

Healthy Pregnancy Weight Gain

Final Evaluation Report

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LIST OF ABBREVIATIONS

| | |
|----------|---|
| AHS | Alberta Health Services |
| APPEL | Alberta Perinatal Professionals Electronic Library |
| AMA | Alberta Medical Association |
| APrON | Alberta Pregnancy Outcomes and Nutrition |
| ARECCI | Alberta Research Ethics Community Consensus Initiative |
| BMI | Body Mass Index |
| CPSA | College of Physicians and Surgeons of Alberta |
| CSEP | Canadian Society for Exercise Physiology |
| GWG | Gestational Weight Gain |
| HC | Health Canada |
| HCP | Healthcare Provider |
| HEAL | Healthy Eating and Active Living |
| HPHC | Healthy Parents, Healthy Children |
| HPWG | Healthy Pregnancy Weight Gain |
| IOM | Institute of Medicine |
| LBW | Low Birth Weight |
| LGA | Large for Gestational Age |
| NPA | Nurse Practitioners Association |
| PARmed-X | Physical Activity Readiness Medical Examination for Pregnancy |
| PCN | Primary Care Network |
| SGA | Small for Gestational Age |
| SOGC | Society of Obstetricians and Gynecologists of Canada |

EXECUTIVE SUMMARY

Background

Gestational weight gain (GWG) is an important public health issue which, if not within the recommended range, has the potential to negatively impact pregnancy outcomes including increased risk of caesarean delivery, post-partum weight retention, preterm birth and giving birth to infants who are large or small for their gestational age. Children of women with excessive GWG have an increased risk for childhood obesity. Despite the current Health Canada GWG guidelines, pregnant women face challenges to gain weight within the recommended ranges. Though these guidelines are intended to be used with good clinical judgment and facilitate discussions between women and their healthcare providers (HCPs) about nutrition and physical activity, a large number of women continue to receive inadequate advice and fail to gain weight within the recommended range.

Objectives

The Healthy Pregnancy Weight Gain (HPWG) project was developed with the purpose of promoting healthy pregnancy weight gain among Albertan women. The goals of this project include increasing knowledge and awareness of the GWG guidelines with HCPs and pregnant women, as well as increasing the capacity of HCPs to support pregnant women in achieving healthy dietary intake, regular physical activity and healthy weight gain in pregnancy.

Methods

In the Fall of 2012, HPWG resources, including the Health Canada 2010 Guidelines for Pregnancy Weight Gain (adopted from Institute of Medicine 2009), were disseminated to HCPs. An evaluation framework was developed to assess the knowledge, attitudes and behaviours of women and HCPs regarding HPWG at two different time periods: before and 18 months following the distribution of the HPWG resources to HCPs (Time1 and Time2, respectively). Surveys were administered to independent cross sections of women and HCPs at Time1 (Fall 2012) and Time2 (Spring 2014) with the objective of capturing changes in knowledge, attitudes and behaviours of both groups, after the intervention.

This report provides an overview of the findings from the surveys at Time2 and also compares the results from Time1 and Time2.

Findings

997 women and 385 HCPs (including family physicians, obstetricians/gynecologists, midwives, nurses, dietitians and health educators) participated in the Time2 survey. 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. This was not significantly different from 44% at Time1, for the same measure. Distribution of timing for weight gain target discussion was significantly different between Time1 (49.3%) and Time2 (73.8%) with more women reporting having the discussion at their first trimester of pregnancy at Time2. No significant association was found between pre-pregnancy body mass index (BMI) category and whether HCPs discussed a weight gain target with women.

34.3% of HCPs recalled receiving the HPWG resource package; however, 50.7% of HCPs reported sharing some type of weight gain information resource with pregnant women at Time2. This was

consistent with 53% of women who reported receiving a weight gain resource from their HCP. A significantly larger number of women at Time2 reported receiving a weight gain information resource from their HCP. To some extent, this was found to be due to the introduction of the *Healthy Parents, Healthy Children* print and online resources, which have been in circulation since June 2013 and widely disseminated at Public/Community Health Centers independent of the HPWG project. 27% of women identified that having a discussion with their HCP and/or access to resources as having an impact on their eating habits, physical activity and weight gain during pregnancy. No difference was found in HCPs' reported behavior in terms of providing weight gain, nutrition and physical activity advice between Time1 and Time2.

At Time2, only one third of HCPs considered themselves to be very/completely familiar with Health Canada 2010 Guidelines for Pregnancy Weight Gain and Health Canada's Prenatal Nutrition Guidelines, and only 15% and 13% reported being very/completely familiar with the joint SOGC/CSEP and PARmed-X Guidelines for Exercise in Pregnancy, respectively. This was not different from Time1, except for exercise guidelines which tended to be lower at Time2.

Overall, 45% of women at Time2 gained in excess of the weight gain guidelines during their pregnancy, which was significantly lower than in Time1 (52%). Similar to Time1, women in the underweight and healthy weight categories were more likely to meet or be below the weight gain guidelines than women categorized as overweight and obese prior to becoming pregnant. Of the women who fell into the overweight and obese categories, 67% and 68.5% at Time2 gained above the weight gain guidelines (vs. 79% and 61% at Time1), respectively.

Another important finding was that more than 36% of women in the underweight BMI category at Time2 gained less weight than recommended for their pregnancy, which can have negative impacts on the pregnancy outcome. This finding emphasizes the importance of support for appropriate weight management during pregnancy for women across all of the BMI categories.

Conclusions and Recommendations

Given the significance of healthy GWG on maternal and infant outcomes it is crucial to ensure that both HCPs and women are aware of the guidelines and have access to the tools and resources to support a HPWG.

Recommendations include:

- Improve HPWG resource access and uptake among HCPs and women
- Facilitate development of personal skills related to healthy eating and active living
- Explore health marketing strategies to increase awareness of HPWG and HPWG resources with women and HCPs
- Continue research collaboration with the ENRICH Research Project to identify universal strategies to promote healthy weights and healthy eating in pregnancy and postpartum
- Capacity building among HCPs to further support HPWG

INTRODUCTION

Purpose of the Report

This report summarizes the evaluation results from the Time2 surveys completed by postpartum women and healthcare providers (HCPs) in Alberta and compares the findings of Time1 and Time2.

Background

Pregnancy is a critical period in every woman's life that can significantly influence the short and long-term health of both mother and infant. Gaining a healthy amount of weight is one of the important determinants in achieving the best pregnancy outcome.

The available evidence indicates that women who gain excessive weight during pregnancy are at increased risk for cesarean delivery and higher postpartum weight retention, and may be at a greater risk for induction of labour, longer length of labour and gestational diabetes. In the long term, they are at increased risk for hypertensive, metabolic and cardiovascular disorders; breast cancer; and low self-esteem/depression. Adverse health outcomes of excessive gestational weight gain (GWG) for the infant include an increased risk for preterm birth, infant mortality, large for gestational age (LGA), macrosomia, higher birth weight infants, higher newborn fat mass, childhood obesity and long-term adiposity (Viswanathan et al. 2008, IOM 2009, Nehring et al. 2011).

Conversely, breastfeeding initiation rates are lower in women who do not gain sufficient weight during pregnancy. Inadequate GWG also increases the risk of preterm birth, infant mortality, low birth weight (LBW) and small for gestational age (SGA) infants (Viswanathan et al. 2008, IOM 2009, Han et al. 2011).

The current Health Canada (HC) GWG recommendations, adapted from the 2009 Institute of Medicine (IOM) guidelines, are based on a woman's pre-pregnancy body mass index (BMI) (Institute of Medicine and National Research Council, 2009). These ranges were developed to ensure the best health outcomes for both mother and child. The IOM guidelines are intended to be used together with good clinical judgment as well as a discussion between the woman and her HCP about nutrition and physical activity (Institute of Medicine and National Research Council, 2009).

Despite the growing research linking inappropriate pregnancy weight gain with adverse maternal and child health outcomes, women continue to receive inconsistent messages and inadequate support from their HCPs with regard to their weight gain (de Jersey et al. 2010, Johnson et al. 2013). These findings suggest the need for improvement in the process of advising women and their HCPs about appropriate GWG, including counseling related to nutrition and physical activity.

Project Description

The Healthy Pregnancy Weight Gain (HPWG) project was developed with the purpose of promoting healthy pregnancy weight gain among Albertan women. The goals of this project include increasing knowledge and awareness of the HC and IOM guidelines with HCPs and pregnant women, as well as increasing the capacity of HCPs to support pregnant women in achieving healthy dietary intake, regular physical activity and healthy weight gain in pregnancy. A provincial HPWG Working Group was convened with representation from each zone, membership from related Alberta Health Service (AHS) program areas, as well as clinicians and researchers. Between 2010 and 2012, resources

were developed in consultation with the HPWG Working Group and, in the Fall of 2012, were disseminated to HCPs to share with pregnant clients and women thinking of becoming pregnant. Approximately 4800 resource packages were disseminated across the province to family physicians, obstetricians, nurses, prenatal educators, registered dietitians, midwives and related AHS program areas.

These resources included:

- The Healthy Pregnancy Weight Gain Information for Health Professionals;
- The Healthy Eating and Active Living (HEAL) for Pregnancy booklet (developed by Alberta Health);
- Pregnancy Weight Gain Graphs for Singletons based on pre-pregnancy BMI (underweight, healthy weight, overweight, and obese);
- A pre-pregnancy BMI calculator wheel;
- Key Actions for Healthy Pregnancy Weight Gain – Information for Health Professionals; and
- Referral site for nutrition counseling for HPWG (www.albertahealthservices.ca/nutritioninpregnancy.asp).

Some of the above resources were developed by revising pre-existing resources. In particular, the HEAL for Pregnancy booklet is a revision from a 2009 Alberta Health version and the weight gain graphs and BMI calculator wheel were revisions from the former Calgary Health Region resources titled: *A Healthy Baby is Worth the Weight*.

