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Understanding Virtual Peer Support Needs and Preferences for Maintaining Brain-Healthy Behaviours Among Aging Adults

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Abstract

Background: Although virtual supports may promote engagement with brain-healthy lifestyle behaviours among aging adults, few are designed with the needs of end-users in mind.
Objective: This qualitative study explored the needs and preferences of integrating virtual peer support into brain health programs among Canadian adults aged 55 years and older.
Methods: Five semi-structured focus groups (22 participants, n = 18 women) were conducted and analyzed using thematic analysis.
Findings: Participants discussed different brain-healthy behaviours and outlined barriers and facilitators to maintaining a brain-healthy lifestyle. Most women reported perceived differences in experiences between genders, whereas most men did not perceive any gender differences in terms of brain-healthy lifestyles. Participants indicated interest in virtual supports that provide education on brain health, include peer support, promote social engagement, and empower aging adults to maintain autonomy.
Discussion: Findings underscore the importance of designing person-centered and gender-responsive virtual brain health programs that reflect aging adults' lived experiences to foster resilience.

Résumé

Context: Bien que les outils d'accompagnement virtuels puissent favoriser l'adoption de comportements favorables à la santé cérébrale chez les personnes âgées, rares sont ceux qui sont conçus en tenant compte des besoins des utilisateurs.
Objectif: Cette étude qualitative a exploré les besoins et les préférences concernant l'intégration d'un accompagnement virtuel par les pairs dans les programmes de santé cérébrale destinés aux adultes canadiens âgés de 55 ans et plus.
Méthodes: Cinq groupes de discussion semi-structurés (22 participants, n = 18 femmes) ont été organisés et examinés à l'aide d'une analyse thématique.
Résultats: Les participantes ont abordé différents comportements favorables à la santé cérébrale et ont mis en évidence les obstacles et les facteurs facilitant le maintien d'un mode de vie sain pour le cerveau. La plupart des femmes ont fait état de différences perçues dans les expériences selon le genre, tandis que la plupart des hommes ne percevaient aucune différence liée au genre relativement aux modes de vie favorables à la santé cérébrale. Les participantes ont manifesté leur intérêt pour des soutiens virtuels qui proposent une éducation sur la santé cérébrale, intègrent le soutien par les pairs, favorisent l'engagement social et permettent aux personnes âgées de conserver leur autonomie.
Discussion: Les résultats soulignent l'importance de concevoir des programmes virtuels de santé cérébrale centrés sur la personne et tenant compte des spécificités de genre ainsi que des expériences vécues par les personnes âgées afin de favoriser leur résilience.

Introduction

As population aging progresses, so too does the importance of supporting cognitive health to lower the risk of dementia and other age-related illnesses (Livingston et al., 2020). Although there is currently no 'cure' for dementia, researchers have identified modifiable lifestyle behaviours that reduce dementia risk and support healthy aging throughout the lifespan (Livingston et al., 2020). According to the Lancet Commission, smoking, depression, diabetes, obesity, physical

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inactivity, and social isolation in mid and late life explain up to 17 per cent of dementia cases (Livingston et al., 2020). Although important throughout the lifespan, engaging in brain-healthy lifestyle behaviours, including physical activity, adhering to a healthy diet, and social engagement, is particularly important in later life to minimize these risk factors.

The World Health Organization Active Aging Framework (WHO, 2002) is aligned with the Lancet Commission, which posits that the process of optimizing opportunities for health, participation, and security is needed to enhance quality of life as people age. The framework recognizes that health behaviours, social connectedness, lifelong learning, and community participation are important determinants of wellbeing and functional ability in later life, making it particularly relevant for interventions aimed at supporting brain health and healthy aging among older adults.

To date, several interventions have been implemented to target aging adults' engagement in healthy lifestyle behaviours, which vary in scope (e.g., physical activity; Denny et al., 2020) and format (e.g., duration, facilitation). These interventions have been associated with significant changes in cognition (e.g., Denny et al., 2020), physical and health-related outcomes (e.g., engagement in physical activities; diet; Lawlor et al., 2019), and psychological outcomes (e.g., well-being; Schwei et al., 2020), providing evidence that targeted interventions can successfully support brain health for aging adults.

Despite the reported benefits of these interventions, uptake of certain healthy behaviours in the population is low. For instance, researchers found adults aged 65–79 years old were significantly less likely than their younger adult counterparts to meet Canada's guidelines for movement (Rollo et al., 2022), and similar findings have been found for other aging adults (Liang et al., 2024). Additionally, many older Canadians are at nutritional risk, meaning risk of malnourishment, and do not consume appropriate amounts of protein, fruits and vegetables (Ekwaru et al., 2017). Aging adults report barriers to engaging in healthy lifestyle behaviours, including lack of knowledge about healthy lifestyle behaviours, access to programming, financial concerns, and lack of time (Mohammad Hanipah et al., 2025). Importantly, these experiences are influenced by socio-cultural and demographic factors, such as gender (Mohammad Hanipah et al., 2025; Schladitz et al., 2022).

Limited research has explored the association between gender perceptions and engagement in healthy lifestyle activities for aging adults (Schladitz et al., 2022). Among the research that does exist, aging women report gender-specific family commitment barriers, wherein familial responsibilities and caregiver roles take precedence over caring for oneself (Mohammad Hanipah et al., 2025), while men may report greater challenges with social participation (Lim-Soh & Lee, 2023). Exploring the perceived relationship between gender and aging adults' engagement in these behaviours is critical to inform the development of interventions that are tailored to gender-specific needs and promote brain health equity (Mohammad Hanipah et al., 2025).

One of the ways to address some of the reported barriers to engagement is through virtual supports. More recently, and likely in part due to the COVID-19 pandemic, there has been a shift to virtual support across different age groups to support health and well-being. Virtual supports have some advantages, including lower cost than in-person programs, fostering social connections among individuals from different locations, and reducing mobility-related barriers (Sevilla-Llewellyn-Jones et al., 2018). Nevertheless, virtual support may not adequately address ongoing barriers to engagement (e.g., caregiving demands, low motivation, and health challenges), and introduces unique challenges to intervention delivery (e.g., lack of access to technology and internet, lack of knowledge and skill needed for technology use). A growing body of evidence suggests online programming is feasible for supporting aging adults' engagement in brain-healthy lifestyle behaviours, such as exercise and cognitive and social engagement (Dagenais et al., 2023; Gravesande et al., 2023). Some of these studies have also been associated with improved physical, cognitive, and social functioning, as well as psychological well-being (reviewed in Dagenais et al., 2023). Common barriers reported by aging adults for online exercise programs include a lack of space and privacy, and unstable internet connection (Gravesande et al., 2023). These barriers highlight the importance of accessibility within online programming and indicate inequality in access to these programs (Gravesande et al., 2023). Importantly, while grounded in literature, much of the existing virtual supports for aging adults have been developed by researchers without considering the needs and preferences of aging adults.

