ENRICH

Optimizing the Health of Women in Pregnancy and Postpartum

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Visit our website at **enrich.ualberta.ca**

Here you can find more information about each of the studies, learn more about our team, see other resources we have created to support our research and a list of our publications!

UNIVERSITY OF ALBERTA ALBERTA INNOVATES ENRICH Alberta Health Services

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Promoting Appropriate Maternal Body Weight in Pregnancy and Postpartum through Healthy Eating

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A Message from ENRICH

It is an honour and a privilege to share ENRICH's Final Report with you. ENRICH is a multi-disciplinary, collaborative research program aimed at supporting diverse groups of women in Alberta to have the healthiest pregnancies and pregnancy outcomes possible. This report is the compilation of ENRICH's activities, projects, outputs and deliverables, 2013–2019.

When the idea for ENRICH was conceived in 2012, the investigative team was aware that one factor undermining women having the healthiest pregnancy possible was related to inappropriate weight gain during pregnancy. We knew that about half of the women in the Alberta Pregnancy Outcomes and Nutrition (APrON) study gained weight in excess of recommendations, while around 20% gained less than is recommended. Based on these observations, we partnered with provincial and community-based organizations, specifically Alberta Health Services, the Multicultural Health Brokers Cooperative, and Maskwacîs Health Services to explore the issue further. We worked together to identify key strategies to promote healthy eating and appropriate weight management in pregnancy and postpartum. We then co-designed studies to make sure that the different strategies were effective, safe, feasible, relevant, and practical for women, their healthcare providers, and the community-based organizations who support them.

Thinking back, our team gave a collective sigh of relief when the grant proposal was submitted to Alberta Innovates, and really wondered whether we'd be successful. We knew that we had a good plan for the first 2.5 years of the 5 year proposal. However, we made it very clear that the final 2.5 years (which turned into 3.5 years) would be driven by what was learned from women and our community partners. Indeed, we could not have guessed what innovative, important and feasible strategies the different communities of women and supporters would identify and implement. What we did tell the funding agency was that whatever the strategies, we would do them well and the impact would be meaningful. The partnerships that were developed and nurtured from the beginning accelerated and provided great momentum in improving support for women and their health in pregnancy and postpartum.

ENRICH's process, strategies and outcomes are presented in this report. We hope that you feel the excitement, creativity, and hard work that has gone into every step of all of the 13 or so projects that made up ENRICH over the past six years.

In closing, we express our sincere gratitude to the all investigators, community partners, trainees, staff, Strategic Advisory Group members and Members of the International Network of Researchers. We also wish to thank our major funders, Alberta Innovates, for supporting this project and making a difference in women's lives. This work would not have been possible without all of us working together as one.

Thank you everyone and happy reading,

Rhonda Bell
Paula Robson
Linda McCargar
Maria Mayan

Background Information

In 2013, the ENRICH Research Program set out to optimize women's health in pregnancy and postpartum. This report summarizes the work carried out in Alberta by ENRICH over the past 6 years.

FIGURE 1: ENRICH Research is Organized Under Four Major Themes

Throughout this report, gender-specific language such as "woman", and "women" is used. We intend these terms to refer to all childbearing individuals, regardless of their gender identity or sexual orientation.

Understanding Weight Changes in Pregnancy and Postpartum

These studies focused on understanding the many personal factors that may affect weight and body composition changes in pregnancy and postpartum (for example: dietary intake, physical activity, breastfeeding, and sedentary behaviours).

Promoting Healthy Pregnancy Weight Gain to Pregnant Women

These studies aimed at identifying and implementing strategies to promote healthy weights and healthy eating in pregnancy and postpartum. Understanding the knowledge, attitude and behaviours of women and their health care providers to support healthy weights in pregnancy and postpartum was integral to this work. Alberta Health Services provided leadership for these projects and collaborated closely with the ENRICH team.

Working with Community-Based Organizations

These studies were aimed at women who experience significant barriers to accessing services, for example: living with poverty; language barriers; recent immigrant or refugee status; limited access to health, housing, or other resources; and food insecurity. These realities can leave women and their families with unmet needs resulting in poor pregnancy outcomes.

Working with a First Nations Community

These studies considered the unique needs that First Nations women and communities an important theme of our studies is understanding the kinds of support that First Nations women and families need during pregnancy and postpartum; the barriers faced when accessing healthcare; how family, community, and culture influence this process; and how to leverage the strengths of their community for support.

ENRICH Research Objectives

- To understand perceptions and experiences of diverse groups of pregnant and postpartum women with respect to social, environmental and ecological means to support healthy pregnancies.
- To identify needs, gaps and opportunities in health service delivery systems that could be harnessed to promote optimal health in pregnant and postpartum women.

ENRICH's work is centred around the "Developmental Origins of Health and Disease". This framework notes that women's health before, during and after pregnancy has important long-term effects on their health, their children's health, and the health of future generations. Optimizing women's health and supporting them in pregnancy and postpartum goes a long way to reducing their risk of chronic diseases such as obesity, Type 2 diabetes, heart disease and other non-communicable diseases in later life.

FIGURE 2: Women's health before, during and after pregnancy has important short and long term effects on their health, their children's health, and the health of future generations.

