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Capacity-building and Participatory Research Development of a Community-based Nutrition and Exercise Lifestyle Intervention Program (NELIP) for Pregnant and Postpartum Aboriginal Women:Information Gathered from Talking Circles.

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Capacity-building and Participatory Research Development of a Community-based Nutrition and Exercise Lifestyle Intervention Program (NELIP) for Pregnant and Postpartum Aboriginal Women:Information Gathered from Talking Circles.

Abstract
Objectives were to gather information from Talking Circles of Aboriginal women who participated in a maternal Nutrition and Exercise Lifestyle Intervention Program (NELIP) to identify strategies to bring NELIP into the community. Twelve First Nations women participated. Several main themes were identified regarding health: balance, knowledge/education and time management. Benefits of the NELIP were improvement in health, stamina, stress, and a healthy baby, no gestational diabetes and a successful home birth, with social support as an important contributing factor for success. Suggestions for improvement for the NELIP included group walking, and incorporating more traditional foods into the meal plan. The information gathered is the first step in determining strategies using participatory research and capacity-building to develop a community-based NELIP for pregnant Aboriginal women.

Keywords
Talking Circles, Healthy Lifestyle, Women, Pregnancy

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Introduction

Health disparities, where less affluent members of a population suffer from higher morbidity and mortality than those more prosperous, present major public health and social justice concerns (Frohlich, Ross & Richmond, 2006). The evidence for patterns of health disparities in Canada and the suggested mechanisms for these patterns are based on the interaction of several social determinants of health, including Aboriginal status, income and where an individual lives (Frohich, Ross & Richmond, 2006). Poor health outcomes in Aboriginal people (First Nations, Inuit and Metis) are related to reduced access to health resources and opportunities, to lack of knowledge and education based on poverty and income, and inequitable access opportunities to safe neighbourhoods and health services in relation to other Canadians (Frohich, Ross & Richmond, 2006). Development of policies relating to Aboriginal health must first address the mechanisms for the pattern of health disparities, be flexible enough to consider the interplay of the determinants of health between Aboriginal communities (large and small) and consider the interaction of health at both the micro and macro levels (Jacklin, 2009).

Policy makers responsible for Aboriginal health should initiate policy development at the micro level by listening to the health needs and wants of members of the community. This will allow community and health planners to make recommendations and focus on root causes leading to prevention of disease and on the cultural and community strengths of empowerment to improve health. This would send a strong message to the governmental level of policy development that each community has a different approach to health improvement, supporting intra-community diversity that underlines the importance of self-determination and emphasizes the strength of cultural healing and disease prevention for Aboriginal people, based on the needs of the collective members. Policy makers and planners could then create more effective policies and programs and direct community resources more appropriately and efficiently. At the macro level, society may then understand the challenges faced by Aboriginal peoples and communities, reversing the portrayal of a sick population, by emphasizing strengths, healing and disease prevention (Jacklin, 2009).

Health disparity indicators show that the life expectancy of Aboriginal people is lower, infant mortality is higher, diabetes rates are double, and obesity rates are higher, compared to non-Aboriginal people in Canada (Garner, Carniere, Sanmartin, & LHAD Research Team, 2010; Carriere, Garner, Sanmartin, & LHAD Research Team, 2010). Health policies aimed at disease prevention rather than treatment at the micro level may help decrease health disparities in the Aboriginal population. As one example, First Nations people with diabetes were more likely to be overweight and less likely to exercise compared to the general population (Bobet, 1997). When questioned, First Nations people with diabetes perceived their disease as a health problem and although many believed that community-based nutrition awareness programs would help, almost no-one mentioned exercise as a solution (Bobet, 1997). The message that exercise combined with healthy eating, or a healthy lifestyle reflecting the traditional (time-honored) way of life, can help prevent or manage diabetes and other health related problems, should be reinforced in the Aboriginal population, starting at the micro level, one individual at a time, using programs that are culturally specific to each individual community.

Health disparity indicators for Aboriginal women have shown that this sub-population group has many risk factors for chronic disease. Aboriginal women have a greater body mass index (BMI) than non-Aboriginal women and a central body fat patterning that places them at high risk for obesity and gestational diabetes mellitus (GDM) (Young, 2001). About 30% of Aboriginal women with type 2 diabetes reported that their condition was first diagnosed during pregnancy (Young, O'Neil & Elias, 1997). GDM has been shown to be a predictor of type 2 diabetes and obesity later in life for both mother and offspring (Young et al., 1997). If GDM is a significant initiating factor in the type 2 diabetes epidemic in Aboriginal populations then prevention of GDM may lead to lower rates of type 2 diabetes in successive generations (Dyck, Klomp, Tan, Turnell, & Boctor, 2002).

