Research Article

Promoting Slhánaý Sk̓wálwen (Indigenous Women’s Heart Health): Findings From Sharing Circles With Squamish Nation

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ABSTRACT

Objective: To gather knowledge and experiences from Squamish Nation citizens to codevelop a model of foraging walks for Indigenous women’s heart health.

Design: Qualitative study (sharing circles).

Setting: Vancouver, Canada (virtual).

Participants: Squamish Nation community members (n = 9), Elders or Knowledge Keepers (n = 5), and researchers (n = 2).

Intervention: Community-led foraging walks as a culturally safe nutrition education strategy.

Main outcome measure(s): Perspectives and experiences.

Analysis: Content analysis and narrative synthesis.

Results: Personal experiences of foraging walks or knowledge of traditional plants were limited for most participants, and all desired to learn more about traditional foods using land-based activities. Participants identified a lack of nutrition education surrounding heart health and common mistreatment and judgment from health professionals. Participants identified important elements of a future Squamish program, including who should be involved, how to implement it, and the most effective temporal and physical setting. All agreed foraging walks help promote 5 dimensions of heart health (physical, emotional, spiritual, mental, and social) through physical activity, purposeful nutrition, and connection to community and culture. Findings from the sharing circles were used in the creation of a template for future foraging sessions and contributed to plant identification cards for the whole community.

Conclusions and Implications: Community-based pilot studies to test foraging walks as a culturally safe and environmental approach to nutrition education and cardiovascular health awareness for Indigenous communities are warranted. Research to examine the similarities and differences across Indigenous groups related to understanding heart health and land-based practices for nutrition education and heart health awareness is needed.

Key Words: Indigenous population, women, food supply, preventive medicine, cardiovascular disease (J Nutr Educ Behav. 2024;000:1–11.)

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INTRODUCTION

Cardiovascular diseases (CVD) are still a leading cause of death in North America and the number one killer in women. There are strong and growing social disparities in CVD not only by gender but also by race/ethnicity. Epidemiologic data reveal that the risk for CVD among Indigenous people in Canada is profound. First Nations (FN) women are 2.5 times more likely to develop CVD and 56% more likely to die from the disease compared with the general population. Heart attacks occur earlier in life among Indigenous vs non-Indigenous populations, and the risk of death from heart attacks is higher in women than in men. In Canada, women are more likely to be diagnosed with major risk factors such as high blood pressure (52% older women vs 45% older men), but women are less likely than men to be diagnosed with heart disease (4% vs 7%). A review by the Lancet Women and Cardiovascular Disease Commission concluded that this diagnostic discrepancy is attributed to women’s heart health being “understudied, under-recognized, underdiagnosed, and undertreated.” Disparities in CVD risk and outcomes are attributed to diverse and complex factors, including social, economic, environmental, genetic, and lifestyle factors.

Prevention efforts typically aim to change behavioral factors such as poor diet, physical inactivity, stress, and tobacco smoking, as evidence shows each factor affects CVD risk. However, conventional risk factors may underestimate actual risk in Indigenous groups, particularly for women and younger adults. Cardiovascular disease risk is greater among Indigenous people not only because each recognized risk factor is disproportionately more prevalent, but also because Indigenous-specific social determinants of health (e.g., historical and intergenerational trauma from colonialism and ongoing structural violence) differentially affect Indigenous communities. Indigenous people were legally forced in the US and Canada to be removed from their traditional lands onto reservations that effectively denied them access to their traditional food sources, knowledge, and practices with implications for healthy eating and CVD risk—the Canadian 1876 Indian Act remains in effect today. Traditional Indigenous foods on reservations were replaced by government-distributed subsidized commodities of low nutritional value, which have been associated with an increased risk of adverse cardiometabolic outcomes. In addition, the Sixties Scoop (known as The Scoop) was a period in which a series of policies were enacted in Canada that enabled child welfare authorities to take or scoop up Indigenous children from their families and communities for placement in foster homes from which they would be adopted by White families. This is one of many forms of cultural genocide whereby Canada had the explicit goal of fully assimilating all Indigenous people so as to eradicate their language, culture, ways of being and knowing, and most notably, their ties to their land.