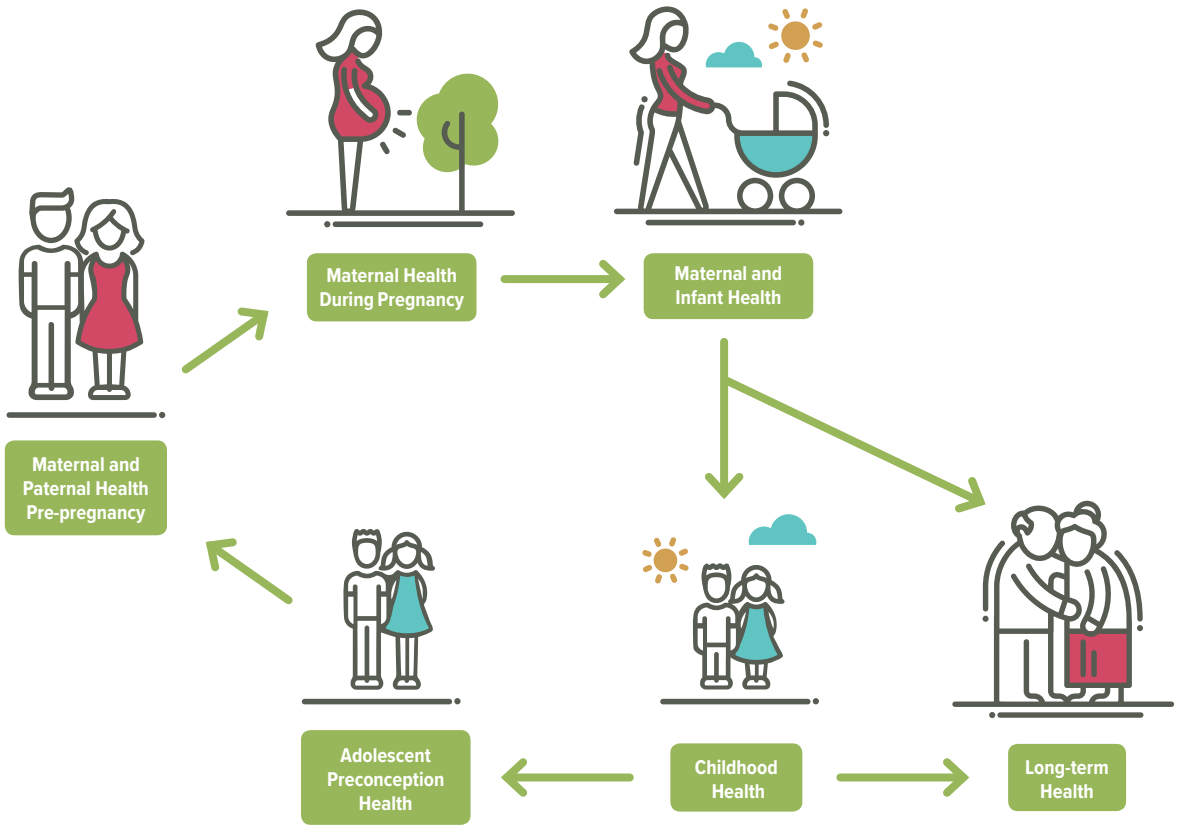
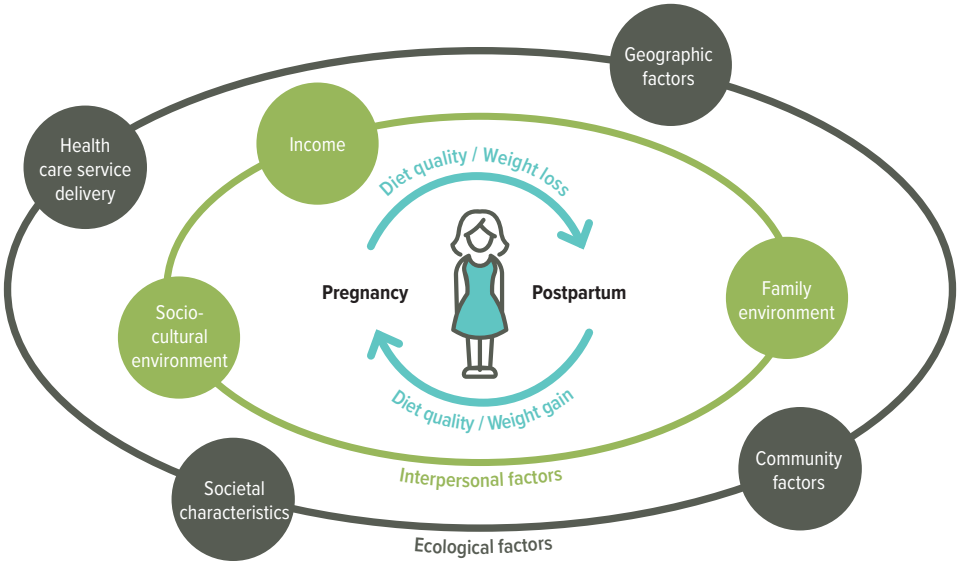


FIGURE 3: Pregnancy Related Weight Gain and Weight Loss



ENRICH's Approach to Research

ENRICH has taken an Integrated Knowledge Translation (iKT) approach with its research.

What is iKT?

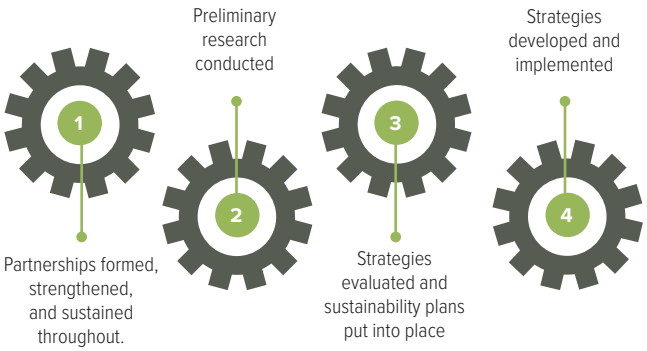
- iKT is "a dynamic and iterative process that includes synthesis, dissemination, exchange and ethically sound application of knowledge to improve the health of a population, provide more effective health services and products and strengthen the healthcare system"

  SOURCE: Canadian Institute of Health Research (2016) http://www.cihr-irsc.gc.ca/e/29418.html

What are the principles of iKT?

- Research partners work alongside researchers through all stages of research
- Each stage of research is an opportunity for collaboration. For example, Research partners are involved in the development or refinement of the research questions, selection of the methodology, data collection and tools development, selection of outcome measures, interpretation of the findings, crafting of the message, dissemination of the results.
- By taking an iKT approach to research, ENRICH has worked with different groups to better understand their needs and ultimately work with them to implement strategies that would be meaningful to them.

FIGURE 4: ENRICH's Research Process



Understanding Weight Changes in Pregnancy and Postpartum

Understanding Gestational Weight Gain

Data from APrON study participants was analyzed to describe patterns of gestational weight gain (GWG). APrON is a prospective cohort research study that aims to improve the short and long-term health of mothers and newborn babies in Alberta by identifying the role of nutrition in mental and neurodevelopmental disorders, and long-term neurocognitive function.