Although pregnancy is a vulnerable time for excessive weight gain and gestational diabetes development, it is also an opportune time for the initiation of community-based intervention programs, since pregnant women can be motivated to adopt healthy lifestyles to benefit fetal health. In traditional Aboriginal cultures, women are the givers of life and are highly respected in this role (Grace, 2003). Within the Aboriginal community, pregnant and post-partum women are major caregivers for other children, holding a powerful influence on lifestyle, including both eating and activity habits for young children before they attend school. Targeting pregnant women, many of whom also have pre-school aged children, may lead to prevention of excessive weight gain and diabetes through healthy living; subsequently, these health outcomes and habits can be passed on to children through a community-based program.

There is a growing acceptance among Aboriginal communities for traditional forms of healing (Grace, 2003). In order to understand fundamental concepts of Aboriginal health, a holistic definition of health and the notion that there are differences between communities is imperative (Dowling, 1999). Many Aboriginal communities commonly describe health and well-being in terms of the spiritual, emotional, physical and mental (or intellectual) aspects of the whole person (Malloch, 1989). Bartlett (2005) used this approach in examining the health and well-being of Metis women in Manitoba using a "talking-circle methodology" (gathering wisdom and knowledge), in which symbolism grounded in Aboriginal culture and tradition was used for data collection. Participants were asked to hold a symbolic object (a stone) when speaking, which provided spiritual space to reflect deeply and personally, while facilitating active listening of the others in the circle (Bartlett, 2005). A facilitator was used to ask specific questions of the group (Eyler et al., 2003a, 2003b) and to direct the object to each participant (Bartlett, 2005). A recorder or transcriber was also present to track and record the statements of the group participants. Data were processed through synthesis of descriptive narratives by coding transcribed statements, and then each Talking Circle narrative summary was analysed for themes (Bartlett, 2005).

One of the major themes identified was that an important motivating factor for Metis women in maintaining well-being was grounded within a sense of community (collectivism) rather than individualism and that most health promotion continued to focus on the individual. This approach did not support the Metis women's community orientation to life. They concluded that health was expressed as involving physical aspects of life while well-being included holistic integrated dimensions of spiritual, emotional, physical and intellectual/mental aspects (Bartlett, 2005). Based on these findings and others, it is important to understand the views and culture of Aboriginal peoples, including their perception of body image, physical activity and healthy foods (Gray-Donald et al., 2000), in order to improve the health disparities found in Canada among Aboriginal women.

We have developed an intervention tool consisting of nutritional control and healthy eating in combination with an individualized walking program for pregnant and post-partum women, called the Nutrition and Exercise Lifestyle Intervention Program (NELIP) that prevents excessive weight gain during pregnancy and helps regulate blood glucose concentrations in overweight women at risk for GDM (Mottola et al., 2010). From the original study, 26% of these participants were Aboriginal women. The description of NELIP is published elsewhere (Mottola et al., 2010) but briefly consisted of a meal plan based on nutritional therapy of smaller meals more often with carbohydrate-intake controlled, and distributed throughout the day, modified from the meal plan given to women with GDM (Gunderson, 1997). The exercise intervention consisted of walking for 25 minutes per day, 3-4 times per week, increasing the time by 2 minutes per week until 40 minutes was achieved (Mottola et al., 2010). From the original NELIP, a specialized meal plan was developed in partnership with two Aboriginal dieticians who incorporated more traditional foods for the Aboriginal participants while the walking program remained the same. Each participant was required to come to the research lab to exercise once per week and to be monitored (body weight, blood pressure, and capillary glucose pre and post exercise), or one

member of the research team would meet the participant, monitor her and walk with her in her community.

Our original longitudinal intent was to collect information concerning health at the individual level relating to participation in NELIP in order to facilitate the development of a community-based intervention for pregnant and postpartum Aboriginal women. Figure 1 outlines the strategies we intend to follow for a successful NELIP- research-based community program with dissemination of knowledge to all partners and stake holders ultimately leading to improvement in community health. In developing the community partnership program we recognize all partners in the research process: researchers, community health workers, and the women participants. The information discussed in the present study resulted from the Talking Circles of the Aboriginal participants. These were held to determine each woman's views and beliefs regarding health and how the NELIP could be used to develop a community-based program, which represents the first element or stage in the initiation of capacity building and program development.