Evidence indicates that the loss of traditional food procurement practices, such as foraging plants for food and medicines, impacted FN food choice and food-related well-being. Surveys of the Six Nations Reserve (Brant County, Ontario) revealed access to food and walkability were compromised, leading to unfavorable behavioral risk factors for CVD. Lack of access to healthy food in general, and culturally relevant food in particular, is a widespread problem among FN, and is independently associated with CVD risk. First Nations storytellers often comment on the essential role of disconnection from the community and the land for the alarming trajectory in FN chronic illness. Indigenous people in Canada have a deeply rooted relationship with the land through many cultural practices that have developed over generations, most notably foraging food and medicines. Risk communication methods and preventive strategies promoted by government health agencies and charity organizations of colonial states that use standard diet and exercise interventions have had little impact for, and require special consideration in, Indigenous communities. By contrast, research shows that restoring ties to land and nature increases feelings of safety and stability, reduces stress, and improves mental health while simultaneously encouraging engagement in physical activity and traditional food knowledge.

Burgeoning Indigenous health research supports a need to raise awareness of CVD risk and address health disparities in Indigenous women through approaches that support cultural connection and traditional knowledge and practices. Studies have shown that culturally tailored education programs can positively influence stroke preparedness and adherence to hypertension treatment. Other research points to the importance of integrating cultural safety into disease prevention strategies. Cultural safety is defined and experienced by those who receive the service and means that the recipient feels safe; cultural safety is created from humility, respect, and self-reflection and requires an awareness, understanding, and redress of the service provider's power differential and discrimination inherent in the health service delivery system. An education intervention using culturally appropriate language and care provided by Indigenous health care professionals improved Indigenous patients’ health literacy about CVD medication.

Building on work to identify community needs and priorities, this qualitative study centers on the perspectives, knowledge, and experiences of marginalized Indigenous women whose stories are understudied and often ignored. We aimed to fill the knowledge gap in Indigenous women’s heart health research and policy by using the unique context of the Squamish (Sḵwx̱wú7mesh) Nation, which is consisted of descendants of Coast Salish, Chilean and Hawaiian peoples who inhabited a vast territory within the Lower Mainland region of British Columbia, from Vancouver to Gibson’s Landing to the area north of Howe Sound in Canada. Our objectives were 2-fold: (1) to facilitate...
community engagement activities to build a strong research partnership, and (2) to gather knowledge to code-sign the structure and content of future foraging walks program as an environmental approach to nutrition education that provides a culturally safe ‘cardiovascular health awareness program’ for local Indigenous women.

METHODS

Study Design

This qualitative, descriptive study was called Slhánay Skwalwen (Shaa-nay skwaalwen), meaning “women” and “health or essence of being.” It used participatory action research (PAR) combined with Indigenous methodologies (IM)—known as two-eyed seeing—to co-create new knowledge on foraging walks for heart health promotion. The collaboration between academic researchers and the Squamish Nation’s Elders, Knowledge Keepers, and community members was built on relational reciprocity and a decolonizing approach. The title “Elder” is bestowed to an individual by their community because of the spiritual and cultural knowledge that they hold; that is, they have been gifted with their respective teachings by other Elders or Knowledge Keepers, typically over many years of mentorship and teaching. Many communities have defined protocols and processes for becoming an Elder, and gender and age are not determining factors for this title. A Knowledge Keeper is someone who may not be considered an Elder but carries traditional knowledge and expertise in specific spiritual or cultural areas. The project used the IM of talking/sharing circles to (1) work in good relation to each other, (2) explore the specific topic of a community-led foraging walks program for heart health, and (3) understand harvesting experiences and perceived health benefits among Squamish participants. Sharing circles are similar to focus group methodology, except sharing circles embed culturally appropriate protocols. For example, it is a protocol for an Elder to open the circle by welcoming everyone to their land, giving a prayer of thanks to the Creator, and then closing the circle again with a prayer of thanks. In nonvirtual settings, participants sit in a circle and typically pass a “talking stick” to take turns sharing their thoughts, feelings, and experiences; in Squamish tradition, the talking stick is passed to the right.

The study received an expedited review and was approved by The University of British Columbia Behavioral Research Ethics Board (no, H21-00187); all participants gave written informed consent. All study procedures adhered to the tenets of the Declaration of Helsinki and the First Nations Principles of Ownership, Control, Access, and Possession.