SOURCE: http://www.apronstudy.ca/about-the-study/background

Evidence shows that pre-pregnancy body mass index (BMI) and weight gained during pregnancy are both independent factors for maternal and child health outcomes. People of any pre pregnancy BMI may gain weight that does not meet or exceeds Health Canada recommended weight ranges. This results in increased risk of pregnancy complications and adverse outcomes for the patient and child. Of particular concern is the increasing trend of people with a high BMI who become pregnant, as well as an increasing number of people who exceed weight gain recommendations. The Health Canada pregnancy weight gain recommendations, adapted from the 2009 Institute of Medicine guidelines, are based on pre-pregnancy BMI. These ranges are associated with the best health outcomes. The guidelines are intended to be used together with good clinical judgment as well as regular discussions between the patient and healthcare provider about nutrition and physical activity.

SOURCE: March 2015. Alberta Health Services Healthy Pregnancy Weight Gain Final Evaluation Report

FIGURE 5: Institute of Medicine and Health Canada Gestational Weight Gain Guidelines

Pre-pregnancy BMI	Weekly weight gain during 2nd and 3rd trimester (kg/wk)	Total weight gain (kg)
Underweight	0.44 – 0.58	12.5 – 18
Normal	0.35 – 0.50	11.5 – 16
Overweight	0.23 – 0.33	7 – 11.5
Obese	0.17 – 0.27	5 – 9

49% of APrON women gained in excess of GWG guidelines, 33% gained within guidelines and 18% gained below.

Time to exceed gestational weight gain guidelines was different in women with different pre-pregnancy BMI's: women who fell in the overweight or obese pre-pregnancy BMI range exceeded gestational weight gain guidelines early in pregnancy – by week 20 in pregnancy. The majority of women who were within a normal weight BMI exceeded recommended upper limits of gestational age appropriate gestational weight gain by week 30 of pregnancy. 40% of normal weight women also exceeded total weight gain guidelines.

From these findings we can infer that early intervention for obese and overweight women is key. In addition, because 40% of women who had a normal pre-pregnancy also exceeded total weight gain guidelines we conclude that support to gain appropriate amounts of gestational weight needs to be available to all women.

Understanding Dietary Patterns of Women Before and During Pregnancy

Data from APrON participants was analyzed to describe women's dietary patterns before and during pregnancy.

FIGURE 6: Adherence to Canada's Food Guide Recommendations

0 represents not meeting any CFG recommendations and 9 represents meeting all of them. Mean adherence score was 3.2 (SD 1.8). Women met few of the daily dietary recommendations specified by Canada's Food Guide.

Number of recommendations met	N (%)
0	67 (3)
1	214 (10)
2	434 (21)
3	505 (24)
4	414 (20)
5	266 (13)
6	125 (6)
7	37 (1)
8	4 (0.2)
9	0 (0)

Women who had a healthier eating pattern before pregnancy were more likely to adhere to Canada's Food Guide (CFG) during pregnancy. Women who ate a healthier pattern of diet prior to pregnancy were more likely to meet more of the dietary recommendations during pregnancy and consume fewer less healthy foods.

Furthermore women who had a "healthy" pattern of diet prior to pregnancy were less likely to develop complications in pregnancy. Consuming a diet characterized by frequent intakes of vegetables, fruit, oils, fish, and pasta/ rice prior to pregnancy, was associated with lower odds of developing gestational hypertension, independent of other factors such as pre-pregnancy BMI, gestational weight gain, and socio-demographic characteristics.

No association was found between a women's dietary patterns prior to pregnancy or adherence to CFG with gestational weight gain.

Understanding Postpartum Weight Retention

In order to better understand postpartum weight change, we conducted the Postpartum Calorimetry (PCAL) study which tracked weight loss, body composition and energy expenditure postpartum in 52 women.

We first wanted to test the accuracy of the Dietary Reference Intake (DRI) equation that is regularly used to predict women's energy requirement in the postpartum period. We tested the accuracy of this equation by comparing it with women's daily energy expenditure measured using a whole body calorimetry unit.

Calorimeters are used to measure an individual's daily energy expenditure.

We found that the DRI equation had a 58% accuracy in estimating total energy expenditure for lactating women, however, accounting for how much a woman is breastfeeding helps refine estimates.

We also wanted to explore how body composition and breastfeeding influenced postpartum weight loss. We found that women's weight and body composition changed in different ways for different women in the postpartum period. Some women gained weight during the postpartum period even when breastfeeding. Women who had a high physical fitness (higher VO2 max) presented with a lower weight retention by 9 months postpartum. These findings suggest that losing weight in the postpartum period will occur differently for every women and weight loss strategies therefore need to be individualized for each woman.

Promoting Healthy Pregnancy Weight Gain to Pregnant Women in Alberta

We partnered with **Alberta Health Services** (AHS) to learn more about and identify the needs, gaps, and opportunities in healthcare delivery systems around supporting pregnant and postpartum women in Alberta. Our goal was to find ways to address these needs and gaps and to harness opportunities to promote nutrition, physical activity and healthy weight during and after pregnancy.

ENRICH Research Activities

ENRICH and AHS worked together to conduct focus groups across the province of Alberta. We asked women about their experiences with gestational weight gain and nutrition, and their interactions with care providers. We also asked women what they think they need in order to have a healthy pregnancy. AHS also conducted a province-wide survey. Women within one-year postpartum were asked questions about their pregnancy regarding the advice they received about weight gain, nutrition, and physical activity from their healthcare providers. In turn, healthcare providers were asked about their practices with pregnant women with respect to weight, nutrition, and physical activity. Healthcare providers who work with pregnant women from across Alberta were interviewed. We asked them about their practices with pregnant women regarding weight gain and nutrition and about what they need to better support women to achieve healthy pregnancies.

WHAT DID WE LEARN?

Women are concerned about weight gain and postpartum weight loss. They want to talk about weight and think it should be a part of standard care. However, many healthcare providers expressed that they experience barriers to having conversations about gestational weight gain with their clients such as a lack of training, a lack of resources for sharing, time constraints, and sensitivity of and discomfort of discussing the topic. Similarly, women who reported that conversations about gestational weight gain did occur, explained that these conversations were neither timely nor positive. The following quotes from Nikolopoulos et al (2017) work illustrate this point.