Objectives

The objectives of the present study were to bring together Talking Circles of those Aboriginal pregnant and post-partum women who participated in the NELIP. All four aspects of health, spiritual, mental, physical and emotional, were examined. The information gathered by these Talking Circles was used to help us identify the potential strategies for success in developing a community-based program and to identify themes regarding barriers (reasons for not being able to participate), and strategies to overcome these barriers to the NELIP.

Methods

Capacity building is an important component in community-based research development (Pegler, DeBruyn, Burrows, Gilbert, & Thompson, 2003). We partnered with Indigenous Services at the University of Western Ontario in order to give First Nations senior students the opportunity to learn about community-based participatory research and Aboriginal Talking Circle methodology. Two First Nations research assistants worked with a First Nations facilitator, who was experienced in focus group and Talking Circle methodology. The hired facilitator was highly recommended by Indigenous Services. Several meetings took place prior to the Talking Circles with advisors from Indigenous Services, the researchers and the facilitator to discuss the questions and format to be used. The students learned key practical applications to community-based qualitative research and assisted in transcribing the discussions from the Talking Circles. Based on Figure 1, this was the first in a series of capacity-building initiatives in which there was knowledge and experience gained for First Nations university students who will be future workers and advocates for Aboriginal communities.

From the original NELIP (Mottola et al., 2010), 27 pregnant Aboriginal women who were living either on-reserve[1] or off-reserve participated. From this initial recruitment, 17 women who lived within driving distance were contacted by the First Nations research assistants and 12 women agreed to participate in the Talking Circles. Transportation costs were covered, and incentives, babysitting and healthy foods were provided at each Talking Circle meeting. All women gave informed consent and approval was given by the Health Sciences Ethics Review Board at the University of Western Ontario.

[1] Living within a First Nations or Indian Band community as defined by Statistics Canada – Cat. # 97-558-XIE2006001

Through our partnership with the Southern Ontario Aboriginal Diabetes Initiative (SOADI), we were able to use a culturally relevant resource called the "Ribbon of Life". The Ribbon of Life was also adopted by the National Aboriginal Diabetes Association as the national symbol of diabetes awareness among Aboriginal people in 2006. We partnered with SOADI to develop and modify the Ribbon of Life as a symbol for pregnant Aboriginal women to help increase the awareness of preventing gestational diabetes. In the original Ribbon of Life, there are 4 ribbons which represent the four seasons and the importance of exercise, healthy eating, stress management and medicine, in addition to the 4 aspects of human nature, spiritual, emotional, physical and mental (SOADI). The four colours of ribbon (white, black, yellow and red) represent all the different nationalities that are dealing with diabetes. The Ribbon of Life may be adapted to resemble each individual's origin, by positioning the beads on the appropriate colored ribbons (SOADI). There are seven blue beads that represent water that sustains life and represents seven generations. The ribbon without any beads signifies, for example, the Aboriginal person with diabetes and how individuals stand in their aloneness with this disease (SOADI). The modified Ribbon of Life (Figure 2) consists of one ribbon with three beads (one of which is the original blue) that represents the family. The red bead symbolizes the pregnant mother, indicating mother earth and women. The smaller green bead represents the baby and symbolizes new life and renewal. These additional beads were added to symbolize women who are dealing with gestational diabetes (SOADI). The importance of the Ribbon of Life is the necessity of balance and regaining health when one has diabetes. Through our partnership with SOADI, the Ribbon of Life was used as a neutral symbol for the Talking Circles, since not all of the participants came from the same community and all women could relate to GDM prevention; one of the initial objectives of our program.

All Talking Circles began with a smudging ceremony conducted by the facilitator, assisted by the two research assistants. All of the individuals in the room were of First Nations descent. Researchers were not present in order to encourage the women to speak honestly about the program. One research assistant projected blank templates of a circle on a screen to assist the participants in answering the questions. The first circle projected illustrated the 4 sides of a medicine wheel to represent the 4 aspects of one's health, i.e., spiritual, emotional, mental and physical. The second circle projection represented self, family, community and Nation. Participants were asked to hold the Ribbon of Life as the Talking Circle symbol when speaking. This represented a neutral symbol and one that all could relate to in gestational diabetes prevention. The facilitator asked specific questions of the group (Eyler et al., 2003a, 2003b) and directed the object to each participant (Bartlett, 2005). The facilitator acknowledged the direction the "talking circle" took – either clockwise or counter clockwise and this direction was agreed upon by the group. The person holding the Ribbon of Life was the only person speaking and answering the questions posed by the facilitator. The facilitator also made sure that each person had the opportunity to speak first while still keeping the circle going in the appropriate direction. Each person's response was typed into the appropriate area of the circular templates projected on the screen by the first research assistant. The second research assistant ran the audiotape and kept notes on procedure. Questions asked by the facilitator were:

1) "What does being healthy mean to you – think about this in regards to the holistic or whole person (the mental, physical, emotional, and spiritual)"?