HCPs also have access to an online learning module through the Alberta Perinatal Professionals Electronic Library (APPEL). The HPWG project team developed this module with support from the Alberta Perinatal Health Program.

A logic model was developed in consultation with the HPWG Working Group and outlines the inputs, activities, outputs and short-, medium- and long-term outcomes for this project (see Appendix A). As described in the logic model, this project's short-term expected outcomes include:

- Increased knowledge and awareness of HCPs and pregnant women of:
 - the IOM and HC guidelines and supporting resources;
 - physical activity guidelines and supporting resources; and
 - nutrition guidelines, resources and counseling services.
- Increased capacity of HCPs to address HPWG with pregnant women in Alberta.

The project's medium-term expected outcomes include improved birth outcomes related to GWG for infants born in Alberta, and an increased percentage of pregnant women:

- who gain within the IOM and HC guidelines;
- with healthy nutrition; and
- with healthy physical activity levels.

Measurement of these medium-term outcomes requires extensive provincial surveillance which is not possible at this time as the information technology infrastructure does not exist (e.g. data collection, data transfer, data repository). Therefore, these outcomes are considered out of scope for this evaluation.

Evaluation Objectives

Key evaluation objectives for this project include:

1. To assess knowledge, attitudes and behaviours regarding pregnancy weight gain.
2. To assess knowledge, attitudes and behaviour regarding physical activity during pregnancy.
3. To assess knowledge, attitudes and behavior regarding nutrition during pregnancy.

This report will provide an overview of the results received from the surveys in Time2 and provides a comparison of findings from Time1 and Time2.

METHODS

Study Design

A mixed-methods approach was used to collect information from women up to 6 months postpartum and HCPs including general practitioners, family physicians, midwives, nurse practitioners, registered nurses, obstetricians, gynecologists, dietitians and prenatal educators. Two surveys were created: one for postpartum women and one for HCPs. Surveys included both quantitative and qualitative questions (See Appendix B and C for the women's and HCPs' surveys). These surveys were distributed to a cross section of women and HCPs in the Fall of 2012 at Time1 (T1) and to different samples of the same populations in the Spring of 2014 at Time2 (T2).

Data Collection, Sampling and Recruitment Procedures

Recruitment: Women

Women up to 6 months postpartum were recruited to complete the survey using several methods:

- During their 2, 4 and 6 month "Well Child" immunization visits at Community/Public Health Centres across all five zones;
- Through Primary Care Networks (PCNs) that agreed to distribute the surveys during 6 week postpartum visits;

- Through Parent Link Centres, which provided the link to the online survey to their clients; and
- Through local community health fairs with new mothers in attendance.

Women were provided with the option to complete the survey online (a bookmark was provided that included a link to the online survey) or to complete a paper version of the survey. The online survey was launched using SelectSurvey.NET through the AHS forum.

Time2 survey responses were collected between March 3 and June 30, 2014 in all five zones. Due to the lag time in receiving paper surveys through the mail, surveys that were received by the end of July 2014 were also accepted and included in the analysis.

Participating women had the option to provide their contact details separately from the surveys to be entered into a draw for a \$100 gift certificate. Two women were randomly selected from among the participants and were sent their gift certificates.

Recruitment: HCPs

HCPs were recruited through a variety of methods. A survey link was made available through:

- The AHS Insite home page, the HPWG webpage and the Nurse Practitioners Association (NPA) webpage.
- The College of Physicians and Surgeons of Alberta (CPSA) Messenger e-newsletter, the Alberta Medical Association (AMA) MD Scope e-newsletter and the AHS Leadership Matters e-newsletter.
- Nutrition Services sent the link to colleagues who work with pregnant and postpartum women.
- Emails sent to members of: Alberta Association of Midwives; Maternal and Newborn Practice Support Group; Diabetes in Pregnancy Group; and Alberta CAPC CPNP Coalition.
- Alberta CAPC CPNP Coalition Annual General Meeting and Conference information sharing table.
- Bookmarks were included in the HPWG resource packages that were disseminated to HCPs across the province.

Time2 data collection for HCPs was carried out from March 3 to June 30, 2014.

Ethical Considerations

The ARECCI Ethics Screening Tool identified this project as minimal risk. As such, this project did not require formal ethics review, although the ethical considerations outlined through ARECCI were taken into account.

Data Analysis

Survey data were entered manually and/or imported into IBM SPSS Statistics Version 19, which was then used to organize and analyze the quantitative data. Bar graphs and pie charts were used to

show the frequency of responses across each question in both the HCP and women's surveys. Z test for population proportions was used to examine Time1/Time2 differences. P values less than 0.05 were considered significant. Open-ended responses were coded and categorized to saturation.

Report Structure

In the following section, the findings from Time2 surveys and the comparison of findings between Time1 and Time2 are organized and presented according to evaluation objective and data source, respectively.

EVALUATION FINDINGS

Respondent Characteristics

Women's Survey

997 women completed the survey at Time2. Of these, 52.8% completed the paper survey and 47.2% completed the online questionnaire. Of the total number of survey participants, the Calgary Zone had the greatest representation (42.9%), followed by the Edmonton Zone (19.8%), Central Zone (14.9%), North Zone (11.4%) and South Zone (10.9%). Table 1 compares this distribution to the proportion of women giving birth in each zone according to the 2012 Population Statistics.

Table 1. Zone Distribution and 2012 Population Statistics by Zone

| Zone | Proportion of Women Giving Birth in AB, by Zone, in 2012 (n=50,851) | Survey Respondents' Zone Distribution at Time2 (n=887) |
|---------------|--|---|
| Calgary Zone | 36.4% | 42.9% |
| Edmonton Zone | 30.8% | 19.8% |
| North Zone | 14.2% | 11.4% |
| Central Zone | 10.7% | 14.9% |
| South Zone | 7.9% | 10.9% |

The proportion of respondents from Calgary Zone was significantly higher and the proportions of respondents from Central and Edmonton Zones were significantly lower in Time2 as compared to Time1, as shown in Figure 1.

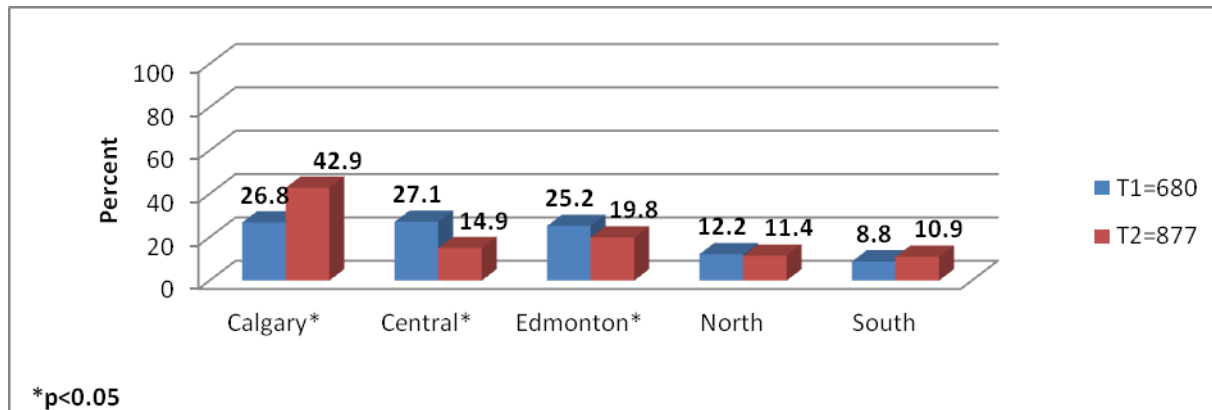


Figure 1. Women's Zone Distribution; Time1 vs. Time2

Time 2 survey respondents ranged between 18 and 45 years of age, with a mean age of 30.5 years (n=926; $\sigma=4.7$). 80.6% of respondents were married, while 15.7% were in a common law relationship and 3.6% were single at the time of survey (n=921). When asked to report the highest level of education completed, 51.1% of women indicated they had a university degree, while 24.3% indicated they had a college diploma and 2.1% reported that they did not complete high school (n=909). The median family income of respondents before taxes was \$80,000-\$100,000 (n=825). A significantly larger proportion of respondents at Time2 had university education and incomes of \$100,000 and higher, as compared to respondents at Time 1.

For approximately half the women at Time2 (53.6%), this was their first child; for 34.4% it was their second and for 12% it was their third child (n=917). Women indicated that at the time of delivery they were 39.1 total weeks pregnant, on average (n=857; $\sigma=1.86$; range: 24-44). At the time they completed the survey, respondents ranged from being brand-new mothers (0 months postpartum) to 18.5 months postpartum (n=907; $\mu=4.26$; $\sigma=2.08$), although 74% of the respondents were up to 6 months postpartum. No significant difference was found between Time1 and Time2 with regard to pregnancy related variables above.

Pre-pregnancy BMI was calculated based on self-reported height and pre-pregnancy weight (n=908). Comparison between Time1 and Time2 showed that a significantly greater proportion of women were in the 'healthy weight' and a significantly smaller proportion were in the obese category at Time2 (Figure 2).