Participants and Recruitment

We purposively sampled community members as well as Elders and Knowledge Keepers from the Squamish Nation who were adults (aged ≥18 years) and who could participate in the virtual sharing circles. Any Squamish person (male, female, or two-spirit) was eligible to participate and was recruited through the Nation’s formal communication channels after the project was approved by the Nation’s Council (December 2021). Individuals who expressed interest in the study received a consent form explaining the study, their participation, compensation, and right to withdraw. All individuals who expressed interest and consented to participate were invited to all 8 circles. Participants were 4 Elders or Knowledge Keepers (3 females, 1 male) and 8 community members (all female) from early (20–25 years) to late adulthood (65–80 years); one Knowledge Keeper joined the project after the second sharing circle at the suggestion of several participants. All individuals who attended the circles and reviewed documents or materials received an honorarium for their time. Specifically, Elders and Knowledge Keepers received 100 Canadian dollars (CAD) per hour, community members received 50 CAD per hour, and co-facilitating Elders (those who gave blessings to open and close circles) received 500 CAD per circle. This compensation aligns with the Squamish protocol of giving something back (tobacco, honoraria, food, etc) when you take something (knowledge, plants, etc). In addition, because shared meals are an important aspect of Indigenous protocol for talking/sharing circles, all participants attending a circle also received a meal of their choice from an Indigenous caterer. Finally, the design and artwork of the project outputs were also commissioned from Indigenous-owned businesses.

Data Collection

The sharing circles took place over Zoom, and each circle lasted for an average of 73 minutes (range 45–117). The researcher guided the sharing circles using open-ended and probe questions (Supplementary Box 1) to collect data using dialogue and storytelling (oral narratives). The question guide was reviewed and approved by an Elder before ethics approval. Eight virtual sharing circles were conducted between March and December 2022 and were cofacilitated by 2 researchers and an Elder following traditional teachings and protocols but without a talking stick; participants each gave an introduction and then took turns to share their stories and discuss the topic of each circle’s agenda. The schedule of circles (Table 1) covered initial topics of (1) relationship-building and identifying community interest in the project (2 circles); (2) knowledge-gathering on structure and content to inform future programming (4 circles); and (3) reviewing and sharing-back findings, and reflecting on next steps (2 circles).

Data Analysis

Handwritten notes were taken by both researchers, and the circle was audio-recorded (with permission) to supplement the notes and to confirm information shared in the circle. The notes were read and discussed in a researcher meeting; a written summary was developed to synthesize the data. Data analysis focused on the content of descriptive experiences and examined the presence, meanings, and patterns of key words and concepts related to foraging walks, heart health, and future
programming as the phenomenon of interest. The driving principle of PAR is to be both the “medium of change and the method of analysis of change.” Thus, consistent with the IM of storytelling, data analysis used a narrative approach that aims to explore, record, and conceptualize the experiences of the Squamish Nation and perspectives of foraging walks as described in the personal stories shared during the circles. The narrative synthesis of the oral data centered on the ideas of the women’s stories because data were analyzed from the position and value of the 2 researchers that the voices of Indigenous women and their families matter and that traditional practices of foraging/harvesting on their lands were integral to their health and well-being.

### Table 1. Schedule of Topics for Sharing Circles and Attendance

<table>
<thead>
<tr>
<th>Time</th>
<th>Circle Topic</th>
<th>No. of Participants</th>
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| Circle no. 1 (March 2022) | Introductions and relationship-building (consultation/prestudy)  
                   | Where we are and where we want to go                                      | 11                  |
| Circle no. 2 (April 2022)   | Identifying community interest to participate and planning needs and priorities (consultation/prestudy)  
                   | Discussion with community members or Elders about who may wish to participate and/or lead the potential walks; also discuss who may wish to participate in gathering knowledge (research capacity-building) | 12                  |
| Circle no. 3 (May 2022)     | Gathering knowledge to inform programming (research)  
                   | Sharing experiences of forest/foraging walks and heart health benefits, and sharing preferences for relevant traditional knowledge (as appropriate) | 5                   |
| Circle no. 4 (June 2022)    | Gathering knowledge to inform programming (research)  
                   | Sharing feelings and perspectives on what a heart health foraging/forest walk should look like (ie, content and structure) | 12                  |
| Circle no. 5 (July 2022)    | Gathering knowledge to inform programming (research)  
                   | Identifying measures of progress and success (what information does the community want to collect to show it works?) and identifying existing and perceived hazards to a future program | 8                   |
| Circle no. 6 (August 2022)  | Gathering knowledge to inform programming (land-based activity)  
                   | Creating community experiences and direct knowledge of Indigenous plants and medicines | 10                  |
| Circle no. 7 (September 2022) | Review of main findings and how to share results by/with community (consultation/poststudy)  
                   | Obtain input from the community about what information is published and how; review the flashcards for accuracy and language | 5                   |
| Circle no. 8 (October 2022) | Final review and reflection on next steps (consultation/poststudy)  
                   | Discuss the final report and any plans for the next steps | 6                   |