Based on the response of the individual, the facilitator ensured that each aspect of health corresponded to the 4 sides of the medicine wheel (template projected on the screen). If the participant did not mention a certain aspect of health, the facilitator would respond by saying, "What about the emotional aspect?", for example. The facilitator also made sure that each person not only focused on NELIP but also considered all aspects of health. Once the facilitator ensured that each participant spoke, each person was asked if there was anything else that could be added to the discussion.

2) “How can your health or certain aspects of your health be improved?” Again the role of the facilitator was to “peel away” layers of the conversation and to probe into all aspects of the individual’s health – based on the above question.

3) The facilitator then briefly described NELIP as a Nutrition and Exercise Lifestyle Intervention Program which led into the next question,
“What did you find beneficial for your health in taking part in the NELIP?” The facilitator continued the holistic theme of health as stated above and prompted each individual to consider all aspects of health. The facilitator continued with the question, “What was successful for you in taking part in the NELIP?” and then asked, “What barriers did you have to overcome to make it successful for you?” If the individual responded that NELIP was not successful for her, the facilitator responded by asking, “Why did NELIP not succeed for you?” and “What barriers existed that prevented you from being successful in the NELIP?”

For the above questions regarding barriers, the facilitator inquired as to when these barriers or obstacles occurred during the program, if and when there occurred a change in barriers, and what helped the participant overcome these barriers.
The answers to the following questions below were projected on a circle template reflecting four areas: self, family, community and Nation.

4) “How can we improve our Nutrition and Exercise Lifestyle Intervention Program?” “What can we do to help you participate more or how could we have helped you incorporate healthy choices into your lifestyle while you were pregnant and going through NELIP?” (Self)

5) “How can we assist other pregnant First Nations women in joining the NELIP?” (Family)

6) “What would be the best way to initiate a community-based program?” (Community)

7) “How best can we involve the community as a whole?” The facilitator followed up with “How can we start involving the community as a whole, who to contact, what may work, what barriers or obstacles may be present and how may we overcome them?” (Nation)

At the end of the session, the facilitator asked each participant if there were any other issues that should be raised or discussed upon reflection of the responses typed into the projected circle templates. Participants agreed that the responses projected on the screen summarized the reflections of the discussions. Validity of response occurred when the participants verified the research summaries projected on the screen (Struthers, Hodge, Geishirt-Cantrell, & DeCora, 2003). All participants were given a Ribbon of Life kit to assemble in order to reflect upon diabetes prevention.

Each session was audiotaped, with permission of the participants, and the tapes were transcribed verbatim by the research assistants. Inductive content analysis (Patton, 1990) was used to allow for an in-depth exploration of the holistic determinants of health (spiritual, emotional, physical and mental/intellectual) in relation to the questions asked. Data were processed through synthesis of descriptive narratives. Each Talking Circle summary narrative was analysed for themes (Bartlett, 2005).

All aspects of the inductive content analysis were consensually validated through a process of achieving mutual agreement relative to the final themes and categories that emerged from the descriptive narratives (Lincoln & Guba, 1985) separately by the research assistants. In order to validate and reduce the bias in interpretation, the separate analysts achieved mutual agreement in the compilation of narrative quotes. A computer- based program (NUD*IST-QSR N6 2002) was also used in

which the narrative quotes were entered into the computer and clusters and commonalities were identified by a research assistant who did not attend the Talking Circles.

Results

Participants

Of the 12 women who agreed to participate, all identified themselves as First Nations descent, and all grew up and spent most of their adult life living on a reserve. Seven women were currently living off-reserve at the time of the current study. Four Talking Circles were held with at least 3 women present each time. Three was determined as the number necessary to generate discussion (Bartlett, 2005). The Talking Circles were held at the University of Western Ontario and all women were reimbursed for their travel costs.