“ No matter what size you are, I think every woman should have that [discussing postpartum weight loss] option. ...if your healthcare provider sits there and says, here’s your options, it’s not like they’re telling you you’re heavy and you need to lose weight. They’re just saying that if you’re willing to or if you want to, here you go. And if they’re doing it to every woman, then every woman’s not going to feel cornered and saying, oh my gosh, you’re heavy. If it’s like, oh yeah, well, my healthcare provider asked me too, then they’re [women] going to be like, oh, okay, well maybe everybody’s getting asked. It’s not just me. It’s a woman thing. It’s every woman. ” (WOMAN)

“ I tipped the 40 pound scale, and that’s when she [the obstetrician] was like, ‘Whoa, whoa’, like, we hadn’t discussed it [GWG] at all up until that point [30 weeks] and then it was, okay, too much weight. But her recommendation was – and as far as I was… ‘You should jump on the treadmill once in a while.’ And I ran until I was seven months pregnant, outside, because I like to run outside. And then I just – the weather wasn’t safe anymore. And so when she said, ‘Jump on a treadmill’, I was like, seriously? I was running the whole time. ” (WOMAN)

“ She [the obstetrician] should have asked me how I felt about my weight gain, not just told me how she felt about it ” WOMAN)

Healthcare providers and women are not regularly discussing gestational weight gain. The following quotes from Nikolopoulos et al (2017) work illustrate this point.

“ I got weighed at every appointment but no one ever – like, we never discussed whether I was, you know, gaining too much, too little, anything. Like, it was just never really brought up. ” (WOMAN)

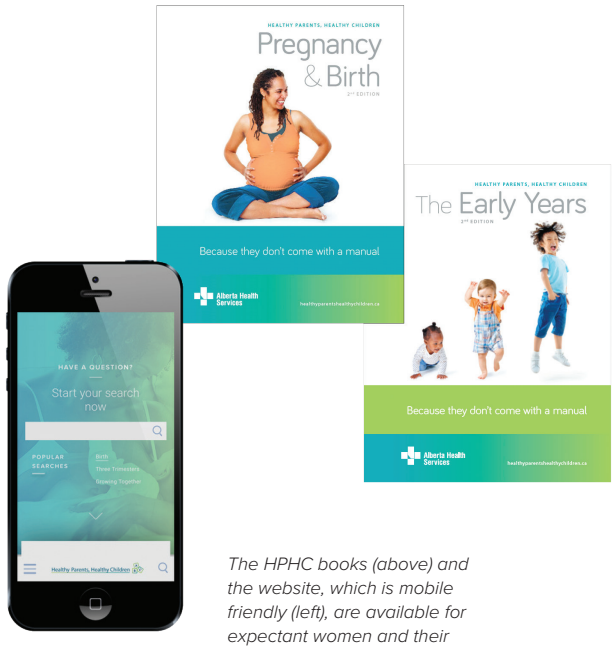
“ I thought that maybe the obstetrician didn’t really care about the weight I’m gaining because she didn’t tell me too much…Every time, just go to the scale, she would look and tell me, ‘That’s right’, every time. I don’t know what’s good or not. ” (WOMAN)

Surveys were administered to women and heath care providers (HCP) across Alberta to capture their level of knowledge, attitudes and behaviours regarding pregnancy weight gain. One third of HCP considered themselves to be very/completely familiar with Health Canada 2010 Guidelines for Pregnancy Weight Gain and Health Canada’s Prenatal Nutrition Guidelines, and 15% and 13% reported being very/completely familiar with the joint Society of Obstetricians and Gynaecologists of Canada (SOGC)/ Canadian Society for Exercise Physiology (CSEP) and PARmed-X Guidelines for Exercise in Pregnancy, respectively. While 96% of women indicated that their weight was measured and recorded at each prenatal visit, only 42% of women reported their HCP had discussed a weight gain target for their pregnancy. Overall, 45% of women gained in excess of the recommended weight gain range for their pregnancy. Women in the pre-pregnancy underweight and healthy weight BMI categories were more likely to meet or be below the weight gain guidelines than women categorized as overweight and obese prior to becoming pregnant. Another important finding was that more than 36% of women in the pre-pregnancy underweight BMI category had gained less weight than recommended for their pregnancy, which can have negative impacts on the pregnancy outcome. The findings emphasize the importance of support for appropriate weight management during pregnancy for women across all of the BMI categories. They also highlight the need to ensure that both HCP and women are aware of the guidelines and have access to tools and resources needed to support healthy pregnancy weight gain.

ENRICH Research Interventions

A Digital Media Campaign

AHS developed and launched the Healthy Parents, Healthy Children (HPHC) resources in 2013. These resources are evidence based, incorporate Albertan parent perspectives, and include key information on healthy weight gain, healthy eating and physical activity during pregnancy. A digital media campaign was identified as an effective way to raise awareness and increase utilization of these provincial resources. The digital media campaign was designed and implemented by AHS to increase women’s knowledge and awareness of healthy pregnancy weight gain information hosted on healthyparentshealthychildren.ca. AHS continues to incorporate healthy pregnancy weight gain messages as part of their ongoing health marketing and communication strategy.



The HPHC books (above) and the website, which is mobile friendly (left), are available for expectant women and their families in Alberta.

An e-Learning Course for Healthcare Providers

Through interviews conducted with healthcare providers, we identified several barriers to pregnancy weight gain counselling, including a lack of training, lack of resources for sharing, time constraints, and sensitivity of the topic. Healthcare providers shared that they would like to learn more about pregnancy weight gain and identified online learning modules as their preferred educational strategy. These findings were used to inform the development of a Continuing Medical Education (CME) Healthy Pregnancy Weight Gain eLearning Course for healthcare providers. The course was developed by AHS in collaboration with a provincial planning committee and the University of Calgary. The course meets the certification criteria of the College of Family Physicians of Canada and is certified by the University of Calgary Office of Continuing Medical Education and Professional Development. The objectives of the course are to:

- Increase knowledge and awareness of healthy pregnancy weight gain information and guidelines.
- Increase comfort in having conversations with pregnant women about weight.
- Increase awareness of resources to support practice.