It is critical to center the perspectives and lived experiences of aging adults in the development and implementation of brain-healthy programming. Furthermore, with a greater shift to virtual supports, it is important to understand the preferences and needs of aging adults to support engagement in virtual programming to elucidate current barriers to engagement in brain-healthy behaviours, allow interventions to be tailored appropriately, and encourage researchers to address the challenges and inequalities aging adults face when accessing virtual supports to promote brain health. Thus, the goals of this qualitative study were to explore aging adults' understanding and experiences of and barriers and facilitators to living a brain-healthy lifestyle, as well as their needs and preferences for using virtual supports to maintain brain-healthy lifestyle habits. Given limited research exploring the gendered experiences in accessing and engaging in these behaviours (Mohammad Hanipah et al., 2025), this study also explores gender influences related to barriers, facilitators, and access to a brain-healthy lifestyle and related behaviours, to support the development of brain health promotion programs addressing gender-specific needs and preferences.

Methods

Study design

This was a qualitative focus group study of aging adults' perceptions related to engaging in brain-healthy lifestyle habits, barriers to those lifestyle habits, and the use of virtual supports for a brain-healthy lifestyle. The semi-structured discussion guide explored aging adults' experiences engaging in brain-healthy lifestyle habits, factors that serve as barriers to engaging in a healthy lifestyle, the use of technology and preferences for virtual supports that may promote engaging in a healthy lifestyle, and perceptions about potential gender differences in engagement and preferences. Supplementary Table S3 provides the full discussion guide. In order to probe gender-related factors, focus groups were gender-specific. Participants took part in the study between May and June 2022.

Participant recruitment

Participants were eligible if they were 55 years old or older and lived in Canada at the time of the study. The initial age criterion was set at 60 years of age as previous research suggests that cognition tends to decline more rapidly starting at age 60 (LaPlume et al., 2022). This

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age threshold therefore captures a population that may be contemplating, experiencing, or actively seeking strategies to maintain cognitive health, making them particularly relevant stakeholders for brain-health promotion initiatives. However, due to challenges with recruitment, one participant aged 55 who expressed interest in the study was recruited.

Since the study took place virtually (via Zoom), participants also needed access to suitable technology and Zoom. The study was promoted through emails, advertisements on social media, and advertisements in web-based versions of magazines (e.g., Zoomer Magazine) and the Heart and Stroke Foundation email newsletter. Interested participants contacted the researchers via email to express interest and were scheduled to complete a screening phone call with a member of the study team. If eligible participants were still interested, they were provided with additional study details and scheduled to participate in a virtual focus group with other interested participants based on self-reported gender.

Study procedures

A total of five focus groups were co-facilitated by two researchers (LB and DD) using the Zoom platform (v5.10). There were three women's focus groups and two men's focus groups. The women's focus groups ranged from five to seven participants per group, and each of the two men's focus groups included two participants. Focus groups ranged from 1 hour 5 minutes to 1 hour 37 minutes. Audio recordings were transcribed by a professional transcription service (Transcript Heroes). Any potentially identifying information was removed at the point of transcription. This study was approved by the University of Waterloo Ontario Research Ethics (#42941), and the Toronto Metropolitan University Research Ethics Board (#2021-485-1).

Data analyses

Transcripts were uploaded into Dedoose (Version 9.0.107, Los Angeles, CA) to support data organization and analysis. Data were analyzed using an inductive reflexive thematic analysis approach as outlined by Braun and Clarke (2012). Consistent with this approach, analysis focused on identifying patterns of shared meaning across participants' accounts while acknowledging the interpretive role of the researchers in the analytic process. Two researchers (AO and LH) independently immersed themselves in the data through repeated reading of transcripts and generated initial codes. The researchers met regularly to collaboratively discuss, refine, and organize codes into preliminary themes and subthemes. Themes were recursively reviewed and refined in consultation with co-authors to ensure coherence, distinctiveness, and alignment with the dataset. Representative quotations were selected to illustrate each theme and subtheme. Reflexivity was incorporated throughout the analytic process by encouraging researchers to critically examine how their disciplinary backgrounds, assumptions, and experiences may have shaped data interpretation. Regular reflexive discussions among the research team supported analytic rigor and transparency. Credibility was enhanced through investigator triangulation, iterative review of themes, and ongoing discussion until consensus regarding interpretation was reached. Rich descriptions and illustrative quotations are provided to support transferability of findings to related contexts and populations. Member checking was not conducted, as the study prioritized researcher interpretation and meaning-making consistent with reflexive thematic analysis.

Results

Participants

Among the 22 aging adults who participated in the focus groups, 18 identified as women, and 4 identified as men. On average, participants were 68.22 years old (SD = 7.59) and ranged from 55 to 90 years old, with a majority of participants identifying as White and/or European (n = 19), and 14 participants reporting that they were retired at the time of the study. Overall, the sample was highly educated, with 14 participants holding a post-secondary certificate, diploma, or degree, and eight participants holding a graduate degree.

Thematic findings

Two broad overarching themes were generated: Needs and Preferences for Promoting a Brain-Healthy Lifestyle and Needs and Preferences for Virtual Peer Support Programming. A visual representation of the themes, sub-themes, and codes generated from focus groups is presented in Figures 1 and 2.

Theme 1: Perceptions of brain-healthy behaviours and the factors that motivate, promote, and serve as barriers to engaging in a brain-healthy lifestyle

Four sub-themes fell under the Needs and Preferences for Promoting a Brain-Healthy Lifestyle, including: 1) brain-healthy behaviours; 2) motivators; 3) promoters; and 4) barriers. Participants also shared perceived gender differences relating to brain-healthy behaviours and barriers. Supplementary Table S1 provides relevant quotes representing each sub-theme.