Talking Circle Results

Talking Circle themes were identified (Table 1) for each question. With regards to question 1, in which each participant reflected on her definition of health and what being healthy means, many found it hard to put into words. One woman suggested that, "..making choices for self at the right moment – whether that is eating healthy, being active or sleeping". Another said "…that combining all of those (spiritual, emotional, mental and physical) to be in balance with all areas working together and make you feel good, if one is not in balance than you are not healthy". It was apparent that all four aspects of health must be in line for the whole person to be considered healthy.

Question 2 referred to how each woman's health and well being could be improved. Many women identified knowledge and seeking out information as an important aspect to improve their health. In addition one woman suggested that for her it was important "…to identify what areas you need to work on and identifying where you need assistance, …whether it is to see a doctor, or a dietitian and then following through with that decision". One participant said that "remembering who I am and where I came from and going back to cultural ways" was important for improving her spiritual health. Other important aspects of improving health were making time or time management to include all aspects of health in everyday life.

Upon reflecting on what was beneficial to each participant's health through the NELIP, answers to question 3 appeared positive. Education and increasing one's knowledge in healthy eating and being physically active were considered beneficial. One participant said that .. "our people just don't know….I learned a lot … (through) good advice and knowledge". Another said that "..they (the researchers) were very understanding about us, culturally and accommodating". One individual said that the "one on one was key, …the sample menus were easy to follow and I learned a lot about food and options of healthy food". Others felt that learning how to read nutrition labels on foods was also valuable. With regard to the walking component, many women liked to use a pedometer as a motivator to increase their daily step counts to keep active. One respondent said that … "I liked that it is a flexible program and the daily walk turned into a family walk after dinner".

When asked about the individual successes they achieved as part of the NELIP many women commented that a healthy baby, managing sugars and gestational diabetes prevention were very important. One participant commented that "having a healthy and successful pregnancy and just proving to the doctors that just because you had one unhealthy pregnancy it's not inevitable that the next one will be unhealthy". In addition, one respondent commented that

> "…it was a good pregnancy and I was, I guess with this program I just felt, the support (and) the information made me keep off the weight I guess and I knew I was eating healthier for my baby….I trusted that things were going to be ok..My goal was, I had always wished to have a home birth but because of my sugar levels that was never something that was possible……care had to be transferred to an obstetrician… so that was always my goal (home birth) ….and I was able to not have to have a doctor and not have to give birth in a hospital so I was really grateful this last time, and I just, I can't say how much I am grateful for this program.."

Many women attributed social support as an important factor contributing to the success of the program.

With regards to overcoming barriers to be successful in the program, many women who lived outside the city said that travel and coming into town once per week were barriers they had to overcome. In addition, these women also said they did not like to drive alone to and from their community, which they had to overcome to be successful in the program. In addition, lack of motivation and scheduling issues were barriers at times, but seeing weekly progress helped with motivation.

When asked how NELIP could be improved (question 4), a few women suggested incorporating more cultural or natural foods such as corn into the meal plan and improving the options for transportation to the lab. One participant also suggested that it would be important for researchers to understand the difficulty women encountered when changing their eating habits and beliefs, especially when the rest of the family did not want to. One way to overcome this was to include the partner and other family members in the program. One respondent said that .. "not just focusing on the pregnant mom but the family altogether cause to create your whole family healthy … because they started to eat a little better because I had to…"

When asked how we could make the NELIP more accessible to other Aboriginal women (question 5), the participants said that awareness, more advertisements, presence at community health fairs, and bringing the program into First Nations communities were important ways to make the program more accessible. One woman suggested that "word of mouth" and "bringing the program out to the reserve" were also important. She also suggested that a First Nations participant be important as a "role model" to speak about the program to other pregnant women in her community.

When asked how to initiate the community aspect of the NELIP (question 6), one participant suggested that .. "let your community know then you have community support.. and I know that is a really hard thing from experience…also too.. like parents and grandparents involvement….but if they actually understood it (gestational diabetes prevention) then they would have that knowledge to be more supportive….when they cooked their meals it might be more healthy too". One woman suggested "really getting in those first providers of care and getting the word out through them… try to find a fun way of getting people involved…. come read about gestational diabetes and we're gonna, I don't know have a party, I don't know…finding innovative ways to get people to participate… I'm not sure how to do it but find a way to get the younger moms involved…. we have a lot of young moms and they are healthy and fit but that's the last thing from their mind is I'm going to be unhealthy but try and get them to see their future too". The notion to include all First Nations women, not just those at high risk for developing gestational diabetes, appears to be important because all women need to follow a healthy lifestyle in order to give birth to a healthy baby.