The Healthy Pregnancy Weight Gain e-Learning course was launched in June of 2018. Evaluation feedback from survey responses showed that overall, participants felt the course increased their competence in supporting healthy weight gain during pregnancy. Almost all agreed or strongly agreed that the program content enhanced their knowledge of healthy pregnancy weight gain, and that they learned something in this course that they will incorporate into their practice (95% and 97%, respectively).

This work was informed by a number of other ENRICH research projects. You can read more about these projects on our website, enrich.ualberta.ca.

Working with Community Based Organizations

We partnered with two community-based organizations: one in the rural area outside of Calgary – **Healthy Moms Healthy Babies** (HMHB) – and another one in Edmonton – **The Multicultural Health Brokers Cooperative** – to explore health perceptions and experiences of migrant and rural women coping with difficult life circumstances during pregnancy and postpartum.

ENRICH Research Activities

Working with the Healthy Moms Healthy Babies Program

Healthy Moms Healthy Babies was led by AHS in collaboration with community partners in rural, southern Alberta. The program supported pregnant and parenting women facing difficult life circumstances and challenges with isolation, finances, physical or emotional health, healthy nutrition, family conflict, and/or addictions. HMHB offered group support with nutrition and prenatal health education; one on one visits with a nurse, dietitian, and/or outreach worker; food vouchers and prenatal vitamins; and referrals to healthcare providers or community agencies as needed. HMHB received funding as one of 276 Prenatal Programs funded by the Canada Prenatal Nutrition Program. These programs focus on maternal/child nutrition and health of pregnant and postpartum women facing difficult life circumstances.

We explored women's and providers perceptions and experiences of health in pre and postnatal periods while attending the HMHB program. We were particularly interested in understanding how difficult life circumstances were intertwined, and possibly intensified because of pregnancy, postpartum, and living in rural Alberta.

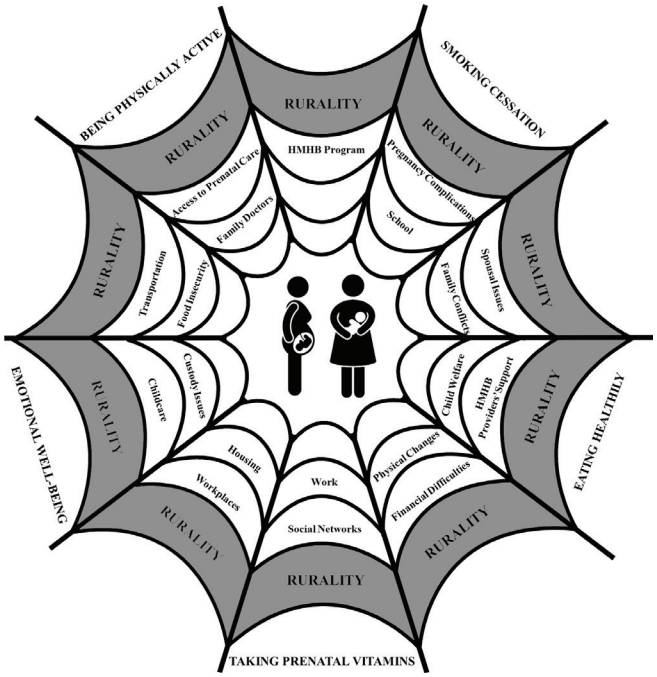
WHAT DID WE LEARN?

Women identified that eating healthy, taking prenatal vitamins, being physically active, looking after their emotional well-being, and stopping any behaviour they perceived as harmful to their baby (i.e., smoking) were key to being healthy during pregnancy and in the postpartum. However, women faced many health barriers for themselves and their babies, including pregnancy or birth complications, family and spousal issues, financial difficulties, and living rurally.

Women said that the services and resources provided by HMHB helped them to address some of the challenges they faced such as mental health and addictions issues, partner abuse and food insecurity. The HMHB program included cooking circles, fresh food boxes, coupons and provided a safe space where women could receive meaningful and respectful support from providers. With such potential, community-based programs need to be well supported through policies.

FIGURE 7: The web of factors shaping women's experiences in pregnancy and postpartum

We captured factors that shaped women's experiences during pregnancy and postpartum in a web of factors, with women placed in the centre. While the inner threads represent the many factors shaping women's lives and experiences, the outer thread represents women's perceptions of health. To get to the outer thread, women must navigate the other inner threads.



SOURCE: Quintanilha, Mayan, Raine, & Bell, 2018

Working with the Multicultural Health Brokers Cooperative

The Multicultural Health Brokers (MCHB) Cooperative is a community-based organization in Edmonton that works with newcomer families and provides them with essential supports that enable them to thrive. Health brokers (ie. service providers who serve women connected to Multicultural Health Brokers) at the Cooperative support families in bridging the knowledge they bring from their home country and Canada's health, social services, education, justice, immigration, and employment systems. The broker's own culture are representative of the 25 different communities they work with. Collectively, they serve over 2000 families a year.

We engaged migrant women from four Northeast African communities (Eritrean, Ethiopian, Oromo and Somali) to conduct focus groups with women accessing a perinatal program offered by the MCHB to better understand migrant women's perceptions and experiences of health during pregnancy and postpartum in Canada. We also conducted interviews with health brokers of the MCHB Cooperative to better understand their experiences supporting these women.

Pictured above are just some of the Healthy Brokers who work to support immigrant and refugee women through the Multicultural Health Brokers Cooperative in Edmonton.

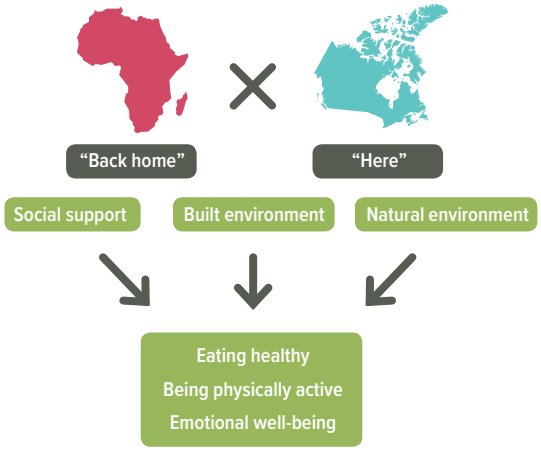
MCHB
Multicultural Health Brokers Cooperative

WHAT DID WE LEARN?