Subtheme 1: Diverse brain-healthy behaviours identified by aging adults

Participants discussed the importance of engaging in activities that challenge them and keep them cognitively engaged. As one participant shared, 'to lead a brain healthy lifestyle is to pay attention to the activities that are going to actually make me think, make me focus, make me exercise the skills, judgment, and executive functioning …' (P3, women's group 1). In this context, many participants discussed the importance of brain games such as chess, mahjong, and crosswords as well as reading. One participant expressed that 'curiosity and a desire to learn and grow is really important' (P3, women's group 2). Many discussed the importance of being a 'lifelong learner,' which may entail taking courses or picking up new skills. As such, engaging in new or old hobbies was said to keep aging adults busy and engaged. As one participant said, 'my hobby keeps me going' (P1, men's group 1).

The importance of social connection and community engagement was widely discussed. As one participant said, 'isolation of older people actually can kill them faster than diseases will … I think the social aspect is very important' (P1, women's group 1). Promoting social connection was discussed in the context of maintaining relationships with friends, neighbours, and relatives and in the context of community engagement and volunteering. Indeed, volunteering was said to promote social connection as well as help to learn new skills, put old skills to use, and stimulate the brain.

Participants also shared their thoughts relating to lifestyle behaviours, including diet, exercise, and sleep. The 'connection between the gut and the brain' was often discussed, and many shared the belief that 'what you put into your body really affects your brain' (P5, women's group 1). As such, participants discussed

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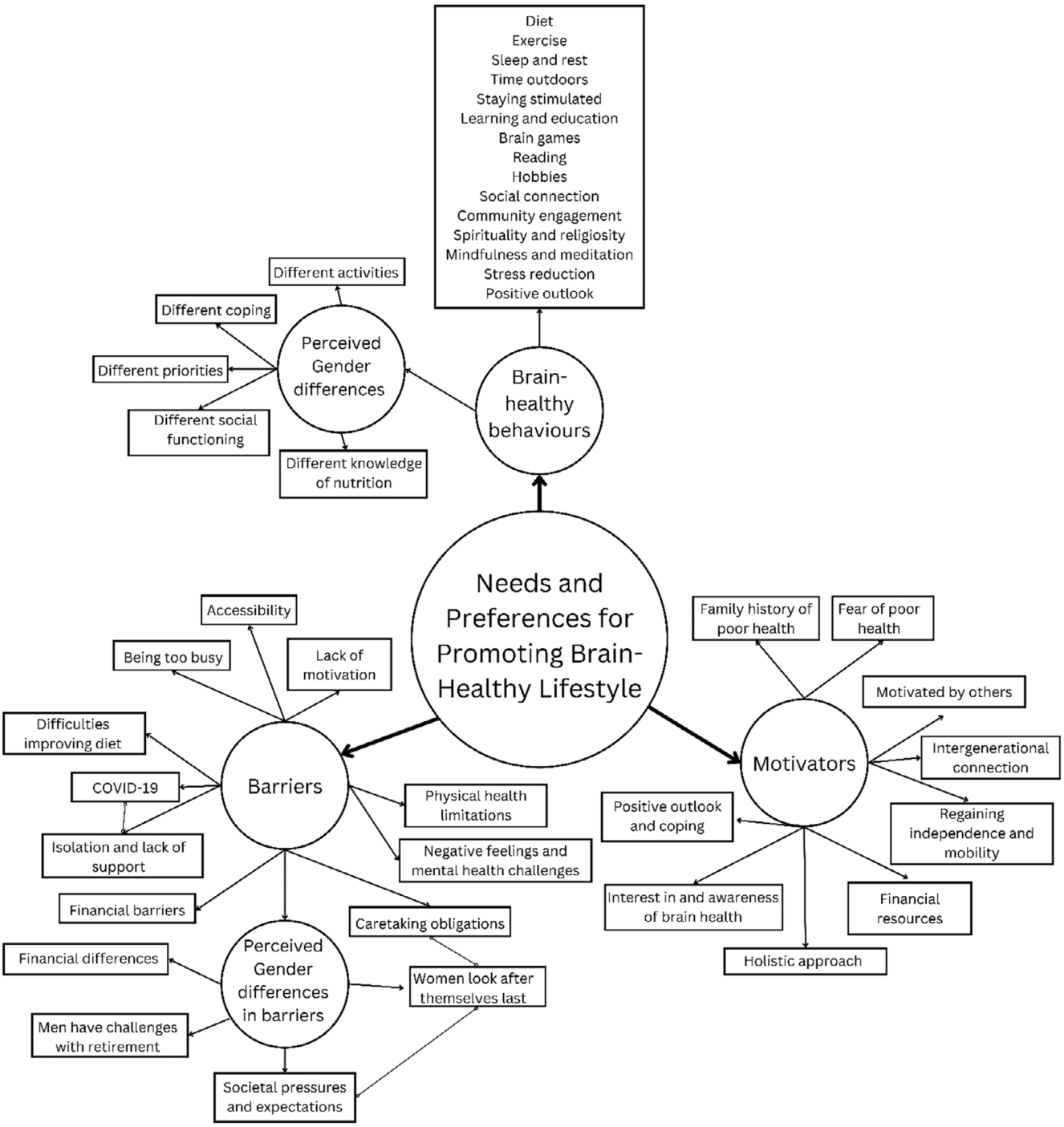


Figure 1. A visual representation of the themes, sub-themes, and codes associated with theme 1: Perceptions of brain-healthy behaviours and the factors that motivate, promote, and serve as barriers to engaging in a brain-healthy lifestyle.

the importance of eating fruits and vegetables, reducing consumption of processed foods, and adhering to Mediterranean and plant-based diets. It was also agreed that 'movement stimulates the brain.' Participants engaged in a range of activities, including pilates, pickleball, and dancing, and discussed the cognitive and social benefits of engaging in regular exercise. Doing exercise in nature, be it walking, hiking, or gardening, was especially recommended. However, participants also emphasized the importance of getting adequate sleep and advised others to 'listen to your body' and rest when needed.