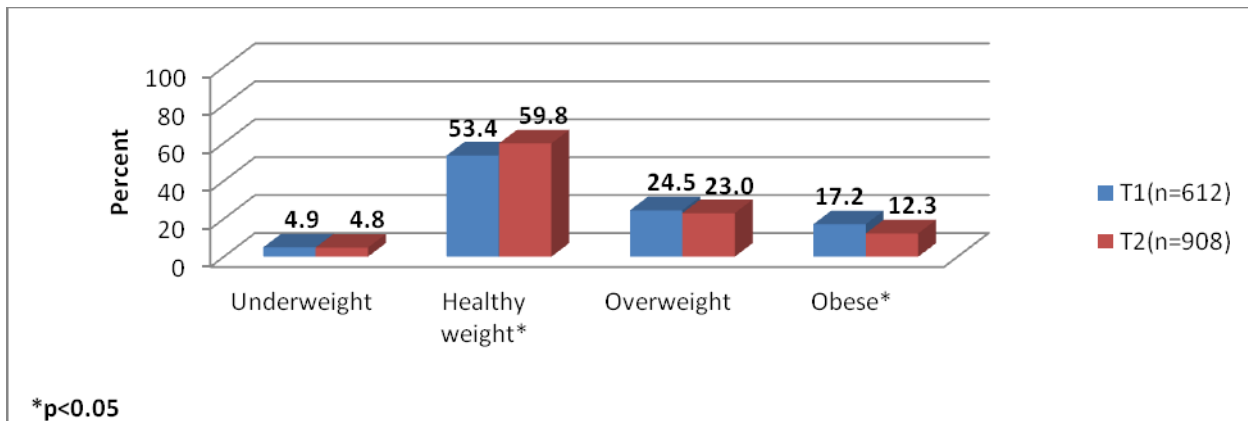


Figure 2. Pre-Pregnancy BMI Distribution; Time1 vs. Time2

HCPs Survey

388 HCPs completed the survey in total and 385 surveys were included in the data analysis (3 surveys were completed by professionals outside of the target group). The Calgary Zone had the largest number of HCP respondents (33.9%), followed by the North Zone (29%), Edmonton Zone (18.8%), Central Zone (10.2%) and South Zone (8.2%). Comparison of Time2 findings with Time1 showed a significant increase in participation from North Zone and a significant decrease in participation from Calgary Zone, as shown in Figure 3. It should be noted that only 62.1% of respondents in Time1 and 63.6% in Time2 specified their service zone.

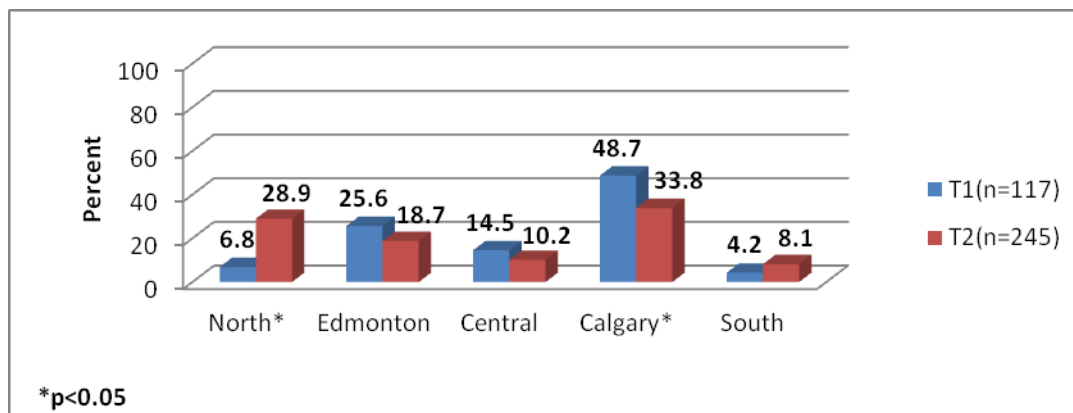


Figure 3. HCPs Zone Distribution; Time1 vs. Time2

Figure 4 provides the comparison between Time1 and Time2 occupational designation of participants. It should be noted that only 60.7% of respondents in Time1 and 62.6% in Time2 specified their professional designation.

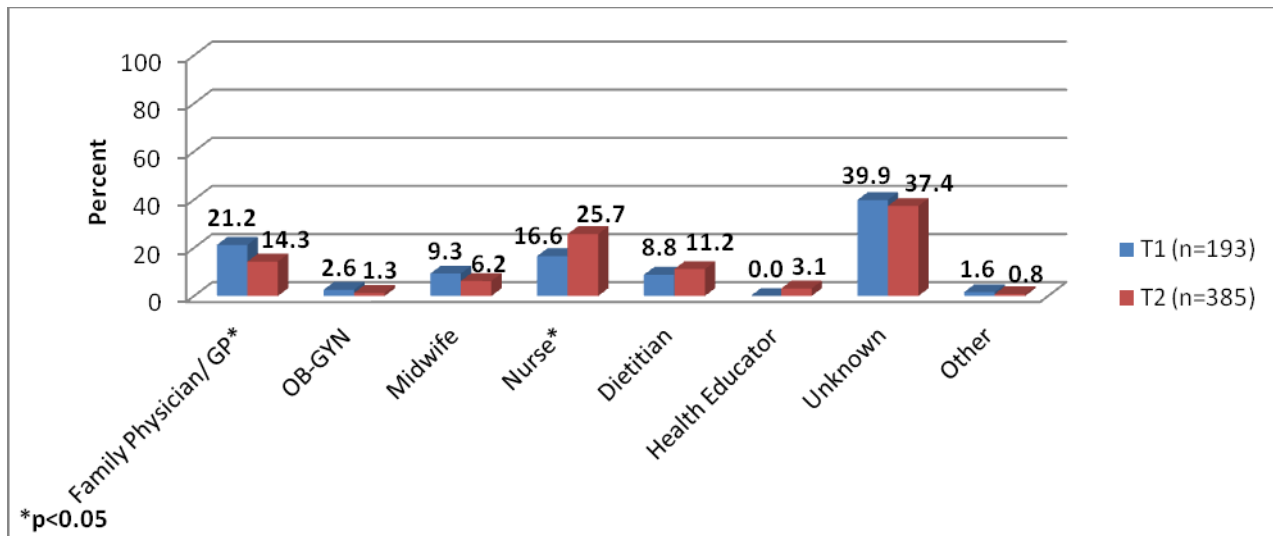


Figure 4. Percent Distribution of HCPs' Occupational Designation; Time1 vs. Time2

Evaluation Objective 1: To assess the knowledge, attitudes and behavior regarding pregnancy weight gain.

Women's Survey

Knowledge Regarding Pregnancy Weight Gain

At Time2, 42% of women indicated that their HCP had discussed a weight gain target for their pregnancy (n=986). This was not significantly different from 44% at Time1.

74% of the women who reported having weight gain target discussion with their HCP (n=404), indicated that the discussion happened during their first trimester of pregnancy, which was statically greater than 49% at Time1.

There was no statistically significant association between pre-pregnancy BMI category and whether HCPs discussed a weight gain target with women. Also, no significant difference was found in the proportion of women who received accurate advice on weight gain targets based on their pre-pregnancy BMI between the two times (46.4% at Time2 vs. 41.7% at Time1).

When asked to indicate how often their HCP measured and recorded their weight (n=963), 96% indicated this occurred at each prenatal visit. This was similar to the 97% in Time1.

- 47.1% of respondents (n=964) had received no weight gain resources from their HCP,
- 32.3% indicated that they received the HEAL for Pregnancy booklet,
- 17.6% indicated they had been offered the *Healthy Parents, Healthy Children* (HPHC) resource, and;
- 9.9% indicated a BMI calculator was shared with them.

However, many women did not find the tracking of weight at their prenatal visits to be informing or empowering without having the appropriate discussion about weight gain:

“Everyone seems to obsess over pregnancy weight. They record it and you have to see it [in] every appointment, even if it’s not discussed. Even if I think I don’t care you are made to just monitor it.”

It is important to note that the HPHC resource has been in circulation since June 2013, and broadly shared with a range of clients including pregnant women. It is disseminated via Public Health clinics, parent support agencies and physicians. This resource did not exist when the Time1 HPWG survey was carried out. A significant difference was found between the proportion of respondents who reported receiving no weight gain information resources from their HCP in Time1 (59.3%) and Time2 (47.1%). This may be, to some extent, due to the introduction of HPHC resource.

Many respondents who selected *other* resources, considered themselves knowledgeable about pregnancy weight gain. However, they mentioned using resources that were very similar to Time1 and included *From Here through Maternity* resource¹, and other online resources, such as babycenter.ca.

Attitudes Regarding Pregnancy Weight Gain

Women were asked to identify what made the biggest impact on their pregnancy weight gain in a multiple choice question. Options for this question were informed by women’s comments received at Time1 in response to an open-ended question exploring the same issue. Collectively, 27% of respondents (n=959) identified having discussions with their HCPs and/or access to HPWG resources as the biggest impact on their weight gain during pregnancy, while 40% indicated that neither discussion with their HCP nor the resources had an impact on their pregnancy weight gain.

A total of 251 women identified *other* factors that had the biggest impact on their weight gain during pregnancy. Respondents *own desire for a healthy pregnancy and birth* was found to be the main motivation for a healthy pregnancy weight gain. Pregnancy related ailments such as morning sickness and lack of appetite, as well as medical conditions such as gestational diabetes, were also mentioned to have significant impacts on eating and hence on pregnancy weight gain.

Impact of pregnancy weight gain on mother

In an open-ended question, women were asked to describe what impact, in their opinion, pregnancy weight gain can have on them. 862 women provided a response to this question. Major themes that arose from women’s comments included: 1) fear of having a difficult labor, 2) fear of not being able to lose the extra weight postpartum, 3) physical stress to mother’s body during and after pregnancy, 4) mental and emotional stress and disturbed self-esteem after pregnancy, and 5) long term health problems as a consequence of overweight or obesity. This quote is an illustration of many women’s thoughts in this regard:

¹ A resource created by the former Calgary Health Region and distributed in Calgary, Edmonton and North Zones.

“Added stress to a body already under stress.”

Impact of pregnancy weight gain on baby

In an open-ended question, women were asked to describe what they thought would be the impact of pregnancy weight gain on the baby. 844 responses were received for this question. Women’s responses focused on three possible scenarios: healthy weight gain, excessive weight gain, and insufficient weight gain. The major themes that emerged from women’s quotes included the effects of maternal weight gain on 1) fetal growth and development, 2) birth and possible accompanying complications that can negatively affect the baby, and 3) long-term adverse health outcomes for the child. This quote is a showcase of what many women thought:

“Very important ... me gaining weight means baby is growing.”