In addition, the women recommended that there should be support from Administration (Band and Council), and a qualified individual from the community to supervise a community walk to make it accessible for all participants. To make this more feasible, one suggestion was "to incorporate the program into something they have already established with not a whole lot of extra work on top … to create partnerships between this program and community health services". One participant suggested

…"maybe through having a stroller parade and be a part of community events… do something creative.. who has the best dressed stroller creation and have a little prize, or ribbon… making exercise fun…a get fit mommies team .. using creative things". Many of the community suggestions can also be used to involve First Nations people as a whole (question 7). One respondent suggested starting with "one person at a time and then building into family and the whole community". Education attainment and the transfer of knowledge about the program were also important.

The final thoughts on the program before closing the Talking Circles were quite positive. One participant said, "I know the program helped me… I wouldn't want to see it go away…I hope that it's here and I hope we can expand it". Another woman summarized by saying, "it seems like its catching on… hopefully it can continue… healthy habits I picked up from the program, the walking and the eating… its helping me with my family and my children are benefitting and also my husband too… I think it starts with yourself and you know.. you can make a lot of changes with other people too… so I would like to see other women benefit from this program…that's why I am here today is to, you know, do what I can to help because it helped me.."

Discussion

Some of the main mechanisms and social determinants for health disparities in Canada are Aboriginal status, income and where an individual lives (Frohlich, Ross, & Richmond, 2006). Although these are important mechanisms that identify health disparities, Aboriginal people have identified many determinants of health that are specific to their well-being. In a recent report six determinants of health from First Nations and Inuit Community Health Representatives across Canada were identified: balance, life control, education, material resources, social resources and environmental/cultural connections (Richmond & Ross, 2009). In the small population of Aboriginal women who participated in a Nutrition and Exercise Lifestyle Intervention Program (NELIP) many themes were identified that corresponded to some of these determinants of health. The two main determinants identified by both the on- and off - reserve women appeared to be balance and knowledge/education. "Being healthy" means that a balance exists between all aspects of health; the emotional, physical, spiritual and mental. If one aspect of these four components is not in balance it is critical to have knowledge and seek out information to restore the balance. Rest and having a quiet spirit and communicating a healthy lifestyle to family members were also identified as being important aspects of a holistic healthy person. One additional theme that emerged in the context of the improvement and maintenance of an individual's overall health was time management. Time management was important in life control as a determinant of health because the participants were empowered to control their environment and make it healthy for the growing baby as well as for themselves.

Many participants discussed the importance of knowledge attainment relating to gestational diabetes and how to prevent it through healthy living. They commented on the educational materials they were given, the social support, and being accountable to others helped keep them motivated and on track. Social support has been listed as an important determinant of health in Aboriginal communities and those communities seemingly reported healthier populations (Richmond, 2007). It appeared that a successful program should have many levels of social support, from the individual's support-seeking behaviour (downstream – educational attainment to make healthy choices, Richmond, 2007) to a greater support system in the community (Administration) and beyond (upstream, Richmond, 2007). Among Aboriginal women, all types of social support were related to thriving health (positive health outcomes) (Richmond, Ross, & Egeland, 2007). Perhaps the network of support offered by NELIP provided empowerment for each participant, providing her with motivation and the skills necessary to continue down the pathway to improved health.

Feedback from the participants regarding food and nutrition from the NELIP indicated that many women said they learned about healthy food choices, reading nutrition labels on packaging, simplifying menus, and nutrition benefits to their children. Unhealthy food cravings were diminished. Participants also commented on the benefits to their health as they reported increased stamina, less stress, a healthy baby, no gestational diabetes and a successful home birth, in addition to quitting smoking. Suggestions for improvement for the NELIP included group walking with other women, incorporating more traditional foods into the meal plan, and assistance in how to change eating habits when the rest of the family does not want to. Reverting back to traditional foods and being active were identified as environmental/cultural connections, as these were listed in the health determinants that improved the quality of health for Aboriginal people (Richmond & Ross, 2009).

Childbirth as a spiritual life event in Aboriginal cultures has a great impact not only on the woman giving birth but also on her family and community (Lalonde, Butt & Bucio, 2009). Aboriginal midwifery is an important part of many communities and being able to give birth at home with a traditional midwife was important to one of the participants. She was not able to accomplish this before because she had trouble controlling her blood sugar. However, by getting her health back in balance through healthy eating and walking, she was able to achieve this goal and deliver at home, with the assistance of a traditional midwife.