Lastly, participants discussed the importance of stress reduction and maintaining a positive outlook. Generally, they recommend 'finding things that make you happy' to manage stress. Many spoke specifically about mindfulness and meditation. For example, one participant said, 'when I get overworked, or concerned, or nervous, I find a spot where I can sit down and meditate, and that really pulls

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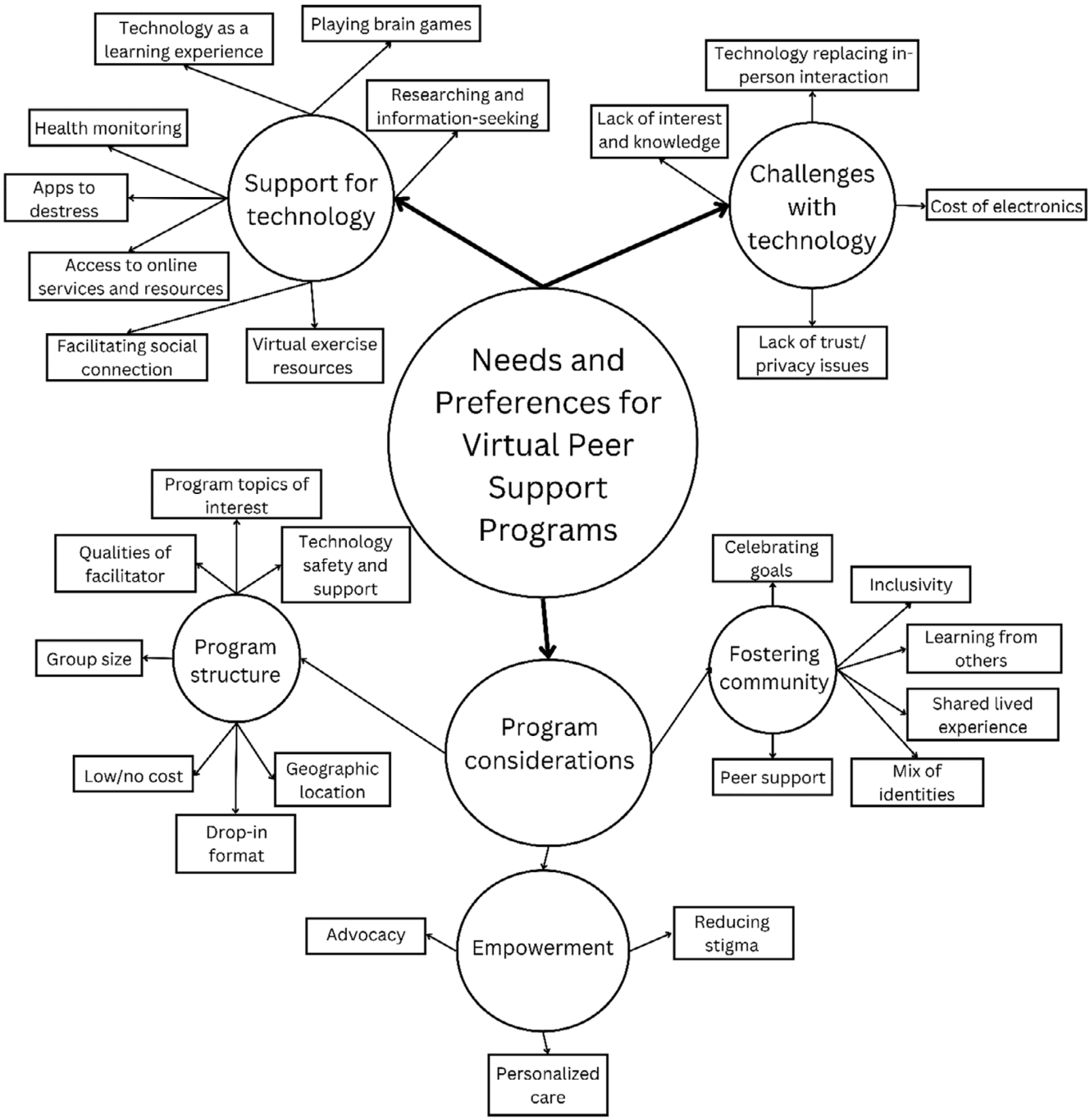


Figure 2. A visual representation of the themes, sub-themes, and codes associated with theme 2: Needs and preferences for virtual peer support.

me through' (P5, women's group 3). Some participants said that, on top of helping to reduce stress, mindfulness and meditation 'is good for your brain too.' Many also spoke about the benefits of spirituality and religiosity for stress reduction. For example, one participant said, 'I'm very active in prayer life. So that definitely does release any stress that I may have' (P1, men's group 2). In regard to maintaining a positive outlook, many participants discussed the importance of laughing, waking up with a positive attitude, and practicing gratitude every morning. This outlook on life was perceived as reducing stress and depression and helpful for coping with health challenges.

In regard to the ways in which aging adults engage in these brain-healthy behaviours, participants outlined some perceived gender differences. Firstly, participants explained that different genders may simply gravitate toward different activities. As one participant said, 'my wife doesn't exercise hardly at all, and she's probably smarter than I am. And I'm involved in volunteer work quite a bit, and she's not, but she's really active with our children … So, I just think we're wired a bit different when it comes to activities …' (P1, men's group 2). As discussed by two women in this study, because women are often expected to cook more than men, they may find it easier and more enjoyable to adjust their diet to eat more

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healthily. Women in this study also expressed that men are more likely to prioritize themselves and put their own needs and wants before others, whereas women may be more likely to put the needs of their families before their own, which may result in gender differences in the uptake of brain-healthy behaviours.

Both men and women in this study discussed differences in coping with stress and adversity. Specifically, men were perceived as having a harder time accepting and expressing negative emotions, and consequently, may have more difficulty asking for help. As one participant said, 'one of the biggest differences is the male ego, and the … unwillingness to accept that you're scared, or you have anxiety, or you have depression, or whatever the case is' (P2, men's group 2). Conversely, 'women are prepared to share, talk about their troubles, and they're able to cope better because they've got people who understand' (P2, women's group 3). Indeed, some women in this study explained that 'women find it easier to make social connections, and stay with them over the course of years. Whereas, when men retire, it's much harder for them to start to reach out, because they're used to having their partner do all of that kind of interaction' (P5, women's group 2).

Subtheme 2: Fears, family, and friends motivate aging adults to lead a brain-healthy lifestyle

Participants discussed a range of factors that help motivate them to engage in a brain-healthy lifestyle. Firstly, participants were motivated by a general fear of ill health. Some participants had experienced health issues in the past and expressed that these events had motivated them to take better care of their brain health. As one participant said, 'I had a fairly serious concussion … it was frightening … to see how information is so easily lost… I certainly don't want to end up with dementia, or any sort of serious memory problems' (P3, women's group 1). Similarly, participants discussed family histories of Alzheimer's disease and other dementias, and expressed they were engaging in behaviours to prevent being diagnosed with similar neurodegenerative diseases. As one participant said, 'Alzheimer's steals the person that you once knew … because my mother had Alzheimer's, I'm, like, five times as likely to maybe get it. And so, I said, 'well, I'll do all I can to hope that I don't get to that position" (P1, women's group 1).

