the importance of supporting cultural integrity and putting community first among Indigenous peoples in Australia and New Zealand [35]. It is likely that views about what constitutes cultural safety differ between Indigenous persons and immigrant women because the definition of cultural safety refers to effective care of a person of a particular culture as determined by that person [36]. However, study studied yielded insight on what constitutes culturally-safe health

promotion among immigrant women, and identified numerous considerations specific to promoting PA to immigrant women in a culturally safe manner.

Strengths of this research include the use of rigorous qualitative methods that complied with qualitative research reporting standards [17–19], input and guidance from an interdisciplinary research team that included immigrant women, inclusion of diverse participants, saturation of the results and concordant views within and across women and manager groups. Some limitations may reducethe transferability of the findings. We did not include women of all cultural groups including Indigenous women, instead focusing on the most common immigrant groups in Canada [7]. Further research is needed to explore preferences for ideal education session design among other groups. The study included participants from some of Canada's provinces, therefore findings may not be relevant to immigrant women or community agencies in all Canadian provinces or territories, or in other countries with differing social, economic and healthcare environments.

In conclusion, by interviewing diverse immigrant women and managers of community agencies that offer services to immigrant women, we generated insight on the ideal characteristics of an education session that could raise awareness of the importance of PA in reducing cancer risk. In doing so, we identified issues that must be considered to implement the education sessions and expanded on the concept of cultural safety in the context of PA education sessions. Further research is needed to assess the feasibility and impact of PA education sessions designed based on these findings.

Abbreviations

PA Physical activity

Supplementary Information

The online version contains supplementary material available at https://doi.org/10.1186/s12889-024-19612-5.

Supplementary Material 1

Supplementary Material 2

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Author contributions

ARG conceived the study, acquired funding, and supervised and independently reviewed all aspects of the work including planning, recruiting, data collection and analysis, and manuscript preparation. SI, SD, RS and XY assisted in recruiting, collecting, and analyzing data, and in drafting the manuscript. CF, NK, CS, JS and JT assisted in conceiving the study, planning data collection and analysis, interpreting results and drafting the manuscript. All authors read and approved the final manuscript. All authors agreed both to be personally accountable for the author's own contributions and to ensure that questions related to the accuracy or integrity of any part of the work, even ones in which the author was not personally involved, are appropriately investigated, resolved and the resolution documented in the literature.

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Data availability

All data generated or analysed during this study are included in this published article and its supplementary information files.

Declarations

Ethics approval and consent to participate

All methods were carried out in accordance with relevant guidelines and regulations. This study was approved by the University Health Network Research Ethics Board in Toronto, Canada. All participants provided written informed consent before the interviews.

Consent for publication

Not applicable.

Competing interests

The authors declare no competing interests.

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