When asked about their experiences supporting women, health brokers identified that food crisis regularly overshadowed the services offered by health brokers and they in turn spent much of their time addressing the emergency food needs of women and their families.

Women identified eating healthy, being physically active, and being emotionally well as pivotal aspects of a healthy pregnancy. They compared their experiences with pregnancy "Here" (In Canada) and "Back Home" (The country they immigrated from). "Here" in Canada, women lacked the social support and physical environmental that they perceived as key enablers of healthy pregnancies and postpartum. Living without extended family members and friends' support made women feel they lacked the emotional and instrumental resources to eat healthy and be physically active while pregnant and postpartum.

FIGURE 8: How women described their experiences with pregnancy "Here" (In Canada) and "Back Home" (The country they immigrated from).



"So you see in our country even if you are poor there is always someone who can help you, it could be a relative, it could be someone you even pay. And when they do that you are out relaxing, going for a walk, you know doing things that you would like (...)" WOMAN

"Here if you are busy, if you have to run around, if you have to work, and you have to do house chores you might not get enough sleep. And you might have to cook but you don't want to cook because you are tired so women ask their husbands to buy food from the restaurant while he is coming to home." WOMAN

ENRICH Research Interventions

The Community Resource Coordinator & The Grocery Run Program

The role of the Community Resource Coordinator (CRC) was created to support the health brokers and women at the MCHB Cooperative. Together, the CRC and the brokers decided that a grocery run program would be an appropriate intervention to meet the needs of the brokers and the women. The aim of the grocery run was to not only provide emergency food for families at times of need but also to minimize the time brokers spent on fulfilling emergency food needs.

The Grocery Run Program (GRP) was created in order to address the needs of women and health brokers at the Mutlicultural Health Brokers Cooperative. The GRP aims to provide same-day emergency food to pregnant and postpartum women and their families and to reduce the need for health brokers to respond to food crises allowing them to focus on their organizational mandate.

The GRP is a volunteer-based program, supported by dedicated volunteers from the University of Alberta Alumni Association, the Winnifred Stewart Foundation, and the greater community. The program operates out of the Edmonton Intercultural Center – which is where the MCHB Cooperative is situated – and has a number of regular and occasional food donors. The program continues to serve 100 – 130 families every week.

Growing Community Partnerships – The Leftovers Foundation

While the demand for food through the Grocery Run Program continued to rise, the amount of food available through food rescue began to plateau. Despite approaching many food vendors about the possibility of arranging food rescue operations, the Grocery Run was continually turned away due to issues of liability or concerns over increased operational burdens. We realized that increasing food donations on their own was not effective, so we approached the Leftovers Foundation. This charity has been highly successful in creating an efficient city-wide food rescue system within Calgary; they rescue food each week, picking up food from 60 food vendors and redirecting it to 44 service agencies. Through this partnership, we were able to provide the capacity of the Community Resource Coordinator to oversee the operations and grow it's presence in Edmonton. Ultimately, the goal of this partnership is that an efficient city-wide food rescue system can be pursued that would not only benefit the Grocery Run Program, but would also benefit other social service agencies across the city.

Working with local businesses to increase awareness about local food rescue operations.

The Community Economic Development Committee

We recognized that the GRP does not get to the root problem of food insecurity: insufficient income. In an attempt to delve deeper and target poverty directly, a partnership with the University of Alberta Alumni Association was pursued to create the Community Economic Development Committee. This committee's goal was to support immigrant women in developing micro-enterprise and self-employment opportunities. Over the course of one year the committee worked together with the Health Brokers at the MCHB Cooperative to identify those requiring supports, and the barriers hindering the achievement of their goal. Ultimately, the committee realized that the needs of these women and their families was far beyond the scope of simply finding opportunities and turned towards focusing on capacity building, including the following:

- Applying and receiving funding for a micro-enterprise broker within the MCHB Cooperative.
- Identifying several large barriers that need to be addressed before successful entrepreneurship can take place.
- Connecting the brokers with other entrepreneurial supports in Edmonton. Once it was established that some barriers would be difficult to overcome within the confines of this project, connections were made between MCHB and other employment supports.

Working with a First Nations Community

We partnered with the communities of Maskwacîs to gain an in-depth understanding of how to better support pregnant women in a large First Nations community with the ultimate goal of improving pregnancy-related health. We aimed to get a better understanding of the kinds of support that Cree women and families need during pregnancy and postpartum; the barriers faced when accessing healthcare; and how family, community, and culture influence this process. Overall, our goal was to address the unique needs of First Nations women and communities in Alberta.

Maskwacîs is a rural community approximately 90 kilometers south of Edmonton, Alberta, within the area of Treaty Six. The community is collectively made up of four distinct Cree Nations.

MASKWACIS HEALTH SERVICES

ENRICH Research Activities

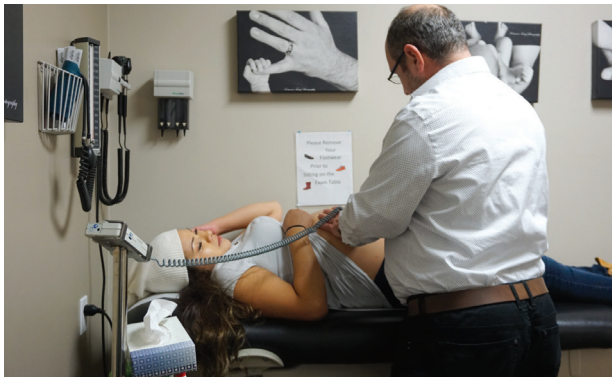
The Healthcare Providers Study

We worked with prenatal healthcare providers in and around Maskwacîs to better understand best practices for effective prenatal care for Cree women. An ethnographic community-based participatory research was carried out with data generated via in-depth interviews with 12 care providers.

WHAT DID WE LEARN?

Healthcare providers and staff need to be sincere and nonjudgmental when working with patients. Developing strong relationships is crucial to good care and being able to express empathy and understanding. Prenatal healthcare providers and staff want and need cultural understanding that is specific to the community. Cultural understanding arises from real experiences and learning from patients over and above relying only on formal cultural security training. Good and appropriate care is flexible, all inclusive, and accessible. Healthcare services should meet the specific needs of patients.