Participants were also positively motivated by others in their lives. Many felt they were more likely to engage in healthy behaviours if friends and family were accompanying them. Additionally, having positive role models to follow promoted a desire to keep moving forward in regards to pursuing a brain-healthy lifestyle. Participants explained that intergenerational connections were especially important in promoting a brain-healthy lifestyle. As one participant said, '…being around young people … (helps) to remember what it's like to be seven years old … back to living the life that you used to live' (P2, men's group 2). Another expressed that 'wanting one more, or two more, or ten more years with … grandkids' (P4, women's group 2) served as a motivator.

Regaining mobility and independence was shared as a motivator to engagement. Specifically, some explained that regaining mobility and independence after injuries and other health conditions, and no longer having to act as caregivers, provided the freedom to be able to engage in brain-healthy activities. Participants also expressed that engaging in brain-healthy behaviours, such as eating well, can be expensive. As such, financial freedom and stability were outlined as important motivators.

Lastly, many participants expressed that they have a lot of interest in brain health, and this general interest serves as a motivator. Indeed, in most focus groups, there were discussions about a desire to learn about the brain through webinars, radio broadcasts, reading, and discussions with health care practitioners. Participants outlined the importance of a holistic approach to brain health. Participants explained that biological systems are interconnected and 'your intestinal health… your heart health, all those things are connected to your brain health' (P1, women's group 3). As such, 'we need to be healthy in our bodies to have a healthy brain' (P4, women's group 2). Relatedly, participants emphasized that brain health does not rely solely on the physical dimensions of wellness, but also depends on social, emotional, mental, and spiritual dimensions.

Subtheme 3: Social, physical, and financial barriers to living a brain-healthy lifestyle

Participants outlined a number of factors that serve as barriers to engaging in brain-healthy behaviours. Participants expressed that while they know they should be looking after their health, the day-to-day grind makes it difficult to do so consistently. As one participant said, 'there's too many things to do in a day … there's constantly pressure to do things for your body, for your mind, for how you eat, how you live, how you sleep' (P1, women's group 3).

Specifically, caregiving obligations were emphasized as salient barriers. Not only are aging adults often looking after aging parents, but they are also often looking after kids and grandkids. Many participants expressed that there just is not enough time in the day to look after themselves. Even when participants do manage to engage in a healthy routine, they say it is often difficult to maintain momentum due to unexpected life events. As one participant said, 'I could get into a pretty good routine for two or three weeks, and then something happens … and it knocks me off the routine and the inertia. It's so hard to get back into it again' (P5, women's group 2). Maintaining a healthy diet was said to be particularly challenging. Indeed, many participants described eating healthy as a constant battle.

Social isolation and a lack of social support were also noted as barriers. Participants expressed that social isolation causes loneliness, and it can also make it difficult to motivate oneself to engage in brain-healthy behaviours such as exercising and eating well. Given the focus groups were held following the peak of the COVID-19 pandemic in Canada, many participants discussed COVID-19 as a significant barrier. Specifically, 'spending months and months not seeing anybody face to face' was said to 'affect brain stimulation at the end of the day' (P2, men's group 2).

Lastly, physical and financial barriers to access were also highlighted. Participants expressed frustration around health barriers such as arthritis, injuries, and cancer, and a belief that these 'diseases and things … do force limitations on you' (P2, women's group 3). Physical health limitations were not only thought to affect the ability to engage in exercise but were also thought to affect the ability to leave the house for doctors' appointments or social engagements, for example. Participants also explained that having to face inclement weather or public transit further limited engagement in community activities, outdoor activities, and programming. Similarly, financial restrictions, such as being on a fixed income in retirement, served as barriers to engaging in programming and behaviours such as eating well and exercising.

Most women in this study felt men and women face different barriers to living brain-healthy lifestyles in older age for a number of reasons. Firstly, men were perceived as having more financial stability, which gives them more choices. As one woman said, 'they [men] can go out and buy all the cool bikes or exercise equipment.

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They can go take whatever courses they want to take. They can do a lot more than women because they have more money' (P2, women's group 1). On the other hand, several women also believed men may experience more challenges related to adapting to retirement. Men were perceived as deriving more of a sense of purpose from their jobs, and as such, experience a shock to the system after retirement and may have more trouble finding meaning in their lives and maintaining social connections.

Women participants also perceived societal expectations as barriers to caring for their health. One woman highlighted, 'it's not usually a man looking after a woman. It's a woman looking after a man … and we're expected to look after them … [women are] expected to be the nurturers' (P1, women's group 3). In addition to looking after spouses, many women in the study shared they were expected to care for the rest of the family and the home, feeling 'if the house is a mess, it's not the husband's fault. If the kids aren't getting along properly … It's never the husband's fault' (P3, women's group 1). As such, many women in this study felt they always look after themselves last. In the words of one woman interviewed, 'we don't necessarily eat right, or exercise right or sleep right, because we're so busy looking after all the men in our lives, or the women, too, but the men especially' (P1, women's group 3).

Theme 2: Needs and preferences for virtual peer support

Three sub-themes fell under Needs and Preferences for Virtual Peer Support Programming, including: 1) support for technology; 2) challenges with technology; 3) considerations for virtual supports. Supplementary Table S2 provides relevant quotes representing each sub-theme.

Subtheme 1: Support for technology

Generally, participants were receptive to the utility of technology for brain health promotion. Navigating technology was described as a learning experience and brain exercise in and of itself. Many participants used technology to seek information on a variety of topics, ranging from current events to cooking recipes. Technology was said to be beneficial for accessing books, learning new languages, and engaging in educational classes. Participants also used technology to play brain games and to guide meditation. Many participants expressed that they use technology to find workout videos and engage in workout classes such as Zumba, flamenco, and pilates. Relatedly, technology was said to help monitor health, including tracking steps, meals, weight, and blood pressure.

Participants also discussed the benefits of technology for ensuring access to social, educational, community, and health services. Virtual health supports were said to be especially important. Many participants had virtual appointments with medical professionals, which were easier to access. These helped to answer questions about medications, get referrals to other medical services, and facilitate doctor-patient communication from the comfort of their home. Lastly, technology was said to facilitate social interaction. Regardless of distance, many participants kept in touch with loved ones via email, video chat, and instant messaging. Online courses and services were also said to foster a sense of community, with one participant sharing, 'having a community of people to do the same thing with repeatedly is what makes a huge difference' (P3, women's group 1). In general, 'interactions happen more often as a result of being able to use technology' (P4, women's group 2), with some participants being able to contact children and grandchildren every day.