One limitation of the present study was that there was a mixture of off- and on-reserve women, who had to drive into the city to participate. However, all participants grew up on reserves and were familiar with community life. Regardless of location, all women were enthusiastic about the development of a community walking program. Many women suggested that a walking program would be an effective way to improve the health of community members. They also suggested ways to increase community participation by advertising at health fairs and in schools, offering more incentives, making exercise fun, using Aboriginal role models as success stories, visiting other communities with successful participants, and by providing transportation or an accessible and safe location for the walking program. In addition, successful community walking programs must have sufficient infrastructure such as a community centre, safe walking trails (no off-leash dogs) or sidewalks. All communities are different but without Administrative (Band and Council) support and a role model or champion from that community, advertising and awareness of diabetes prevention, the chances of success would be limited. Community involvement is another important aspect of capacity-building and community empowerment to improve the health of each member.

Talking Circles have been used as a traditional pattern of intragroup communication specific to Aboriginal communities (Becker, Affonso, & Blue Horse Beard, 2006). They have been used to provide culturally rich group discussions, stories about how a participant thinks and feels about specific topics (Becker et al., 2006). In addition, Talking Circles were used as an intervention to supply education about diabetes to on-reserve American Indians (Struthers et al., 2003). In the current program, Talking Circles were an effective means of gathering information and may, in the future, be used to teach, educate and pass on knowledge relating to gestational diabetes and diabetes in general for the pregnant and postpartum women in Aboriginal communities. This may be an important first step in partnering, capacity-building and sharing information about healthy eating and lifestyle to start the community-based Nutrition and Exercise Lifestyle Intervention Program.

Future Directions

Based on the Talking Circle information presented, the NELIP program will be adapted to combine community needs with research expertise, in order to meet the needs of each woman in her own community. This strategy is the first step in the plan of capacity-building and participatory research

development of a community-based program. Based on the results of the Talking Circle themes, reasons for the success of our program and potential ways to overcome the barriers to becoming healthy through nutrition and exercise lifestyle changes were presented. The participants determined how best to involve more of the community as well as reported individual successes in the program. One of the best ways to ensure community involvement and social support in the future is to include Community Health Representatives. By including Community Health Care workers in future Talking Circles, in addition to pregnant and post-partum women participants, the "voice" of the community would be emphasized, which encourages all participants to reveal strengths and to identify barriers that pertain to the effective implementation of preventing gestational diabetes in the community (Boston et al., 1997).

Through this participatory research investigation, courses of action and recommendations can be planned to overcome the potential barriers to participation (Boston et al., 1997). The findings of these Talking Circles will be incorporated to improve the NELIP as an ongoing collaborative process between the community and the research investigative team. In the next phase of development, using participatory action research, we aim to utilise this forum where equal partners meet, enter into dialogue and share knowledge, experience and expertise (Boston et al., 1997, Pegler et al., 2003) on how best to develop strategies for a community-based program to prevent gestational diabetes and excessive pregnancy weight gain using NELIP for Aboriginal women. As we progress through this process of capacity-building, we aim to disseminate the knowledge gained to all partners and stakeholders, develop new community partnerships, expanding into a program that can be utilized by all Aboriginal communities to improve prenatal and postnatal health care. By starting at the individual level, building upon and listening to health care needs for disease prevention, expanding to the community and health care workers, community and health planners can make recommendations to health policies focusing on cultural and community strengths to improve health and prevent disease, diminishing health disparity indicators for Aboriginal women and their families.

Table 1

Talking Circle themes were identified from each question

Question	Themes
Question # 1- What does being 'Healthy' mean to you?	Eating Well Exercise Balance Knowledge Resting Communication
Question #2- How can your health and well-being be improved?	Expanding Knowledge Exercise Time Management Eating Well
Question #3a) What was beneficial to your well-being and health through participating in NELIP? 3b) What did you consider the successes achieved for 'self'? 3c) What were some barriers you overcame to achieve your successes?	**3a)** GDM Education Access to Dietician Social Support Walking Having a Home Birth Staff Understanding Participants Positive Effects Diabetes Prevention **3b) Success**- Healthy Baby Healthy Eating Home Birth Diabetes Prevention Improved Quality of Life Childcare **3b) Barriers**- Motivation Transportation Time Management
Question #4- How can NELIP improve to help you in terms of participation and incorporating healthy choices into your lifestyle (during pregnancy and afterwards)?	Travel Cultural Recipes
Question #5- How can we assist/encourage other pregnant First Nations women to join in NELIP?	Awareness Education Incentives Aboriginal Role Models Bring to Communities
Question #6- What advice would you give to improve the community aspect of NELIP?	Band/Administrative Support Education Community Involvement Walking Groups
Question#7- How best can we start involving First Nations people as a whole?	Band/Administrative Support Family Involvement Education