Behaviours Regarding Pregnancy Weight Gain

HC and IOM guidelines for pregnancy weight gain, based on a woman’s pre-pregnancy BMI, are shown in Table 2.

Table 2. HC and IOM Weight Gain Guidelines for Pregnancy

| Weight Category | Pre-Pregnancy BMI | Total Weight Gain for Pregnancy |
|-----------------|-------------------|---------------------------------|
| Underweight | <18.5 | 28-40 lbs (12.5-18 kg) |
| Healthy Weight | 18.5-24.9 | 25-35 lbs (11.5-16 kg) |
| Overweight | 25.0-29.9 | 15-25 lbs (7-11.5 kg) |
| Obese | ≥30.0 | 11-20 lbs (5-9 kg) |

Overall, 44.8% of the postpartum women surveyed (n=893) gained in excess of the weight gain guidelines during their pregnancy. Similar to Time1, a larger proportion of women in pre-pregnancy overweight and obese BMI categories gained above the total weight gain guidelines during their pregnancy. The findings also indicate that more than one third of women in pre-pregnancy underweight category failed to meet the recommended weight gain requirements for their pregnancy at both Time1 and Time2. Figure 5 compares Time1 and Time2 women’s adherence to the weight gain guidelines. A statistically significant difference was found between Time1 and Time2 for those who gained above the recommended weight gain in the overweight BMI category and in total.

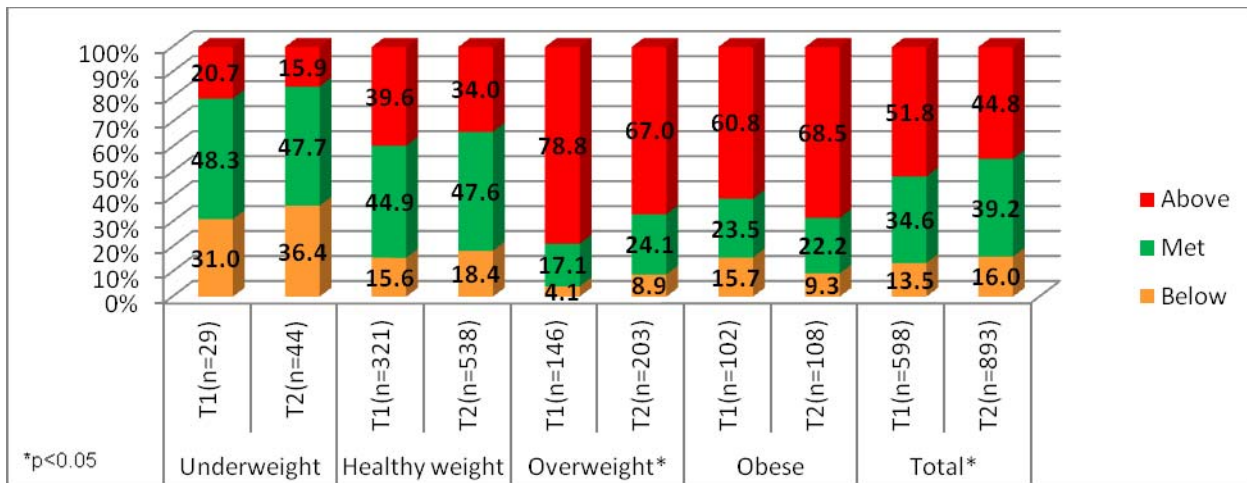


Figure 5. Pre-Pregnancy BMI and Adherence to Weight Gain Guidelines, Time1 vs. Time2

Women were asked to describe what made it difficult, or helped them, to stay within the weight range recommended while they were pregnant. The options for these two questions were informed by qualitative analysis of answers to the same questions asked in open-ended form at Time1. While 32% of women (n=955) indicated that they did not find it difficult to stay within the recommended weight range, others reported difficulty in physical activity (32.6%), feeling fatigued (29.1%) and food cravings (28.2%) as major factors that made it difficult to stay within the recommended weight range.

On the other hand, respondents (n=949) identified factors that helped them stay within the recommended weight range:

- 59% eating healthy,
- 55% drinking lots of water,
- 42% engaging in physical activity,
- 30% regular check-ups with HCPs,
- 26% being active with other children, and
- 25% concerns about post-pregnancy weight retention.
-

HCPs Survey

Knowledge Regarding Pregnancy Weight Gain

Figure 6 compares the self-reported level of familiarity of HCP respondents with Health Canada 2010 Guidelines for Pregnancy Weight Gain at Time1 and Time2, in which no significant difference was found.

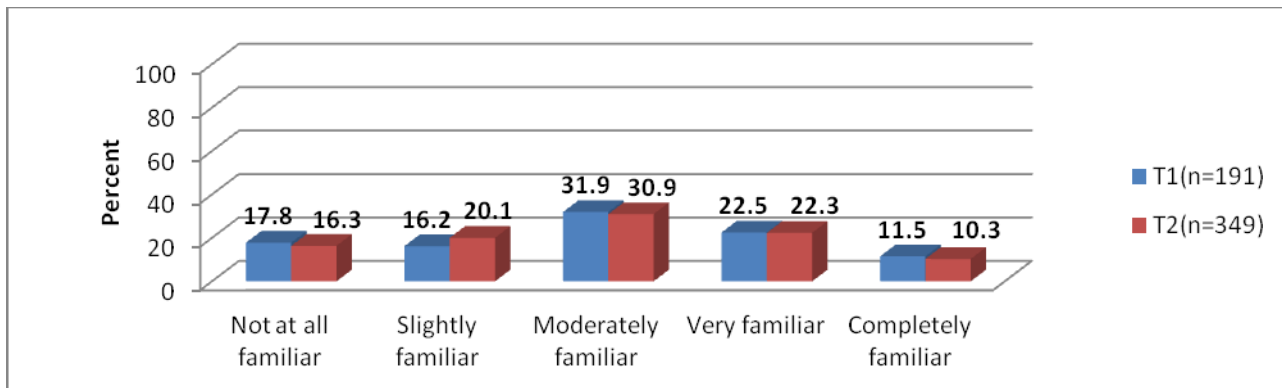


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As for the HPWG resource package, 34.3% of HCP respondents in total (n=382) recalled that they had received the package. A higher proportion of family physicians reported receiving the package as compared to nurses and midwives when the results were stratified by respondents’ occupational designation.

Behaviours Regarding Pregnancy Weight Gain

HCPs were asked to report the average frequency in which they provided women with a weight gain target based on their pre-pregnancy BMI, tracked their weight at every visit, discussed the impact of weight gain on the mother or discussed its impact on the baby. Table 3 shows the findings for the percentage of respondents providing a weight gain target based on pre-pregnancy BMI and those tracking women’s weight at every visit.

Table 3. Percent frequency of HCPs' practice in providing weight target and tracking weight gain, T1 vs. T2

| Profession | Provide weight target based on pre-pregnancy BMI (%) | | | | | | Track weight gain at each visit (%) | | | | | |
|---------------------------------|--|------|-----------|------|--------------|------|-------------------------------------|------|-----------|------|--------------|------|
| | rarely/never | | sometimes | | often/always | | rarely/never | | sometimes | | often/always | |
| | T1 | T2 | T1 | T2 | T1 | T2 | T1 | T2 | T1 | T2 | T1 | T2 |
| Family physician/GP | 19.5 | 31.5 | 22.0 | 22.2 | 58.5 | 46.3 | 0.0 | 1.8 | 0.0 | 1.8 | 100 | 96.4 |
| Midwife | 33.4 | 52.2 | 44.4 | 4.3 | 22.3 | 43.5 | 27.8 | 29.2 | 0.0 | 12.5 | 72.2 | 58.3 |
| Nurse | 59.4 | 71.4 | 3.1 | 16.3 | 37.5 | 12.3 | 50.0 | 70.5 | 18.8 | 6.3 | 31.3 | 23.1 |
| Dietitian | 6.3 | 16.3 | 18.8 | 18.6 | 75.0 | 65.1 | 11.8 | 25.6 | 11.8 | 23.3 | 76.5 | 51.2 |
| Obstetricians/ Gynecologists | 40.0 | 40.0 | 20.0 | 20.0 | 40.0 | 40.0 | 0.0 | 0.0 | 0.0 | 0.0 | 100 | 100 |
| Health educator | NA | 83.3 | NA | 0.0 | NA | 16.7 | NA | 100 | NA | 0.0 | NA | 0.0 |
| Unknown | 80.0 | 52.7 | 10.0 | 10.5 | 10.0 | 36.8 | 80.0 | 52.9 | 0.0 | 0.0 | 20.0 | 47.1 |
| Total | 36.8 | 50.6 | 19.2 | 16.0 | 44.0 | 33.5 | 26.2 | 42.7 | 6.3 | 7.9 | 67.4 | 49.5 |

Participants' self-report of their practice at Time2 indicated that more than 70% of dietitians, around 60% of family physicians/GPs and midwives, 30% of nurses and 25% of health educators often or always discussed the impact of weight gain on mother. A slightly lower percentage of individuals in each profession category tended to discuss the impact of GWG on the baby. Meanwhile, all of the obstetrician/gynaecologist participants (n=5) reported having discussions on the impact of weight gain on both mother and baby. No significant difference between Time1 and Time2 was found in this regard. 23.7% of HCPs reported that they do not share resources about weight gain with pregnant women, which was significantly lower than Time1.