*Participants include Squamish Nation community members, Knowledge Keepers, and Elders, as well as 2 academic researchers. Note: Squamish Nation is located in North Vancouver and in the Squamish Valley in British Columbia, Canada.*

#### Researcher Characteristics and Reflexivity

Data for the PAR project were cocreated between the academic and Squamish participants; data were then jointly analyzed by the 2 researchers. One academic researcher/participant was a Master’s student in Integrated Studies of Land and Food Systems with a background in journalism and community-based research in the US. The other senior researcher/participant was an expert in social epidemiology and health outcomes research with a focus on cardiovascular disease prevention and had experience and training in qualitative research methods from a range of disciplines (philosophy, public health, health services research, and policy). Both data analysts shared economic migrant experiences, mixed socioeconomic positions, Anglo-European cultural backgrounds, and a health equity lens. One lives with major chronic illness, has ancestry from the Caldwell First Nation of Point Pelee in Ontario, and has received continuing education in Indigenous Cultural Safety and Humility and Allyship since 2017.

#### Data Validation for Trustworthiness and Credibility

Member-checking with Squamish participants was a continuous and iterative process that ensured the veracity and enhanced trustworthiness of the data analysis. Stories and written summaries were verified through questioning and clarification throughout
all the circles. In addition, draft project outputs (e.g., flashcards described below) (Figure 1) were circulated by email and by post to all Squamish participants; one Elder also shared the flashcards with other Knowledge Keepers who further verified and confirmed the consolidated data. Comments and feedback were received orally and in writing via email (or by phone for one Elder), and 2 final sharing circles were designed specifically for discussion and review of the project findings (i.e., the deck of flashcards and draft Report to the Council); these were conducted with 7 Squamish participants (Table 1). The feedback received was overwhelmingly positive and strongly supported the narrative analysis summarized in the flashcards and written report. As one Elder stated about the flashcards:

*We showed them to um, my daughter, who and she uh and she makes cards with the Squamish language. And um. She felt that they were just excellent. And we showed them to um. [Knowledge Keeper] and she said they were awesome. Yeah. [...] so, we had 2 go-aheads from 2 Knowledge Keepers with Squamish language.*

All feedback was incorporated in revisions of the Report and flashcards before community dissemination.

RESULTS

The collaborative PAR was a fluid process of scientific inquiry and real-life experience to understand Squamish Nation’s knowledge of foraging walks, as well as perspectives on future program development for heart health promotion. The schedule of sharing circles evolved as the project unfolded, although all topics of the initial question guide were discussed. For the third circle, we invited a Knowledge Keeper to teach about traditional practices and plant knowledge. For the fourth research-focused circle, we had an in-person visit to a local Indigenous garden (xʷc̓ic̓əsəm) at the request of Squamish participants who wanted experiential knowledge of traditional plants; that circle was led by 2 Indigenous hosts who run the garden. In addition, a few circles (nos. 4 and 5) were conducted twice a week to accommodate participants’ schedules. Nevertheless, circle attendance varied throughout the project, and not all participants attended each monthly session. The median number of circles attended by Squamish participants was 4, with a range of 1 to 6; the 2 researchers attended all 8 circles. The gatherings engaged participants in group discussions and created a real opportunity to share personal stories and traditional food knowledge. These activities, especially the garden visit, allowed...
participants to reclaim cultural identity and ways of knowing and also gain personal knowledge of local food and plant medicine.

Personal Experiences of Foraging Walks and Knowledge of Traditional Plants

Many of the participants had very limited experience in foraging and traditional plant medicine. Some participants shared their personal stories of the present or the past about using Devil’s Club and Hawthorne plants as approaches to heart health: “I’m not an expert. I just know a little of a few things about plants, the first one I’ve worked with and have down is Devil’s Club” [Knowledge Keeper, Sharing Circle no. 3]. The seven medicines were described by the invited Knowledge Keeper as a collection of local plants that Squamish Elders used together for general health and well-being (Table 2). Participants expressed a desire to incorporate teachings about sustainability and safety practices into a land-based nutrition education program. Participants wanted to make sure that specific protocols were followed to respect FN territories and protect the plants and natural ecosystem because care for the land is integrated with self-care.