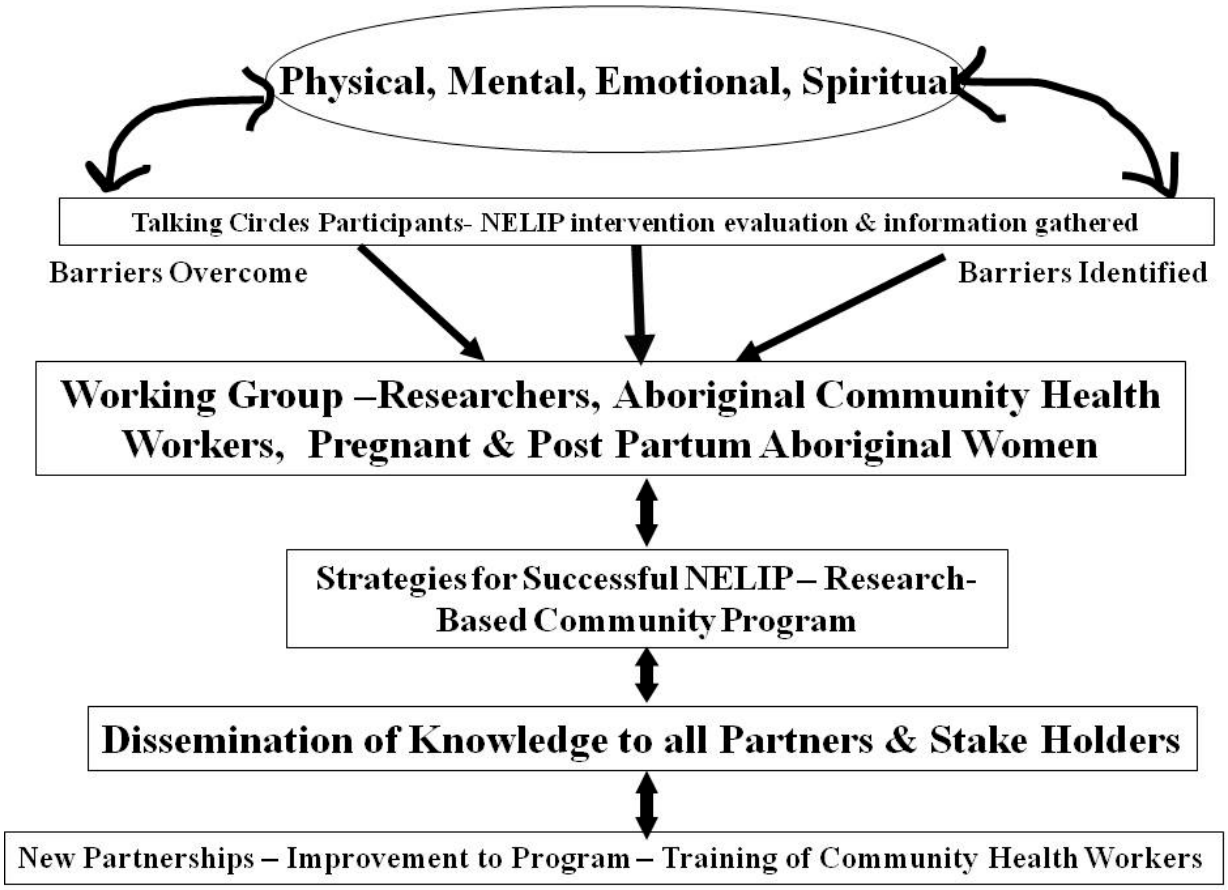

Figure 1. The plan of capacity-building and participatory research development of a community-based Nutrition and Exercise Lifestyle Intervention Program (NELIP) for pregnant and post-partum Aboriginal women.

Figure 2. In partnering with the SOADI, the Ribbon of Life was used as the Talking Circle symbol to represent the Aboriginal woman's struggle to prevent gestational diabetes.

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