Capacity to Support Pregnancy Weight Gain

HCPs were asked to indicate whether, in their opinion, they had appropriate knowledge and information resources to promote pregnancy weight gain. Collectively, 78% of HCPs at Time2 (as compared to 77.8% at Time1) agreed/strongly agreed that they had appropriate knowledge to promote healthy pregnancy weight gain. Also, 66% of HCPs at Time2 (as compared to 73.5% at Time1) agreed/strongly agreed that they had appropriate information resources to promote healthy pregnancy weight gain.

Evaluation Objective 2: To assess knowledge, attitudes and behavior regarding physical activity during pregnancy.

Women's Survey

Knowledge Regarding Physical Activity during Pregnancy

When asked if their HCP shared any physical activity (PA) resources with them during their pregnancy:

- 52.2% of women (n=936) responded that no resources were shared,
- 27.6% indicated receiving the HEAL for Pregnancy booklet,
- 17.2% indicated receiving the HPHC resource,
- 5.7% indicated having discussions with their HCPs, and
- 2.4% reported receiving the Physical Activity Readiness Medical Examination (PARmed-X) for pregnancy.

Attitudes and Behaviour Regarding Physical Activity during Pregnancy

The Society of Obstetricians and Gynecologists of Canada (SOGC) and Canadian Society for Exercise Physiology (CSEP) joint clinical practice guideline for exercise in pregnancy address the frequency, intensity, time and type of exercise recommended for pregnant women. For this evaluation, frequency of women's light, moderate and high intensity physical activity were chosen as indicators to assess both knowledge and behaviours in the women's survey. The SOGC/CSEP guideline recommends that women without contraindications exercise three to four times per week at an appropriate target heart rate, which still allows for a verbal conversation during exercise. This constitutes moderate intensity physical activity. Also, light intensity physical activity was deemed appropriate seven days per week for women without contraindications.

Women were asked to indicate how many days per week they thought light, moderate and high intensity physical activities were appropriate for them during each trimester. This was followed with a question asking how many days per week they participated in light, moderate and high intensity physical activity before pregnancy and during each trimester. Examples of physical activities in each category were provided (See Appendix B).

Because of an error that was found in the data entry matrix of the online survey after data was collected, the data from the online survey was not included in the analysis of women's beliefs and behaviours with regard to physical activity during pregnancy. However, this did not compromise the

findings since the sample size of the paper survey (n=527) was large enough to meet the analysis purposes for Time2 evaluation. This elimination only related to findings presented in Table 4.

Table 4 shows that the amount of physical activity women believed they needed was less than the amount recommended in the SOGC/CSEP guideline (i.e. three to four times per week for moderate intensity activity). Compounding the issue, women reported engaging in even less physical activity than what they believed to be appropriate.

Table 4. Women's beliefs and reported behaviours on physical activity (PA)

| Level of PA * | Beliefs | Behaviors |
|------------------------------|---------------------|---------------------|
| Time | Median (times/week) | Median (times/week) |
| <i>Light intensity PA</i> | | |
| Before pregnancy | - | (n=513) 7 |
| 1 st Trimester | (n=513) 7 | (n=513) 6 |
| 2 nd Trimester | (n=513) 7 | (n=512) 6 |
| 3 rd Trimester | (n=513) 6 | (n=510) 5 |
| <i>Moderate intensity PA</i> | | |
| Before pregnancy | - | (n=515) 4 |
| 1 st Trimester | (n=511) 5 | (n=513) 3 |
| 2 nd Trimester | (n=509) 5 | (n=513) 3 |
| 3 rd Trimester | (n=510) 3 | (n=512) 2 |
| <i>High intensity PA</i> | | |
| Before pregnancy | - | (n=517) 2 |
| 1 st Trimester | (n=514) 3 | (n=517) 0 |
| 2 nd Trimester | (n=514) 2 | (n=516) 0 |
| 3 rd Trimester | (n=515) 0 | (n=516) 0 |

*SOGC/CSEP guideline recommends moderate intensity physical activity 3-4 times/week throughout pregnancy.

It should be noted that median physical activity beliefs and behaviours for all levels of activity and all stages of pregnancy at Time2 was 1-2 times/week less than Time1. 22% of women (n=912) identified having discussions with their HCPs and/or access to HPWG resources as the biggest impact on their physical activity during pregnancy.

67.3% of women indicated they had made changes to their physical activity routine during pregnancy, whereas 30.5% indicated that they had not (n=930). These proportions were similar to Time1. Most respondents reported decreasing the frequency and intensity of their physical activity during pregnancy. In addition, many women reported changing their activity so that it was less strenuous.

Women were asked to describe why they made changes to their physical activity routines during pregnancy in an open-ended question. 634 women provided a response to this question. The overarching themes included protecting the baby from potential harm, and ensuring the activity was aligned with their changing physical abilities. Common reasons for decreasing their physical activity levels included fear of having a miscarriage, exhaustion and pain or discomfort.

HCPs Survey

Knowledge Regarding Physical Activity during Pregnancy

HCPs were asked to indicate how familiar they were with the joint SOGC and CSEP guideline for exercise in pregnancy, as well as the PARmed-X for Pregnancy. 15% and 12.6% of HCPs at Time2 reported being very/completely familiar with the joint SOGC/CSEP and PARmed-X for Pregnancy guidelines, respectively. This was similar to T1.

Behaviours Regarding Physical Activity during Pregnancy

Collectively, half of the HCP participants at Time2 reported having physical activity discussion with their pregnant clients. All midwives and obstetricians/gynecologists and 85.1% of family physicians reported discussing physical activity with pregnant women. Also, a lower percentage of HCPs reported not sharing any physical activity information resources with pregnant women at Time2 as compared to Time1. This might be due to the introduction of HPHC resource, which was used as a comprehensive resource to address major topics during pregnancy.

Capacity to Support Physical Activity during Pregnancy

Consistent with findings presented in the previous section on weight gain support, a higher percentage of midwives followed by family physicians considered themselves to be knowledgeable to promote physical activity during pregnancy (as compared to dietitians and nurses) at both times. However, a lower percentage of HCPs, in all professional categories, indicated that they have appropriate physical activity information resources to share with pregnant women as compared to their level of knowledge in this regard.

Evaluation Objective 3: To assess knowledge, attitudes and behaviour regarding nutrition during pregnancy

Women's Survey

Knowledge Regarding Nutrition during Pregnancy

Participants were asked whether HCPs helped them with their nutrition needs during pregnancy (n=929). 26.8% of participants indicated that they did not have any nutrition needs that required help from their HCP and 25.5% of women indicated that their HCP did not share any nutrition resources

with them. The rest of participants reported receiving HEAL for Pregnancy booklet (22.4%), Canada's Food Guide (17.1%), and HPHC resource (13.3%) for their nutrition needs.

Attitudes and Behaviours Regarding Nutrition during Pregnancy

For this evaluation, the numbers of extra servings from Canada's Food Guide (CFG) required per day, in each trimester, were chosen as indicators to assess both knowledge and behaviors for the women's survey. According to CFG, no extra servings of food are required in the first trimester, and 2-3 extra food guide servings are required, per day in the second and third trimesters. These recommendations do not vary by a woman's pre-pregnancy BMI or by the recommended amount of weight gain for her weight category.

Table 5 compares the frequency of responses for nutrition beliefs during each trimester at Times 1 and 2. According to this table, 40.1% of women at Time2 (n=926) reported that they believed they required no extra servings of food during the first trimester of their pregnancy. This was significantly higher than Time1. Also at Time2, 42.2% (n=931) and 58.5% (n=929) of women believed that they required 2-3 extra servings of food in their second and third trimester, respectively, which was similar to proportions at Time1.

**Table 5. Percent Frequency of Nutrition Beliefs about Extra Food
Required at Different Stages of Pregnancy, T1 vs. T2**

| Extra Servings Required | Nutrition Beliefs | | | | | |
|----------------------------|---------------------------|------------|---------------------------|------------|---------------------------|------------|
| | 1 st Trimester | | 2 nd Trimester | | 3 rd Trimester | |
| | T1 (n=565) | T2 (n=926) | T1 (n=487) | T2 (n=931) | T1 (n=444) | T2 (n=929) |
| No extra servings | 31.3 | 40.1* | 7.8 | 6.7 | 5.9 | 5.5 |
| 1 extra serving | 27.0 | 32.9 | 39.1 | 40.8 | 20.0 | 19.4 |
| 2-3 extra servings | 17.2 | 20.3 | 41.1 | 42.2 | 54.7 | 58.5 |
| 4-5 extra servings | 10.4 | 2.4 | 6.0 | 5.7 | 10.0 | 10.5 |
| 6-7 extra servings | 0.8 | 0.4 | 1.2 | 1.0 | 3.0 | 2.4 |
| More than 8 extra servings | 0.0 | 0.5 | 0.2 | 0.6 | 0.8 | 0.9 |
| Don't Know | 13.3 | 3.4* | 4.8 | 3.0 | 5.6 | 2.8 |

*p<0.05

Nearly 70% of respondents (n=920) indicated that services provided by their HCPs did not have an impact on their eating routines during pregnancy.

HCPs Survey

Knowledge Regarding Nutrition during Pregnancy

HCPs were asked to indicate their level of familiarity with Health Canada's Prenatal Nutrition Guidelines for Health Professionals. Only one third of HCPs at Time2 indicated that they were either

very or completely familiar with these guidelines. No significant difference was found in the level of familiarity between Time1 and Time2.

Behaviours Regarding Nutrition during Pregnancy

HCPs were asked how frequently they discussed appropriate nutrition and extra food requirements with pregnant women. Collectively, 60.9% of the HCP participants at Time2 reported discussing nutrition and extra food requirements with their pregnant clients. Dietitians and midwives were the most likely and nurses and health educators the least likely to provide nutrition related advice to pregnant women.