> *"I think the biggest thing is just trying to create that relationship with the moms. I know they are hesitant accessing healthcare. They may have had poor or bad experiences with other nurses....we don't know that patient's story. That's probably the first thing you could do is ask them. Not about why they're there at the appointment but try to talk to them and create a conversation. Ask them about who they are, about their family, and really try to get to know them... really just being open to whatever they bring us and talk about that first."*
>
> HEALTHCARE PROVIDER



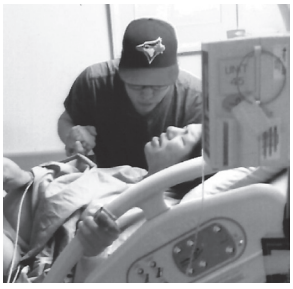
The Father's Study

Very little is known of Indigenous men's perspectives and experiences during their partner's pregnancy, therefore, we aimed to understand how Cree men support their partners during pregnancy. Six fathers from the community of Maskwacîs who are considered role models and involved were interviewed and four of the fathers took part in a photovoice project.

WHAT DID WE LEARN?

Pregnancy is a chance for fathers to rise above negative colonial impacts and reclaim their roles within families. Fathers need support for themselves in order to be supportive to their partners. This support comes from families, strong male role models during their childhood, and maintaining a connection to faith and traditional culture during pregnancy. Perinatal care programs also need to provide more opportunities to include fathers. Genuinely incorporating traditional culture and Elder support, flexibility, cultural understanding, and reconciliation into perinatal care approaches may help support and include indigenous men.

"Nowadays there are a lot of single mothers. Fathers are expected to play a financial role and not really a raising a child type of role. I think because they're not really taught how to be fathers in the first place. There's a big lack of traditional knowledge there, especially on the part of the male. I think it's stemming out of residential schools where the fathers don't really know what their role is supposed to be. Residential school took away those traditional teachings and implemented basically a father's role is just to put food on the table. And of course, there's a lot more to the role than that." FATHER



A father supports his partner during labour to which he credits to his own strong sense of family support (top left).

A father plays with his daughter through whom he gains a sense of purpose and identity (top right).

A father interacts with his son at a community event that he hopes will pass on culture, kinship roles, and Cree family systems (left).

ENRICH Research Interventions

The Elders Mentoring Program

The Community Advisory Committee wanted to provide programming to support pregnant moms and their partners within the clinical setting by utilizing strengths that already exist in the community. So, we developed an Elders Mentoring Program (EMP) in partnership with the Wetaskiwin Primary Care Network (PCN).

The Elder's Mentoring Program was first piloted and then expanded, and is currently ongoing. Elders from Maskwacîs attend prenatal clinic days at the Primary Care Network and engage with pregnant women and their partners to provide social, emotional, spiritual, and cultural support. The Elders Mentoring Program was evaluated in 2017. A total of 14 qualitative interviews were done with staff from the Wetaskiwin PCN, Elders that facilitate the Program, and moms and dads who interacted with the Program.

Elder Margaret Montour interacts with moms that took part in the Elders Mentoring Program.

WHAT DID WE LEARN?

The Program provides enhanced support networks for parents-to-be. Elder support helps fill in a gap in service that was previously lacking within the prenatal clinical setting.

"I don't feel judged anymore, because I'm confident in being a mom. It makes me feel confident to be a mom, for sure, that's what I like most about it. About the program specifically, is I didn't feel any judgement from her at all. It really made me feel better. I love them being there, because I didn't look alone." PARENT

The Program helps right historical harms, connects parents to traditional culture, and leads to improved cultural safety in the clinic.

“ The Elders were very humble, and so gracious in you know, providing education for all the staff there. And you know, you could ask the kind of awkward questions. You could talk about protocol. ‘Cause for a lot of people, um, a lot of employees outside of — you know, working directly with First Nations communities, they don’t necessarily get the cultural security training, the cultural competency training — and then, even if they get some of it, they’re scared to ask, for fear of offending. ” CLINIC STAFF MEMBER

The program provides a sense of fulfillment and enjoyment among those involved.

“ For me it was, it gave me a satisfying feeling of, actually passing on my knowledge to someone else. To a young adult, young parents. To a young adult, young parent. I felt satisfied doing it and I actually felt useful that I shared my knowledge with someone. ” ELDER

Elder Matilda Roasting gives a moss bag to a lucky mom who took part in the Program

Cultural Sensitivity Interventions

Building off of the Healthcare Providers study, we worked collaboratively with the community of Maskwacîs and the Wetaskiwin Primary Care Network to organize and implement a series of cultural sensitivity interventions for healthcare providers and staff who work with pregnant and postpartum women. A number of experiential learning events occured, including lunch and learns where Elders spoke about the history of Maskwacîs and Cree pregnancy, the Samson pow wow, a sweatlodge ceremony, and a ceremonial feast. The activities were designed in collaboration with and facilitated by Elders and community members from Maskwacîs.

The cultural sensitivity interventions gave staff an opportunity to gain positive cultural understanding of Maskwacîs. The goal was not only to educate staff members, but to create safe spaces for dialogue, and healthy, sustainable relationship building between members of Maskwacîs and care providers.

WHAT DID WE LEARN?

Overall, the cultural sensitivity interventions had positive impacts on the perceptions of the prenatal care staff that were involved. Staff benefited from the personal, relaxed, open, genuine, and sincere nature of the interventions. The following quotations reveal the impact of the interventions:

“ So, from a pregnancy perspective I felt like it opened a lot of questions for me, and has opened further conversation within the community with Kokoms in the community and Elders in the community about where to direct young women for teaching around their pregnancy, and really, asking more about where moms are learning about parenting and pregnancy beyond just the basic health facts. ” HEALTHCARE STAFF MEMBER

“ And it’s brought humility for me again about the fact that I don’t know the culture and I am bringing western medicine and there is a whole different set of medicine and culture and healing that is available. We need to work together as a community and healthcare practitioners to really adequately treat some of these for me am I, and kids, and families that are struggling and so it has changed that. ” HEALTHCARE STAFF MEMBER

Prenatal healthcare staff and members from the ENRICH research team attend the Samson Cree Nation Powwow (top left and right).