Need and Desire for Culturally Relevant Heart Health and Nutrition Education

Many of the participants commented that they received very little or no nutrition information or education growing up, and most knew very little about risk factors or medicines for heart health. Many participants felt they had limited personal knowledge of Squamish traditional practices for using plants as food or medicine as a result of the Indian Residential Schools (1830–1996) and the Sixties Scoop (1951–1984). Some also commented they had not received any heart-promoting nutrition information from the mainstream health care system, in which anti-Indigenous racism is deeply embedded. Several participants shared common stories about their experiences of mistreatment and judgment from health care professionals and the lack of support for their diets, health, and well-being. There was a strong shared desire to learn the nutritional value of traditional foods that are known through traditional teachings of land-based activities.

“When you know your [traditional] teachings, it feels good to our hearts” [Elder, Sharing Circle no. 4]. Several participants did identify multiple community resources to support nutrition education for the Squamish Nation. These included books, online resources, accessible spaces, and leaders or Knowledge Keepers that provided learning opportunities about traditional plant medicines, foodways and cooking techniques, and cultural land-based practices. A significant output of this PAR project was the creation of a set of 43 flashcards describing key plants and their health benefits that were identified by the group, as well as these resources (Figure). The commissioned artwork for the cards was done by a Squamish female artist, and the researchers drafted the cards by collating content from both personal stories as well as the books and resources identified by Squamish participants. The flashcards were reviewed multiple times and approved by the project members before 1,500 copies were printed and disseminated to the community following a drumming-in ceremony (attended by 9 Indigenous individuals) as suggested by a project Elder.

“I have distributed most of the flashcards into the Squamish Nation communities. They have been received extremely well. A lot of comments on how beautifully done they are and such a great idea! Thank you again for helping us make this happen.” [community member, email correspondence]

“I have one box left of the foraging cards, they are extremely popular! Elders center has asked if we could do a talk with the Elders about them.” [community member, email correspondence]

“I absolutely LOVE these new cards!!! I am wondering if I can get 26 sets for my SFU [Simon Fraser University] students and so we can go on nature walks this coming Springtime? Thank you for this beautiful and most important project! U Siyam.” [Knowledge Keeper, email correspondence]

Preferences for Program Structure and Content

A future foraging walk program would create an opportunity to share traditional knowledge about plants, including food skills, sustainability practices, and prevention and treatment of diabetes and CVD. These sharing circles emphasized the need for teaching and knowledge-sharing through storytelling as well as experiential learning among families. The participants identified important elements of a future program, including who should be involved, how to implement the program, and the most effective temporal and physical setting for such a program. Ensuring leadership by a local Elder or Knowledge Keeper and following territorial protocols were key considerations, as

<table>
<thead>
<tr>
<th>Plant Common Name</th>
<th>Squamish Name</th>
</tr>
</thead>
<tbody>
<tr>
<td>Devil’s Club</td>
<td>ch’ıtyay’</td>
</tr>
<tr>
<td>Stinging Nettle</td>
<td>ts’e’xts’ix’</td>
</tr>
<tr>
<td>Salal Berries</td>
<td>t’ągą’</td>
</tr>
<tr>
<td>Oregon grape</td>
<td>seliyay’</td>
</tr>
<tr>
<td>Wild cherry tree</td>
<td>t’elerhą’y</td>
</tr>
<tr>
<td>Vine maple</td>
<td>t’ękt’hą’y’</td>
</tr>
<tr>
<td>Maple tree</td>
<td>ǂemelaliy’</td>
</tr>
</tbody>
</table>
well as creating an accessible program that would facilitate multigenerational participation; the inclusion of children and youth was a key concern. One example given was to design a program session as a scavenger hunt to help engage children and young people in the process of foraging and identifying common plants such as purple dead nettle, dandelion, or mint. There was an expressed desire for a dedicated women’s heart health group to focus on the unique perspectives and needs of Squamish women. Topics would include but not be limited to women’s signs of heart attack, weight management in older age (postmenopause), and female-specific approaches to heart health.