Capacity to Support Nutrition during Pregnancy

It is interesting to note that in both Time1 and Time2, the majority of HCPs in various professional categories considered themselves to be knowledgeable about nutrition during pregnancy. However, given the vast array of nutritional considerations during pregnancy, this perception of being knowledgeable needs to be further explored to explain nutrition education practices of different health professionals.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions

Appropriate pregnancy weight management falls into priorities of Alberta Provincial Strategic Directions (Government of Alberta 2008 & 2013, Alberta Health and Alberta Health Services 2010, Alberta Health 2013) that emphasize achieving better pregnancy outcomes through:

Development and implementation of prevention programs and policies to support healthy pregnancies and improve maternal and infant outcomes.

This is to be accomplished by:

- a. Addressing maternal modifiable risk factors including nutrition, physical activity, healthy weights, alcohol, tobacco, drugs, age and psychosocial health.
- b. Developing programs in support of increasing healthy births in Alberta.
- c. Improving low birth weight rate, SGA rate, and preterm birth rate.
- d. Develop/implement programs to improve breastfeeding rates.

The purpose of this report was to summarize the evaluation results from Time2 HPWG surveys distributed to a cross section of postpartum women and HCPs in Alberta in Spring 2014, and to compare the findings to the Time1 survey which dates back to Fall 2012. These results have provided insight into how the dissemination of the provincial HPWG resources has affected knowledge, attitudes and behaviours about pregnancy weight gain, physical activity and nutrition among women and HCPs.

In Time2, 997 women and 385 HCPs (including family physicians, obstetricians/gynecologists, midwives, nurses, dietitians, and prenatal health educators) from across the province completed the surveys (as compared to 737 women and 198 HCPs at Time1). While 96% of women indicated that their weight was measured and recorded at each prenatal visit, only 42% reported their HCP had discussed a weight gain target for their pregnancy. This was consistent with family physicians' reports of their practice in tracking weight (96%) and providing target weight gain (46%), and unchanged from Time1. 74% of women who reported having weight gain target discussion with their HCP (n=404) indicated that the discussion happened during their first trimester of pregnancy. This was significantly higher than 50% in Time1.

There was no significant association between pre-pregnancy BMI category and whether HCPs discussed a weight gain target with women. Women reported that they would like to have tools to track their own weight gain. Focus groups conducted with women from across Alberta as part of the ENRICH Project (2015) found that women want to talk about weight gain with their HCPs and they want to have this discussion as early on in pregnancy as possible. Additionally, they would like to continue discussions about weight gain throughout pregnancy; discuss their progress at every

appointment; and want to discuss weight before they gain more than is recommended to help them control their total and rate of weight gain. Specifically, women want to discuss:

- Weight gain goals based on their pre-pregnancy BMI;
- The trajectory of weight gain (i.e., approximate timing and distribution of weight gain);
- Specific advice and guidance about how to achieve weight gain goals and healthy pregnancies;
- Nutrition and physical activity (specific tailored advice);
- Anticipated changes to daily routines and lifestyles; and
- Updates to understand how their pregnancy is progressing.

53% of women reported that a weight gain information resource was shared with them by their HCPs, which was significantly higher than 40% in Time1. This was likely due to the introduction of the newly developed provincial resource HPHC (available in print and online formats), which has been in circulation since June 2013.

Despite 4800 resource packages being mailed to HCPs across the province, only 34.3% of HCPs recalled receiving the HPWG resource package. Of HCPs surveyed, 50% reported sharing some type of weight gain information resource with pregnant women. This was consistent with the 53% of women who reported receiving a weight gain resource from their HCP.

Only 33% of HCPs at Time2 reported often/always having discussion about weight gain with their pregnant clients. This was consistent with the report of one third of HCPs who considered themselves to be very/completely familiar with Health Canada 2010 Guidelines for Pregnancy Weight Gain. This was also consistent with 27% of women who identified having a discussion with their HCP and/or access to resources to have the biggest impact on their eating habits, physical activity, and weight gain during pregnancy. Respondents *own desire for a healthy pregnancy and birth* was found to be the main motivation for a healthy pregnancy weight gain.

The IOM (2009) in an examination of the evidence for associations between GWG and policy and health care services (particularly practitioners' advice on GWG) found that despite published recommendations, women did not consistently receive advice about healthy GWG from practitioners, and the advice women did receive was often not consistent with the IOM guidelines. This evaluation found that 59% of women in Time1 and 54% in Time2 had **not** received an accurate weight gain target based on their pre-pregnancy BMI. The IOM (2009) continues to recommend that practitioners become familiar with the guidelines for GWG, educate women on the importance of gaining weight within the recommended ranges, and help women achieve healthy GWG by providing dietary and physical activity counseling.

Literature shows that most HCPs acknowledge the importance of healthy weight gain during pregnancy. However, there are a range of barriers, including a lack of formal training, lack of resources for sharing, uncertainty about counseling effectiveness, time constraints and sensitivity of the topic, that prevent them from having effective communication about weight management with pregnant women (Stotland et al. 2010, Johnson et al. 2013, Knight-Agarwal et al. 2014). On the other hand, scholars in the field of knowledge translation argue that there is a tendency among health professionals to delay the uptake of any new application of research-based evidence that deviates

from their routine practice (Grimshaw et al. 2012). These need to be taken into consideration for effective interventions that are designed to target HCPs' behavior change.

Overall, 45% of women at Time2 gained in excess of the weight gain guidelines during their pregnancy, which was significantly lower than 52% in Time1. Similar to Time1, women who were in the underweight and healthy weight categories prior to pregnancy were more likely to meet or gain below the recommendations than women categorized as overweight and obese. Of the women who fell into the overweight and obese categories, 67% and 68.5% gained above the total weight gain guidelines, respectively. This is consistent with a previous study in Alberta that showed women who gained above recommendations were more likely to be overweight or obese pre-pregnancy (Begum et al. 2012).

Another important finding was that more than 36% of women in the underweight BMI category gained less weight than recommended for their pregnancy, which imposes another set of risks to the pregnancy outcome. This finding emphasizes the importance of support for appropriate weight management during pregnancy for women across all of the BMI categories.

Recent information from the Alberta Perinatal Health Program (APHP 2013 & 2014) shows the public health significance of some of the pregnancy outcomes that can be associated with inadequate or excess GWG. These include:

- SGA rate; 11.4%,
- High birth weight (>4000 grams) rate; 9.4%,
- Preterm birth rate; 8.7%,
- LGA rate; 8.6%,
- Low birth weight (<2500 grams) rate; 7.0%,
- Gestational diabetes rate; 5.7%,
- Macrosomia (>4500grams) rate; 1.5%,
- Rate of initiation of breastfeeding; 91%, breastfeeding rates (up to 2 months); 31%, breastfeeding rates (6-12 months); 26%.

Development and dissemination of HPWG information resources were the foundational steps to make standardized resources and consistent information available for both HCPs and women. This evaluation did not identify any changes in HCPs self-assessment of their knowledge of HPWG and their practice in providing weight gain counseling and information to pregnant women between Times 1 and 2. Other interventions are warranted to help translate the knowledge of HPWG into effective practices and further improve the pregnancy outcomes across Alberta.

Recommendations

Recommendations based on evaluation data includes:

| Topic | Recommendation |
|--|---|
| HPWG resource access and uptake | Improve access and uptake of pregnancy information resources and tools for both HCPs and women (information not contained in the HPHC resources). |
| | Continue communication efforts of the dissemination and ordering processes of print and online resources (Singleton Weight Gain Graphs, HPWG BMI Calculator Wheels, HPHC print and online products). |
| Facilitate development of personal skills related to healthy eating and active living | Continue to maintain and/or enhance HPWG resources for women. |
| Health marketing | Explore health marketing strategies to increase awareness of HPWG and HPWG resources with women and HCPs. |
| Develop universal interventions | Continue research collaboration with the ENRICH Research Project to identify universal strategies to support HPWG in Alberta. |
| Capacity building among HCPs to further support HPWG | Explore opportunities to provide HCPs with further training and information on the provincial HPWG guidelines. |
| | Continue to maintain and/or enhance HCP resources and explore feasibility of developing HPWG Clinical Practice Guidelines. |
| | Continue to collaborate with the ENRICH Research Project to identify barriers and enablers of GWG counselling among HCPs in Alberta and appropriate behavior change strategies that need to be applied. |