Subtheme 2: Challenges with technology

While many participants emphasized the benefits of technology, others expressed that using technology was frustrating and that they experienced anxiety related to technology. This was mainly attributed to not knowing how it works. Indeed, navigating technology was said to be like learning a new language, with one participant expressing, 'me and computers just don't get along, it seems' (P1, men's group 2). Other participants claimed that technology has done a disservice to social interaction. Some explained that they prefer face-to-face interaction and expressed that texting is not the same as speaking with somebody in-person. Another challenge to using technology was the price of gadgets. Some participants expressed that not everyone can afford computers, tablets, and smartphones, and were frustrated with having to pay for products such as Zoom. Lastly, many participants expressed privacy concerns and a lack of trust in technology. Indeed, many believed that they could hacked and that there are 'elements behind the scenes that are monitoring what we're doing' (P2, women's group 2).

Subtheme 3: Considerations for virtual supports

Participants outlined a number of considerations for the design and delivery of virtual supports to promote brain health.

Program structure. Firstly, participants expressed that brain health programming should have an educational component. This may include learning about the brain as well as learning about activities to support brain health. Participants also outlined that it is important to consider who is facilitating the program. A couple of participants expressed that having 'professionals facilitate, like a doctor, nurses, people who are educated in that field …would be helpful' (P3, women's group 3). However, some advocated for peer facilitators. As one participant said, 'instead of having experts telling us what to do … aging adults (would be) running the show, with professional help available to support' (P1, women's group 3). Regardless, the facilitator should be prepared to foster a safe and friendly environment. Participants expressed that there should be tech support in place to help program attendees navigate technology issues, as well as practices and safeguards in place to ensure online safety.

In regard to group size, some participants expressed that a larger group was preferable as this increases the likelihood of finding at least somebody that you can identify with. However, another participant expressed that smaller groups may be more comfortable. Participants also warned against geographical limitations. Specifically, virtual supports should not be province-specific as this limits accessibility for participants across Canada. Lastly, participants expressed that a free, drop-in format would be preferable.

Fostering community. Inclusivity was said to be essential for programming. As such, many participants advocated for programming that includes a mix of social identities. Participants expressed that inviting individuals of different ages, gender identities, and ethnicities would facilitate learning and offer different perspectives. As one older woman said, 'I like being comfortable with other women, but I also like getting different perspectives. And from a man … or somebody who's non-binary, you usually get a very different perspective than your own' (P4, women's group 2). However, participants also expressed the importance of shared lived experiences within programs. Many discussed the benefits of connecting with like-minded individuals who face the same challenges. Relatedly, there were some older women who expressed a

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preference for a program that was targeted toward either women aged 55–60 years 'and better' (not 'older').

Overall, participants emphasized the importance of learning from other program attendees as a type of peer support. Programming of this nature was said to expose participants to the lifestyles of seniors in different parts of the world. Peer support was described as an integral component of programming by several. Some participants expressed they may be more likely to share feelings surrounding the challenges they experience in a group program compared to sharing with friends and family. For example, one participant expressed that she and her friends 'talk about lots of things, but aging is very personal … it's way easier to discuss it in a forum like this, than it is one-on-one' (P3, women's group 3). In addition to providing a safe space to discuss challenges and negative feelings surrounding aging outside of one's existing personal relationships, participants also stressed the importance of setting and celebrating goals with other program attendees. As one participant said, 'there's got to be some form of goal setting … and then celebrating is so important … you need to celebrate what you've learned and what you've accomplished' (P4, women's group 3).

Empowerment. Participants emphasized the importance of personal advocacy and the recognition of individual needs. Many expressed that each program attendee will have unique needs and, as such, will require unique care. As one participant said, 'each problem is different. Each one needs to be solved differently' (P1, men's group 1). Programs should foster a space in which aging adults feel empowered to work toward their unique goals and should have access to education, support, and care that are aligned with their unique needs. In line with the idea of empowerment, one participant expressed that aging adults 'carry some wisdom, and they carry experience, and they have something to share with the community' (P3, women's group 1). As such, programs should ensure that aging adults are treated with respect and that programming seeks to reduce the stigma associated with aging. This may involve using appropriate language when referring to aging adults and dispelling stereotypes. As one participant said, 'people just think you should be sitting at home, knitting booties with your granny glasses on or something … It's a different time … (people) of all ages can bring something to the table' (P5, women's group 1).

Discussion

Through focus groups with Canadian adults aged 55+, this study aimed to understand the needs and preferences for promoting a brain-healthy lifestyle and for using virtual supports to maintain brain-healthy lifestyle behaviours. Participants outlined various factors that serve as both barriers and facilitators to maintaining a brain-healthy lifestyle, emphasizing the role of social connection, accessibility, financial resources, and maintaining a positive attitude. Barriers and facilitators are consistent with factors identified by the WHO Active Aging Framework (2002) which support active aging and quality of life through healthy living, participation in meaningful activities, and security and care in society. Additionally, they provided valuable insights into the design and implementation of virtual brain health programs. Despite challenges associated with navigating technology, aging adults expressed a general interest in virtual peer support programs and emphasized the need for a supportive and inclusive social environment, personalized support, and programming that educates and empowers them to maintain a brain-healthy lifestyle.

Brain Health as a holistic concept

Participants described brain health as a holistic and multidimensional concept supported by a range of behaviours, including social engagement, physical activity, healthy eating, stress reduction, adequate sleep, and spiritual practice. Many participants spoke about the importance of lifelong learning and curiosity, emphasizing cognitively stimulating activities like puzzles, reading, and learning new skills. Social connection and community involvement were central, with many identifying social isolation and loneliness as serious threats to well-being. Physical health behaviours, especially exercise, sleep, and diet, were also discussed not only for their biological impact, but also for their psychological and social value.

Participants' understanding of what behaviours promote brain health is largely aligned with existing literature on modifiable risk factors for cognitive decline and dementia (Livingston et al., 2020). Surprisingly, however, participants did not identify smoking and alcohol consumption as risk factors and largely did not emphasize factors in their physical environment as impacting their brain health, such as air pollution (Livingston et al., 2020). Additionally, although there is no consensus in the literature regarding the role of diet in influencing dementia risk (Livingston et al., 2020), diet was discussed by many participants as a factor critical to maintaining brain health. Nevertheless, given the number and heterogeneity of risk factors for cognitive impairment, multidomain interventions that target several risk factors simultaneously are, arguably, thought to be most effective in preventing cognitive impairment (Kivipelto et al., 2018). For example, one meta-analysis found that multidomain lifestyle interventions which targeted physical activity, nutrition, social activity, cognitive training, mood, and chronic disease management had the potential to reduce the risk of dementia (Meng et al., 2022). In line with both our findings and literature suggesting that aging adults have multidimensional perspectives on health and aging (Marcus-Varwijk et al., 2016), brain health interventions should adopt a holistic approach that integrates multiple domains of brain health, influenced by including physical, social, and mental health.