Participants voiced that the timing of the program should reflect not only the flexibility required to accommodate the lives of the community members but also the natural life cycle of their plant relatives (ie, seasonality of harvesting). Thus, program content would need to be tailored to each season. It was proposed that 1 or 2 main sessions during the winter or early spring could be offered as preparation and general knowledge-sharing because it was not possible to forage. These winter gatherings could provide groups with the skills and tools required for smaller family-based foraging walks during the spring and summer seasons. Participants also suggested that a future community-led program should include a shared meal that takes a purposeful eating approach: the harvested plants can be prepared into a heart-healthy meal. The late summer and fall were proposed as times for teaching traditional food processing and cooking techniques for common plants and a Level 2 tailored toward more advanced foraging and preparation of medicinal plants (particularly those that can be toxic or difficult to find). The central role of inclusivity and bidirectional learning was stressed, emphasizing a need to reduce harmful power dynamics and shame among community members who may lack knowledge of Squamish traditional practices.

Finally, discussions of program content included the use of traditional medicine to support Western medical treatment for cardiometabolic conditions. Community members felt it was important for the foraging walks to teach the difference between the 2 types of medicine. A diabetes/hypertension support group could be embedded within the new community-led foraging program to address the common experience that Indigenous people do not have a voice in their medical treatment plans; many participants expressed they had been talked at, not listened to, and even harmed, by British Columbia medical professionals. This special working group would support self-advocacy in medical care, health and nutrition literacy, preventive health practices, and self-monitoring of symptoms such as blood pressure. We developed a template program session on the basis of the preferences shared by participants (Supplementary Box 2).

**Anticipated Heart Health Benefits of Foraging/Forest Walking**

All participants agreed that foraging walks promoted the 5 dimensions of health: physical, emotional, spiritual, mental, and social. Specifically, foraging walks provide physical activity, purposeful nutrition, connection to land, and engagement with community and culture. Foraging in a group setting was seen as especially beneficial for social and emotional connection through the building of relationships and sharing of personal stories and experiences. Moreover, nature-based activities promoted spiritual connection with the land and connection with cultural knowledge and practices, as well as encouraged physical activity through hiking and walking. One participant pointed out that social connection, exercise, and being out in nature are all reported to support mental health.

“[when I am foraging or forest walking], I feel at ease, my true self, what I’m meant to do. I feel sure of myself, and I don’t get heart palpitations from anxiety” [community member, Sharing Circle no. 3].

“it’s empowering that going out in nature is the best medicine” [community member, Sharing Circle no. 3].

“[it] creates happiness” [community member, Sharing Circle no. 3].

Consumption of fruits and vegetables is a key nutritional recommendation for supporting heart health. Community members voiced concerns that following a settler’s Standard American Diet—a diet characterized by processed foods high in sodium, sugars and/or fats—contributed to the high burden of heart-related illness and other chronic diseases like diabetes in Squamish Nation. Thus, a return to traditional food practices, including fresh berries and medicinal plants, was expected to benefit health and prevent heart disease and other illnesses. Participants referred to several types of teas that they made themselves, or their (grand)mothers made for them, from local plants that were harvested. For example, Devil’s Club roots are used as medicinal teas to help with blood pressure and blood sugar, and stinging nettle tips help improve circulation, and contain vitamin C and calcium.

*I just know a little of a few things about plants, the first one I’ve worked with and have down is Devil’s Club. Devil’s Club we call ch’átay’ in our language. It’s excellent for diabetics, so it helps level out your blood sugars, your blood pressure, all of that. And um I’ve been making Devil’s Club salves and tinctures; and so, um when any of my children are sick.*
I’m always putting drops of Devil’s Club in their water or tea or whatever at least 3 times a day, and they’re feeling better the next day. It’s very powerful. I hear that the Devil’s Club root is much more powerful than the actual Devil’s Club. I haven’t experienced that yet, I haven’t processed it and I’m very eager to. [Knowledge Keeper, Sharing Circle no. 3]

All participants spoke of the multiple health benefits of foraging walks and acknowledged that “you are what you eat.”

DISCUSSION

Slíháňy Skwáłwen was a qualitative, community-based PAR study to build a research partnership and co-create knowledge for using foraging/forest walks to promote the heart health of Indigenous women and their families. We intended to provide a culturally safe space to listen to Squamish community members and Elders and to co-design an environmental approach to nutrition education and cardiovascular health awareness through cultural, emotional, and spiritual wellness support. The dialogue and storytelling from our participants revealed a clear need for culturally safe health care, nutrition education, and community programming to address heart health in Squamish Nation. These findings highlighted a common desire for more knowledge and opportunities for land-based practices to support healthy eating, better health, and well-being, especially among younger generations.