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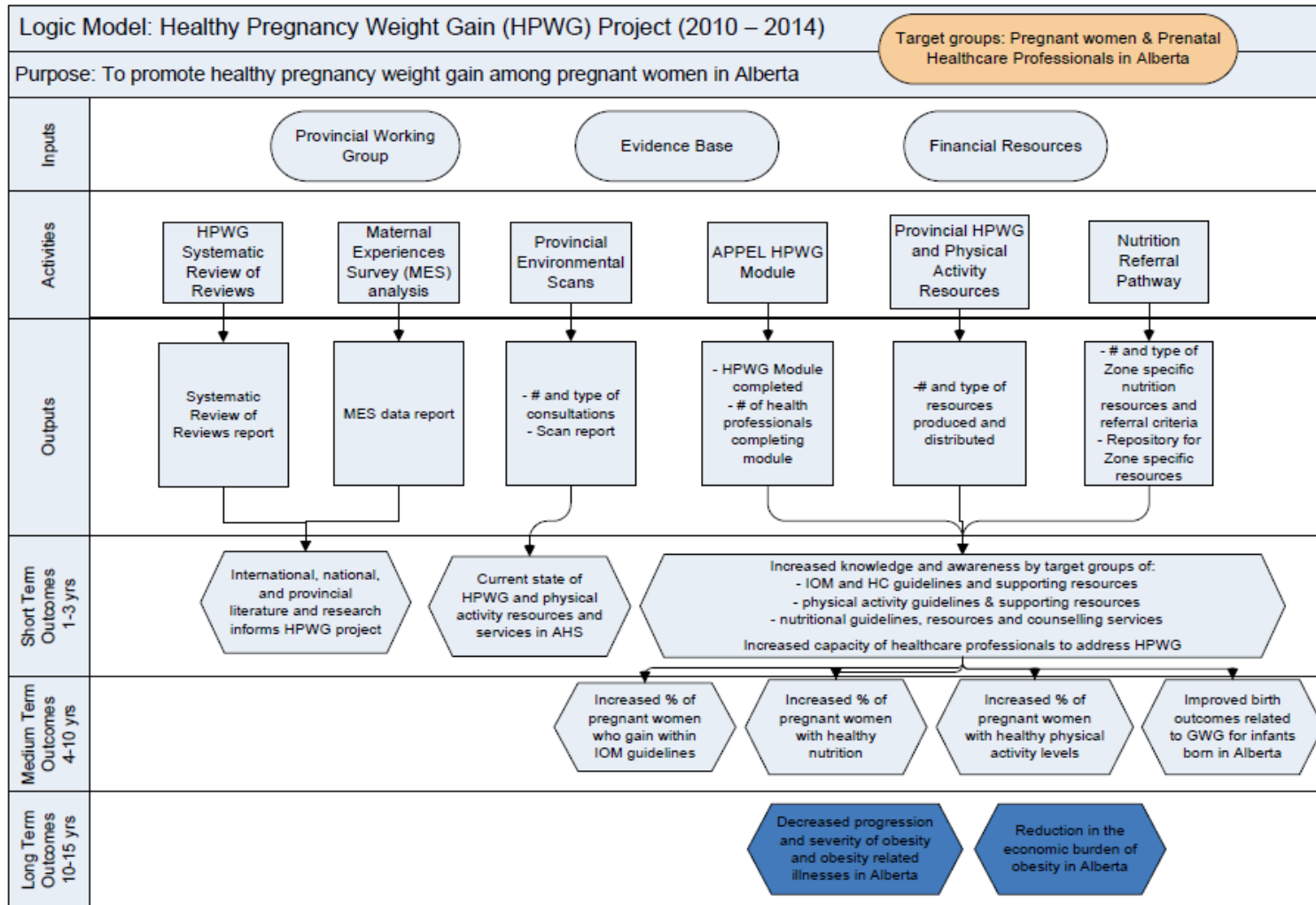
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APPENDIX A: HPWG LOGIC MODEL



APPENDIX B: TIME2 POSTPARTUM WOMEN'S SURVEY

Thank you for taking the time to complete this pregnancy survey. The purpose of this survey is to gather your feedback around pregnancy weight gain, nutrition and physical activity. This information will be used to inform future research and decision-making related to pregnancy weight gain in Alberta, and may be used in future publications.

We are interested in the experiences you personally had during pregnancy. If you have had multiple children, please answer the survey questions as they relate to your most recent pregnancy.

You may choose not to answer any or all questions in this survey. If you do choose to complete this survey, please answer as many questions as you feel you can.

Please be assured that your responses will be reported in a summarized format that ensures all responses remain anonymous. If this survey questions raises any concerns, please call Health Link Alberta at 1-866-408-5465 (LINK).

Healthcare Provider: Refers to physicians, midwives, nurses and dietitians.

1. **Please enter today's date:** ____/____/____ (day/month/year)

Weight Gain during Pregnancy

2. Did your healthcare provider discuss a weight gain target for your pregnancy?

- Yes..... (go to question 3)
- No..... (go to question 6)
- Don't know... (go to question 6)

3. If yes, did you think you could meet this weight gain target over the course of your pregnancy?

- Yes
- No
- Don't know

4. What was the total amount of weight (or weight range) your healthcare provider advised you to gain during your pregnancy? Please indicate in either pounds or kilograms.

_____ lbs or _____ kg

- Don't know/can't remember

5. When did your healthcare provider first discuss a weight gain target for your pregnancy?

- Before pregnancy
- During my first trimester
- During my second trimester
- During my third trimester
- Don't know/can't remember

6. Did your healthcare provider show, give or discuss any of the following weight gain resources with you during your pregnancy?

(Please select all that apply)

- Healthy Eating & Active Living for Pregnancy booklet
- Healthy Parents, Healthy Children resource (print or online)
- Singleton Weight Gain Graphs
- BMI or Healthy Pregnancy Weight gain calculator
- No, my healthcare provider did not show, give or discuss any weight gain resources with me
- Don't know/can't remember
- Other (please specify): _____

7. What made the biggest impact on your pregnancy weight gain?

- Resources shown or given to me
- Discussion with my healthcare provider
- Both the resources and the discussion
- Neither the resources nor the discussion
- Don't know/can't remember
- Other (please specify): _____

8. How often did your healthcare provider measure and record your weight?

(Please select one answer only)

- Every prenatal visit
- Most prenatal visits
- Some prenatal visits
- Never
- Don't know/can't remember

9. In your opinion, what impact do you think pregnancy weight gain can have **on you**?

10. In your opinion, what impact do you think pregnancy weight gain can have on **your baby**?

11. Did any of the following make it difficult for you to stay within the weight range recommended when you were pregnant?

(Please select all that apply)

- Food cravings during pregnancy
- Time constraints
- Feeling sick during my pregnancy
- Feeling fatigued during my pregnancy
- Difficulty being physically active during my pregnancy
- I did not find it difficult to stay within the weight range recommended
- A weight range was not recommended when I was pregnant
- Other (please specify): _____

12. Did any of the following help you stay within the weight range recommended when you were pregnant?

(Please select all that apply)

- Eating healthy
- Engaging in physical activity
- Drinking lots of water
- Fatigue and/or illness during pregnancy
- Support from my family or friends
- Being active with my other children
- Concerns about not being able to lose the weight after my baby was born
- Regular check-ups with my healthcare provider
- I did not stay within the weight range recommended when I was pregnant
- A weight range was not recommended when I was pregnant
- Other (please specify): _____

13. How tall are you without shoes on?

_____ feet _____ inches or _____ cm

14. Just before your pregnancy, how much did you weigh?

_____ lbs or _____ Kg

15. How much weight did you gain in total during your pregnancy?

_____ lbs or _____ Kg

16. How much do you weigh now?

_____ lbs or _____ Kg

Physical Activity during Pregnancy

The next set of questions is focused on light, moderate, and, high intensity physical activity. Please read each question carefully. Some questions are about what you **think** was appropriate for you, and others are about what you **actually did** during your pregnancy.

Please read the definition below and answer Questions 17 and 18 as they relate to light-intensity physical activities.

Light-intensity physical activities: Require minimal effort (e.g. easy walking, household chores, low-intensity yoga, golf, bowling).

17. On average, how many days per week did you **think** that light-intensity physical activity, for more than 15 minutes, was appropriate for you throughout your pregnancy? (Please provide your answers in the table below).

| 1 st Trimester (days/week) | 2 nd Trimester (days/week) | 3 rd Trimester (days/week) |
|---|---|---|
| <input type="radio"/> 0 | <input type="radio"/> 0 | <input type="radio"/> 0 |
| <input type="radio"/> 1 | <input type="radio"/> 1 | <input type="radio"/> 1 |
| <input type="radio"/> 2 | <input type="radio"/> 2 | <input type="radio"/> 2 |
| <input type="radio"/> 3 | <input type="radio"/> 3 | <input type="radio"/> 3 |
| <input type="radio"/> 4 | <input type="radio"/> 4 | <input type="radio"/> 4 |
| <input type="radio"/> 5 | <input type="radio"/> 5 | <input type="radio"/> 5 |
| <input type="radio"/> 6 | <input type="radio"/> 6 | <input type="radio"/> 6 |
| <input type="radio"/> 7 | <input type="radio"/> 7 | <input type="radio"/> 7 |
| <input type="radio"/> Don't know/can't remember | <input type="radio"/> Don't know/can't remember | <input type="radio"/> Don't know/can't remember |

18. On average, how many days per week did you **actually** participate in light-intensity physical activity, for more than 15 minutes, before and throughout your pregnancy? (Please provide your answers in the table below.)

| Before pregnancy (days/week) | 1 st Trimester (days/week) | 2 nd Trimester (days/week) | 3 rd Trimester (days/week) |
|---|---|---|---|
| <input type="radio"/> 0 | <input type="radio"/> 0 | <input type="radio"/> 0 | <input type="radio"/> 0 |
| <input type="radio"/> 1 | <input type="radio"/> 1 | <input type="radio"/> 1 | <input type="radio"/> 1 |
| <input type="radio"/> 2 | <input type="radio"/> 2 | <input type="radio"/> 2 | <input type="radio"/> 2 |
| <input type="radio"/> 3 | <input type="radio"/> 3 | <input type="radio"/> 3 | <input type="radio"/> 3 |
| <input type="radio"/> 4 | <input type="radio"/> 4 | <input type="radio"/> 4 | <input type="radio"/> 4 |
| <input type="radio"/> 5 | <input type="radio"/> 5 | <input type="radio"/> 5 | <input type="radio"/> 5 |
| <input type="radio"/> 6 | <input type="radio"/> 6 | <input type="radio"/> 6 | <input type="radio"/> 6 |
| <input type="radio"/> 7 | <input type="radio"/> 7 | <input type="radio"/> 7 | <input type="radio"/> 7 |
| <input type="radio"/> Don't know/can't remember | <input type="radio"/> Don't know/can't remember | <input type="radio"/> Don't know/can't remember | <input type="radio"/> Don't know/can't remember |

Please read the definition below and answer Questions 19 and 20 as they relate to moderate-intensity physical activities.

Moderate-intensity physical activities: Require more effort than light physical activities but individuals are still able to maintain a conversation (e.g. structured exercise sessions, fast walking, stationary bicycling, tennis, swimming).