Education as a key component of brain health promotion

Participants described fear of cognitive decline, personal or familial experiences with dementia, and the desire to preserve autonomy and time with loved ones as primary motivators for engaging in brain-healthy behaviours. Notably, many participants emphasized interest in the brain itself as a key motivator and expressed a strong desire for ongoing education about brain health. In fact, aging adults in this study emphasized their belief that the process of learning promotes brain health in and of itself. Previous focus groups with aging adults have elucidated similar motivators. For example, Kim et al. (2015) found that the main motivators for lifestyle change among aging adults were education surrounding dementia and fear of developing dementia. Such findings support the need for awareness and education about risk and protective factors for cognitive impairment. Indeed, prior research suggests that educational interventions on brain health can lead to positive behaviour change and increased self-determination (Kivipelto et al., 2018). In line with the importance of adopting a holistic approach, educational health programming for aging adults should clarify the relationships between physical dimensions of health, such as the interplay between cardiovascular and brain health (Wilcox et al., 2009) and integrate content beyond biological

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processes (Marcus-Varwijk et al., 2016), such as the importance of behaviours that promote social and emotional wellbeing.

Inclusivity and accessibility

Experiences with aging vary widely by sociodemographic factors such as gender, income, and cultural background. In particular, most of the women in this study highlighted perceived gender differences in coping skills, caregiving responsibilities, and social connectivity, all of which may affect how men and women engage differently in brain-healthy behaviours throughout the life course. Although these findings are exploratory, they align with literature focusing on gender differences in general well-being. Firstly, gender norms often discourage men from admitting or acknowledging pain and seeking emotional and medical support. Furthermore, men often have smaller social networks than women and are less likely to mobilize social support in times of stress (Courtenay, 2000). This mirrors perceptions by participants that men are less likely to accept negative emotions and less willing to seek help. This lack of social support and engagement can lead to increased social isolation and loneliness, which have been associated with a greater risk of negative health outcomes such as cognitive decline and mortality (Courtenay, 2000; Kuiper et al., 2016). On the other hand, women in this study expressed that they are disproportionately affected by caregiving responsibilities and financial constraints, which limit their ability to engage in brain-healthy activities. Indeed, societal expectations that place caregiving burden on women can result in reduced time for self-care and participation in health-promoting activities (Sharma et al., 2016). The burden associated with caregiving has been associated with reduced psychological and physical well-being as well as negative effects on financial and employment status (Delfino et al., 2018). Relatedly, across Canada, older women have substantially lower incomes compared to men (Naud et al., 2019). This income inequality affects health through several factors, including decreased access to health services, increased exposure to stressful events, and reduced social participation (Naud et al., 2019).

While more research is needed to better understand gender differences as they relate to health promotion programs, our findings suggest that programming should be tailored to respond to gender-specific needs. Specifically, brain health promotion programs may emphasize the importance of social engagement and help-seeking behaviours among men in particular. This may include education surrounding the importance of social participation and a format which allows program attendees to foster relationships with one another. Programming may also acknowledge the burdens associated with caregiving and provide resources for individuals who are overburdened by caregiver responsibilities. This may be attained by providing resources to program attendees who are caregivers and fostering a space for caregivers to share experiences with one another (Chi & Demiris, 2015). Although women are disproportionately affected by financial limitations (Duncan & Singh, 2024), financial constraints act as a key barrier to healthy lifestyle behaviours regardless of gender (Mohammad Hanipah et al., 2025). Given that low socio-economic status is predictive of dementia risk, it is especially important that aging adults can participate in brain health-promoting programming regardless of income. As such, free or low-cost programs would be most inclusive and accessible.

Although focus groups did not include questions relating to the importance of culturally-responsive programming, several participants emphasized their appreciation for cross-cultural perspectives and the inclusion of program attendees from different cultures. As such, it is important to note that conceptualizations of brain health, brain-healthy lifestyles, and factors that promote engagement in brain-healthy lifestyles will vary across cultures (Löckenhoff et al., 2009). While it may be difficult to tailor programming to adequately meet the needs of all cultures, it is important that those involved in designing and implementing health promotion programs are aware of what practices, activities, and educational material reflect a predominantly Western worldview and that barriers to access may vary cross-culturally. Health promotion programs can also respond to cultural variation by ensuring that programming can be personalized to address the unique needs, priorities, and barriers of each individual (Public Health Agency of Canada, 2019).

Empowerment through personalization and advocacy

In this study, aging adults expressed a desire for personalized support. Indeed, personalized approaches that consider varying health conditions, cultural backgrounds, and socioeconomic factors are essential for delivering equitable and impactful support (Public Health Agency of Canada, 2019). Many aging adults experience difficulties accessing resources that align with their specific needs, whether related to caregiving support, culturally safer care, or condition-specific health services. Enhancing awareness and availability of these supports is critical for empowering aging adults to take control of their health (Kuluski et al., 2019; Public Health Agency of Canada, 2019).

Independence and self-determination in aging are crucial for quality of life (Kuluski et al., 2019). When aging adults are involved in decision-making regarding their health and lifestyle, they experience greater autonomy, motivation, and overall well-being (Ferrand et al., 2014). As such, providing opportunities for aging adults to set personalized goals and participate in program planning may foster engagement and long-term adherence to healthy behaviours. Indeed, a study investigating the outcomes of engaging aging adults in the development of a virtual dementia literacy program found that such collaboration provided opportunities for learning and social connection and helped to ensure that the end product was accessible to and beneficial for older adult service users (D'Amico et al., 2024a).

Moreover, combating ageist stereotypes is integral to fostering empowerment. Ageism has been linked to reduced access to health services and worse social relationships and health outcomes (Chang et al., 2020). Challenging negative perceptions about aging by highlighting aging adults' contributions and capabilities can enhance confidence and motivation to engage in health-promoting activities (Chang et al., 2020). By incorporating positive aging narratives and ensuring aging adults are active participants in their health journeys, virtual peer support programs can help dismantle harmful stereotypes and foster a sense of agency and purpose.