A feast ceremony was held in Maskwacîs as part of the interventions as well as a thank you to the community and to the healthcare staff that took part in the experiential learning activities (right).

Other ENRICH Publications

Graham, J.E., Moore, J.L., Bell, R.C., & Miller, T. (2019). Digital marketing to promote healthy weight gain among pregnant women in Alberta: An implementation study. *Journal of Medical Internet Research*, 21 (2) doi: 10.2196/11534

Pereira, L.C.R., Purcell, S.A, Elliott, S.A., McCargar, L.J., Bell, R.C., Robson, P.J., Prado, C.M. (2019). The use of whole body calorimetry to compare measured versus predicted energy expenditure in postpartum women. *American Journal of Clinical Nutrition*, 109, 554-565 doi: 10.1093/ajcn/nqy312

Jarman, M., Adam, L., Lawrence, W., Barker, M., Bell, R.C. (2019). Healthy conversation skills as an intervention to support healthy gestational weight gain: Experience and perceptions from intervention deliverers and participants. *Elsevier: Patient Education and Counselling*, 102, 924-931 doi: 10.1016/j.pec.2018.12.024

Oster, R. T., Bruno, G., Mayan, M. J., Toth, E. L., & Bell, R. C. (2018). Peyakohewamak—Needs of involved nehiyaw (cree) fathers supporting their partners during pregnancy: Findings from the ENRICH study. *Qual Health Res*, 1049732318794205. doi:10.1177/1049732318794205

Elliott, S., Pereira, L., McCargar, L., Prado, C., & Bell, R. (n.d.). Trajectory and determinants of change in lean soft tissue over the postpartum period. *British Journal of Nutrition*, 1-9. doi:10.1017/S0007114518002015

Quintanilha, M., Mayan, M. J., Raine, K. D., & Bell, R. C. (2018). Nurturing maternal health in the midst of difficult life circumstances: a qualitative study of women and providers connected to a community-based perinatal program. *BMC Pregnancy and Childbirth*, 18, 314. http://doi.org/10.1186/s12884-018-1951-6

Pereira, L. C. R., Elliott, S. A., McCargar, L. J., Bell, R. C., & Prado, C. M. (2018). Changes in energy metabolism from prepregnancy to postpartum: A case report. *Canadian Journal of Dietetic Practice and Research*, 1-5. doi:10.3148/cjdpr-2018-016

Jarman, M., Mathe, N., Ramazani, F., Pakseresht, M., Robson, P. J., Johnson, S. T., & Bell, R. C. (2018). Dietary patterns prior to pregnancy and associations with pregnancy complications. *Nutrients*, 10(7) doi:10.3390/nu10070914

Morris J, Nikolopoulos H, Berry T, Jain V, Vallis M, Piccinini-Vallis H, Bell R, (2017). Healthcare providers' gestational weight gain counselling practises and the influence of knowledge and attitudes: a cross-sectional mixed methods study. *BMJ open*, 7 (11), pp. e018527

Jarman MJ, Bell RCB, Nerengberg KN, Robson PR. (2017). Adherence to Canada's Food Guide recommendations during pregnancy. *Current Developments in Nutrition*, 1 (6)

Nikolopoulos H, Mayan M, MacIsaac J, Miller T, Bell RC, (2017). Women's perceptions of discussions about gestational weight gain with healthcare providers during pregnancy and postpartum: a qualitative study. *BMC pregnancy and childbirth*, 17 (1), pp. 97

Bell R, Robson P, (2016). Lack of a significant relationship between energy intake in pregnancy and gestational weight gain underlines the need for further evaluations of energy metabolism during this time. *Evidence-based medicine*, 21 (5), pp. 192

Quintanilha M, Mayan MJ, Thompson J, Bell RC. (2016). Contrasting "back home" and "here": how Northeast African migrant women perceive and experience health during pregnancy and postpartum in Canada. *International journal for equity in health*, pp. 80

Oster RT, Bruno G, Montour M, Roasting M, Lightning R, Rain P, Graham B... Bell RC. (2016). Kikiskawâwasow – prenatal healthcare provider perceptions of effective care for First Nations women: an ethnographic community-based participatory research study. *BMC pregnancy and childbirth*, 16 (1), pp. 216

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Adam LM, Manca DP, Bell RC. (2016). Can Facebook Be Used for Research? Experiences Using Facebook to Recruit Pregnant Women for a Randomized Controlled Trial. *Journal of medical Internet research*, 18 (9), pp. e250

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Pereira, L.C.R., Elliott, S.A., McCargar, L.J., Bell, R.C., Vu, K., Bell, G., Robson, P.J., Prado, C.M. (2019). The influence of energy metabolism on postpartum weight retention. *American Journal of Clinical Nutrition*, 109, 1588-1599 doi: 10.1093/ajcn/nqy389

In addition, there are several manuscripts that are currently under review. Please check our website, enrich.ualberta.ca, for updates on additional publications!

The 2018 Maternal Conference

The ENRICH Research Program and the Maternal, Newborn, Child & Youth Strategic Clinical Network planned two days of dynamic sessions geared towards inspiring innovation in maternal health. The 230 conference attendees included people invested in maternal care, research and practice leaders, healthcare professionals, trainees, community-based organization service providers, and community members. Conference presenters and workshop hosts engaged conference attendees in thinking about maternal health from unique perspectives.

The Conference hosted 35 unique presenters, 9 interactive workshop session, and 34 posters covering a variety of topics surrounding maternal health.

Bringing it all together!

Conference attendees came together for a final wrap up session. The aim of this final activity was to give everyone a chance to reflect on the last 2 days and to discuss the challenges and opportunities that need to be confronted to better maternal health outcomes in the world. Groups were asked to brainstorm different ways that they believed this could be done. Some of the top priorities and potential action items included:

- Addressing poverty and its impact on maternal and child health
- Improving education and knowledge around maternal and child health
- Focusing on patient involvement in care decisions, and providing individualized pathways of care
- Including fathers in prenatal care

Addressing maternal health is complex and many perspectives and factors need to be considered in the process. Diverse groups of experts must come together to better support maternal health from all angles.

ENRICH

Promoting Appropriate Maternal Body Weight in Pregnancy and Postpartum through Healthy Eating