Our findings showed there was a common experience of limited knowledge of local plants and traditional healing practices, in alignment with previous research that documents the interruption of Indigenous knowledge because of colonial practices and Indian Residential Schools. A recent mixed methods study with American Indians assessed the feasibility of implementing a group gardening program and reported that community members were not knowledgeable about growing food. The possession of plant knowledge and foraging skills by a few project members revealed the cultural value and critical role of a community’s Knowledge Keeper, as well as the vital role that intergenerational oral teachings have in transmitting and sharing knowledge to maintain the health and well-being of the community. This study also found a strong desire by community members and some Elders to learn more about the health benefits of wild plants and traditional foods and to include nutrition education in the community foraging program. Knowledge of medicinal and edible plants passed down through oral storytelling plays a crucial role in Indigenous culture and ceremony. Colonization, which includes environmental degradation from industry, has effectively eroded Indigenous access to traditional land-based lifestyles (ways of being and knowing), resulting in restricted availability of healthful dietary options. Thus, reclaiming cardiovascular health necessitates a resurgence of the health-promoting aspects of a holistic, balanced life, as dependence solely on Western medicine and foods undermines the individual and collective healing of Indigenous people. Culturally safe nutrition education, particularly with community support, group sessions, and cooking skills, can significantly impact metabolic and cardiac health.

Moreover, a community-based foraging walk program could offer a tangible solution to the challenge of limited access to fresh and healthy foods and health inequities faced by many Indigenous communities. According to a decade-long study—the First Nations, Nutrition and Environment Study—food insecurity affects 24% to 60% of FN, which is 3–5 times higher than the general Canadian population. That study also demonstrated the importance of traditional foods in the diet of FN. By learning to identify and sustainably harvest edible plants, community members become empowered to provide nourishing, locally sourced ingredients for their families. Direct access to nutrient-rich foods such as berries (eg, salal berries high in antioxidants) and plants (eg, stinging nettle high in vitamin C) will have physical health impacts while improving food sovereignty, community wellness, and reparation of intergenerational trauma. Integration of culturally relevant teachings into contemporary nutrition and health education is essential for addressing disparities in Indigenous health and nutrition literacy, as well as experiences of discrimination within health care. When interventions are not culturally tailored or relevant, they tend to be ineffective and may exacerbate existing health disparities. A community-based education program with culturally tailored curriculum was shown to be more effective at improving heart health knowledge and awareness among other minority groups. Finally, a recent review of culturally relevant diabetes and obesity interventions concluded that experiential, interactive, and codeveloped programs delivered by local Indigenous people within their communities were the most effective in benefiting health and well-being.

We found there was a diversity of opinions and ideas about how to structure a future community-led foraging walk program. Previous studies of codesigned interventions and research approaches have also reported a range of best practices or approaches for each group based on available skill sets, interpersonal dynamics, and familial structures. Flexibility to do what works was a major theme of the community-based Traditional Foods Project supporting American Indians in rural US to design their type 2 diabetes program. Although flexibility allows for locally and personally relevant programming, it presents a challenge to the standardization of implementation protocols. Nevertheless, the centering of local needs and desires in community-led programming is especially important in the context of Indigenous health. Our study builds on previous research using culturally sensitive program development and critical ethnographic approaches to determine the essential components of a foraging walk program to better support Indigenous women’s heart health. In so doing, our work helped to foster Squamish women’s understanding...
of traditional plants and food, reduce their experiences of oppression, and decolonize health research, and, as supported by previous research, thereby also address health disparities.

Findings also highlighted the Squamish understanding of holistic health as 5-dimensional, in contrast to the traditional Cree Nation medicine wheel teachings of balance between physical, mental, spiritual, and emotional aspects of health. Our results showed that foraging walks could have benefits for the social or cultural domain of health and well-being and that this benefit is derived from building community connections and strengthening cultural identity. Similar to the medicine wheel, the Squamish 5 dimensions of health represent a localized Indigenous understanding of balance and wholeness and offer an Indigenous perspective on the impact of health interventions on health outcomes.

Previous research has used the medicine wheel to reveal the positive benefits of cultural strength and the negative impacts of historical trauma in all 4 domains of health. The participants in our study spoke about how foraging walks were seen as essential for maintaining heart health because they reconnect Indigenous participants with their ancestral practices, help to revitalize cultural heritage, and enhance pride and identity. The use of foraging walks as a culturally appropriate environmental approach to nutrition education is supported by the biophilia hypothesis; that is, the biological drive to engage with nature for survival and sustenance heightens the social and emotional aspects of food and develops a positive relationship with diet and eating.