Fostering community

In line with a large body of literature outlining the relationship between social support and health outcomes in aging adults (Courtenay, 2000; Kuiper et al., 2016), this study emphasized the motivational role of social connection in maintaining brain health. Specifically, participants expressed that inspiration by role models, encouragement by loved ones, and intergenerational connections promoted sustained engagement in brain-healthy lifestyles. These factors were not just triggers for action but acted as sustaining

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influences that helped them integrate health-promoting behaviours into their daily lives.

Relatedly, findings emphasized the importance of fostering a sense of social connection within brain health promotion programs. Some participants expressed interest in adopting a peer support format for brain health promotion programs. There is evidence for the efficacy of peer-support programs among aging adults. For example, Dorgo et al. (2009) found that aging adults who engaged in a physical fitness intervention led by peer mentors perceived improved overall health and well-being, social functioning, and vitality. Schwei et al. (2020) found that an aging in place program matching one older adult with a less-able older adult in the same community facilitated independence, supported mobility, and promoted social engagement. Additionally, there is some evidence demonstrating the benefits of including a peer support component in virtual exercise and mental health programming for aging adults. As such, brain health promotion programs should foster a space in which program attendees can celebrate goals with one another, share experiences, and lean on one another for support.

Virtual programming is feasible but requires support

While aging adults acknowledge the potential benefits of virtual programming to support brain health, many expressed concerns about privacy and ease of use. These findings align with literature suggesting that, aside from access to and interest in technology, age-related changes in cognitive and sensorimotor systems are barriers to using technology (Charness & Boot, 2009). Further, although many participants felt technology offered the potential to interact with others more regularly, regardless of location, some participants expressed concerns about a lack of social connectedness when interacting with others virtually. This aligns with results of a feasibility study wherein aging adults expressed the desire for greater social interaction in a virtual memory intervention (D'Amico et al., 2024b). Lastly, aging adults expressed concerns about the affordability of technology. Previous studies have found that the high cost of internet, smartphones, and computers serves as a critical barrier to accessing technology-based supports (Wilson et al., 2021). Indeed, while technology can enhance access to health programming for aging adults in remote areas or those with mobility challenges (Wilson et al., 2021), socioeconomic status, ethnicity, and education have been previously found to contribute to disparities in the use of technology-based supports (Latulippe et al., 2017).

Despite these challenges, there are some technology-based brain health programs for aging adults that have been deemed feasible and effective in promoting health outcomes such as memory and attention and modifying lifestyle risk factors (e.g., D'Amico et al., 2024b). Virtual programming for aging adults should therefore focus on addressing technology-related challenges. This may include offering technical support, user-friendly platforms, and clear guidance on digital safety (Charness & Boot, 2009). This may also include optimizing social engagement through synchronous sessions delivered to groups via video conferencing (D'Amico et al., 2024b). Lastly, considering the importance of accessibility and inclusion in the provision of brain health promotion programming, it is imperative that financial barriers be addressed. Such barriers may be addressed by providing access to free or low-cost electronic equipment, a strategy which has been found to facilitate the use of technology-based supports in aging adults (Cajita et al., 2018).

Together, the study findings align with the WHO Active Ageing Framework (WHO, 2002). Participants' understanding of brain health as a holistic construct reflects the framework's recognition of the interconnected physical, psychological, and social determinants of health. Themes related to education, inclusivity, personalization, and advocacy highlight the importance of empowerment, and the theme of fostering community underscores the role of social participation and support in promoting well-being. Participants' emphasis on inclusivity, accessibility, and the need for support in virtual programming further reflects the WHO's focus on reducing environmental and social barriers to participation. Finally, these findings speak to the framework's position of gender as a cross-cutting determinant that shapes opportunities to engage in behaviours and experiences that support brain health throughout the aging process.

Limitations

Several limitations must be considered when interpreting these findings. First, the sample size for this study was small and relatively homogeneous. Most participants were white, highly educated women. As such, there is a limit to which these findings reflect the needs and preferences of men and individuals from different cultural and socio-economic groups in Canada's aging population. Further, given the small number of male participants, findings relating to perceived gender differences should be interpreted with caution. To address this limitation, the research team engaged in thoughtful, reflexive, and nuanced interpretation when generating and reviewing themes and subthemes. Future research should specifically survey more culturally and socio-economically diverse aging adults to understand their brain health promotion beliefs and needs as it pertains to virtual programming. In regard to addressing the underrepresentation of diverse ethno-racial populations in dementia research specifically, future research strategies could include: 1) ensuring a culturally-diverse research team, 2) developing culturally adaptable research materials, 3) developing relationships and engaging with diverse cultural networks, and 4) ensuring findings have practical implications for these groups.

Additionally, self-selection bias may have influenced the results, as those already interested in brain health, as indicated by participants' existing knowledge on brain health promotion, may have been more likely to participate, and those who were technology-literate may have been more likely to opt to participate in Zoom focus groups. Indeed, it is possible that the virtual study design resulted in the exclusion of individuals who did not have access to or comfort with technology. However, having a group of participants with some notion of what constitutes 'brain health' and a base level of familiarity with digital technology was required to meaningfully participate in focus groups on this topic. Future studies should broaden recruitment and actively reach out to diverse groups of aging adults, including those who may not have an interest or extensive knowledge in brain health and those who may be less likely or able to engage in virtual programming. This may help to identify strategies to maintain long-term engagement in brain health promotion programming in populations who are not currently being reached by existing initiatives. Finally, perceptions and experiences with technology that were shared may have been influenced by the socio-historical context of the focus groups. The focus groups occurred during the COVID-19 pandemic during which time aging adults' perceptions toward technology shifted positively, and their engagement with technology increased (Haase et al., 2021).

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Conclusion

This study sheds light on the perspectives and experiences of aging adults in Canada and may provide tangible recommendations for the design and delivery of virtual peer support programs to promote brain-healthy lifestyles. Results reveal critical insights around the importance of integrating inclusivity, advocacy, and community as integral pieces for designing equitable and effective programs. Future initiatives should ensure they recognize the diverse needs and preferences of aging adults and offer person-centerd support. Programming should include education on brain health promotion that reflects aging adults' holistic perspectives on health and aging. Brain health promotion programs should include peer support models and promote social engagement. Lastly, programming should aim to dispel ageist stereotypes and empower aging adults to live and age in alignment with their values. When designed with aging adults' needs in mind, this study suggests that virtual brain health promotion programs may be effective in supporting aging adults' cognitive and emotional resilience in an increasingly digital world.

Supplementary material. The supplementary material for this article can be found at http://doi.org/10.1017/S0714980826100828.

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