Although a community-led foraging walks program was seen to benefit all members (ie, women and their families), there was consensus on the need for a separate program component focused on women’s heart health in terms of their unique risk factors, experiences, and needs. This component could serve to strengthen women’s social support, reduce the stress of caretaking roles, and promote resilience in all aspects of women’s heart health and well-being. The associations of isolation, psychosocial stress, and loneliness with CVD in women are well-established and have become more pronounced in recent years. Cross-sectional evidence from a Canadian cohort showed that having limited social participation or a small social network size was associated with higher odds of hypertension in women, including Indigenous women. In other words, the vital social interactions and a sense of belonging that are specifically cultivated through a community-led foraging/forest walking program have significant potential to reduce Indigenous women’s heart health risk factors and promote better overall health and well-being.

Methodological Considerations

Our findings are drawn from 8 sharing circles with 14 Squamish participants and 2 academic researchers, which may limit the study from capturing the full breadth of community perspectives and experiences of foraging walks for heart health. However, this project used respondent-driven sampling, which is a survey and analysis technique that facilitates recruitment in populations that are hard to reach or may be averse to research participation. This aligns with the best practices of PAR and has the benefit of both generating relevant representative data and addressing the absence of population health information for FN. Thus, our data may be more accurate than census or conventional research methods because of its capacity to capture hidden groups that are underrepresented in health research. Similarly, in focus group research, the IM of sharing circles might increase the risk of social conformity of views expressed. However, several sharing circles were run twice with different compositions of participants depending on their availability, which may have helped to mitigate groupthink. Because of restrictions imposed by the coronavirus disease 2019 global pandemic and the distance of some participants, the sharing circles were conducted online. Indigenous relationships and cultural practices have historically been grounded in in-
person communication and ceremony. The limits imposed by a virtual setting included not being able to use a talking stick or to share meals, which may have limited the relationship-building process and sense of connectedness that could, in turn, impact participants’ ability to trust the non-Indigenous facilitators. Despite the lack of in-person circles, the researchers provided a personalized meal to each community participant using a local Indigenous catering service or an additional honorarium for the participant living outside the caterer’s catchment—this offering was combined with honoraria guided by the project advisory Elders as appropriate compensation.

A key strength of this work is the explicit use of IM and Squamish protocols, such as opening and closing each circle with a Blessing from an Elder or Knowledge Keeper. Researchers maintained reflexivity by incorporating self-awareness and intentionality during the listening sessions, consciously taking a minimal role in the discussions. All project outputs—the deck of flashcards, template program session, and final summary report—were shared with all project members for verification as a sharing-back exercise and a member-checking technique. This PAR project was motivated by a collaborative approach, and researchers worked closely with community Elders from conception to completion. This process thereby enabled community ownership of any future programming and research results. Reflexivity, humility, and respectful partnership in this qualitative research process enabled the project to adapt and respond to the concerns of participants as the project unfolded. Squamish involvement and leadership at each stage of the study also strengthened community competence and are essential for research reconciliation and self-determination of Indigenous communities. Our study integrated Indigenous knowledge and community-based information to produce a culturally relevant resource and expand holistic understanding of CVD prevention in this FN community.

IMPLICATIONS FOR FUTURE RESEARCH AND PRACTICE

There is a high demand and an unmet need for traditional knowledge and land-based practices for heart health and wellness among the Coast Salish community of Squamish Nation. The community showed a strong preference for foraging walks as a culturally safe and environmental approach to nutrition education and cardiovascular health awareness, and findings indicated that a foraging walk curriculum would benefit from incorporating traditional food preparation techniques that focus on healthful food choices and cultural relevance. The measurement of parameters in all 5 domains of health is warranted in future research and evaluation on the potential impacts of foraging walks or other culturally appropriate nutrition-related CVD prevention in Indigenous women. Personalization and flexibility in the structure and delivery of future land-based strategies and approaches to promote heart health will likely enable Indigenous community members to choose the timing and topics of a foraging walk program they receive. It will be important for future environmental approaches to nutrition education among Indigenous people in Canada to be land-based, include traditional food practices, and foster intergenerational relationships.

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SUPPLEMENTARY DATA

Supplementary data related to this article can be found at https://doi.org/10.1016/j.jneb.2024.04.003.

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