19. On average, how many days per week did you **think** that moderate-intensity physical activity, for more than 15 minutes, was appropriate for you throughout your pregnancy? (Please provide your answers in the table below.)

| 1 st Trimester (days/week) | 2 nd Trimester (days/week) | 3 rd Trimester (days/week) |
|---|---|---|
| <input type="radio"/> 0 | <input type="radio"/> 0 | <input type="radio"/> 0 |
| <input type="radio"/> 1 | <input type="radio"/> 1 | <input type="radio"/> 1 |
| <input type="radio"/> 2 | <input type="radio"/> 2 | <input type="radio"/> 2 |
| <input type="radio"/> 3 | <input type="radio"/> 3 | <input type="radio"/> 3 |
| <input type="radio"/> 4 | <input type="radio"/> 4 | <input type="radio"/> 4 |
| <input type="radio"/> 5 | <input type="radio"/> 5 | <input type="radio"/> 5 |
| <input type="radio"/> 6 | <input type="radio"/> 6 | <input type="radio"/> 6 |
| <input type="radio"/> 7 | <input type="radio"/> 7 | <input type="radio"/> 7 |
| <input type="radio"/> Don't know/can't remember | <input type="radio"/> Don't know/can't remember | <input type="radio"/> Don't know/can't remember |

20. On average, how many days per week did you **actually** participate in moderate-intensity physical activity, for more than 15 minutes, before and throughout your pregnancy? (Please provide your answers in the table below)

| Before pregnancy (days/week) | 1 st Trimester (days/week) | 2 nd Trimester (days/week) | 3 rd Trimester (days/week) |
|---|---|---|---|
| <input type="radio"/> 0 | <input type="radio"/> 0 | <input type="radio"/> 0 | <input type="radio"/> 0 |
| <input type="radio"/> 1 | <input type="radio"/> 1 | <input type="radio"/> 1 | <input type="radio"/> 1 |
| <input type="radio"/> 2 | <input type="radio"/> 2 | <input type="radio"/> 2 | <input type="radio"/> 2 |
| <input type="radio"/> 3 | <input type="radio"/> 3 | <input type="radio"/> 3 | <input type="radio"/> 3 |
| <input type="radio"/> 4 | <input type="radio"/> 4 | <input type="radio"/> 4 | <input type="radio"/> 4 |
| <input type="radio"/> 5 | <input type="radio"/> 5 | <input type="radio"/> 5 | <input type="radio"/> 5 |
| <input type="radio"/> 6 | <input type="radio"/> 6 | <input type="radio"/> 6 | <input type="radio"/> 6 |
| <input type="radio"/> 7 | <input type="radio"/> 7 | <input type="radio"/> 7 | <input type="radio"/> 7 |
| <input type="radio"/> Don't know/can't remember | <input type="radio"/> Don't know/can't remember | <input type="radio"/> Don't know/can't remember | <input type="radio"/> Don't know/can't remember |

Please read the definition below and answer Questions 21 and 22 as they relate to high-intensity physical activities.

High-intensity physical activities: Involves vigorous activity where individuals work up a sweat, their heart beats fast and they are unable to carry on a conversation for very long (e.g. fast running, fast stationary cycling, vigorous swimming).

21. On average, how many days per week did you **think** that high-intensity physical activity, for more than 15 minutes, was appropriate for you throughout your pregnancy? (Please provide your answers in the table below.)

| 1 st Trimester (days/week) | 2 nd Trimester (days/week) | 3 rd Trimester (days/week) |
|---|---|---|
| <input type="radio"/> 0 | <input type="radio"/> 0 | <input type="radio"/> 0 |
| <input type="radio"/> 1 | <input type="radio"/> 1 | <input type="radio"/> 1 |
| <input type="radio"/> 2 | <input type="radio"/> 2 | <input type="radio"/> 2 |
| <input type="radio"/> 3 | <input type="radio"/> 3 | <input type="radio"/> 3 |
| <input type="radio"/> 4 | <input type="radio"/> 4 | <input type="radio"/> 4 |
| <input type="radio"/> 5 | <input type="radio"/> 5 | <input type="radio"/> 5 |
| <input type="radio"/> 6 | <input type="radio"/> 6 | <input type="radio"/> 6 |
| <input type="radio"/> 7 | <input type="radio"/> 7 | <input type="radio"/> 7 |
| <input type="radio"/> Don't know/can't remember | <input type="radio"/> Don't know/can't remember | <input type="radio"/> Don't know/can't remember |

22. On average, how many days per week did you **actually** participate in high-intensity physical activity, for more than 15 minutes, before and throughout your pregnancy? (Please provide your answers in the table below)

| Before pregnancy (days/week) | 1 st Trimester (days/week) | 2 nd Trimester (days/week) | 3 rd Trimester (days/week) |
|---|---|---|---|
| <input type="radio"/> 0 | <input type="radio"/> 0 | <input type="radio"/> 0 | <input type="radio"/> 0 |
| <input type="radio"/> 1 | <input type="radio"/> 1 | <input type="radio"/> 1 | <input type="radio"/> 1 |
| <input type="radio"/> 2 | <input type="radio"/> 2 | <input type="radio"/> 2 | <input type="radio"/> 2 |
| <input type="radio"/> 3 | <input type="radio"/> 3 | <input type="radio"/> 3 | <input type="radio"/> 3 |
| <input type="radio"/> 4 | <input type="radio"/> 4 | <input type="radio"/> 4 | <input type="radio"/> 4 |
| <input type="radio"/> 5 | <input type="radio"/> 5 | <input type="radio"/> 5 | <input type="radio"/> 5 |
| <input type="radio"/> 6 | <input type="radio"/> 6 | <input type="radio"/> 6 | <input type="radio"/> 6 |
| <input type="radio"/> 7 | <input type="radio"/> 7 | <input type="radio"/> 7 | <input type="radio"/> 7 |
| <input type="radio"/> Don't know/can't remember | <input type="radio"/> Don't know/can't remember | <input type="radio"/> Don't know/can't remember | <input type="radio"/> Don't know/can't remember |

23. Did your healthcare provider show, give or discuss any physical activity resources with you during your pregnancy?

(Please select all that apply)

- Healthy Eating & Active Living for Pregnancy booklet
- Healthy Parents, Healthy Children resource (print or online)
- Physical Activity Readiness Medical Examination for Pregnancy (PARmed-X for Pregnancy)
- No, my healthcare provider did not share any physical activity resources with me
- Don't know/can't remember

Other (Please specify): _____

24. What made the biggest impact on your physical activity routine during pregnancy?

- Resources shown or given to me
- Discussion with my healthcare provider
- Both the resources and discussion
- Neither the resources nor the discussion
- Don't know/can't remember
- Other (Please specify): _____

25. Did you make changes to your physical activity routine during pregnancy?

- Yes..... (go to question 26)
- No..... (go to question 27)
- Don't know... (go to question 27)

26. If yes, please explain why you made changes to your physical activity routine during pregnancy.

Nutrition during Pregnancy

The next question is about how much extra food you **think** was appropriate for you during each trimester of your pregnancy, not how much extra food you actually ate.

27. How much extra food do you **think** you needed during each trimester of your pregnancy,? (Please select one answer for each trimester.)

Examples of one extra serving (Canada's Food Guide):

Vegetables and Fruit:

- 250 mL (1 cup) of leafy raw vegetables or salad
- 1 piece of fruit

Grain Products:

- 1 slice of bread or ½ bagel
- 125 mL (1/2 cup) cooked rice,

Meat and Alternatives:

- 75 g (2 ½ oz.) / 125 mL (1/2 cup) cooked fish, poultry or lean meat
- 2 eggs

Milk and Alternatives:

- 250 mL (1cup) milk or fortified soy beverage
- 175 g (3/4 cup) yogurt

Please check one box for each trimester:

| How many extra servings do you think you needed during your pregnancy from any food group per day ? | 1 st Trimester | 2 nd Trimester | 3 rd Trimester |
|---|------------------------------|------------------------------|------------------------------|
| No extra servings needed | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 1 extra serving (equivalent to 150-175 calories) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 2 -3 extra servings (equivalent to 300-500 calories) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 4-5 extra servings (equivalent to 500-900 calories) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| 6-7 extra servings (equivalent to 900-1200 calories) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| More than 8 extra servings (equivalent to more than 1200 calories) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Don't know/Can't remember | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |

28. Did your healthcare provider help you with your nutrition needs during your pregnancy?

(Please select all that apply)

- I did not have any nutrition needs that required help from my healthcare provider
- Yes, provided me the Healthy Eating & Active Living for Pregnancy booklet
- Yes, provided me the Healthy Parents, Healthy Children resource (print or online)
- Yes, provided me Canada's Food Guide
- Yes, listened to, and answered, my questions
- Yes, referred me to a dietitian
- Yes, referred me to a prenatal class
- Yes, referred me to a prenatal nutrition class
- Yes, referred me to a program that gave me free food or milk coupons
- No, my healthcare provider did not help me with my nutrition needs
- Don't know/can't remember
- Other (Please specify): _____

29. What made the biggest impact on your eating habits during pregnancy?

- Resources shown or given to me
- Discussion with my healthcare provider
- Both the resources and discussion
- Referrals to specialists, including Dietitians
- Resources, discussion and referral
- None of the above
- Don't know/can't remember
- Other (Please specify): _____

30. Did you make changes to your food and/or beverage intake during pregnancy?

- Yes..... (go to question 31)
- No..... (go to question 32)
- Don't know... (go to question 32)

31. What changes did you make to your eating habits during pregnancy? (Please select the appropriate answers)

| | Increased/ Added In | Decreased/ Removed | Kept the Same | Don't Know | Not Applicable |
|---|--------------------------------|-------------------------------|--------------------------|-------------------|---------------------------|
| Amount of Food (portion size) | | | | | |
| Meal Skipping | | | | | |
| Caffeinated Coffee/ Tea | | | | | |
| Decaffeinated Coffee/ Tea | | | | | |
| Milk | | | | | |
| Milk Products (e.g., yogurt, cheese) | | | | | |
| Meat | | | | | |
| Meat Alternatives (e.g. beans, legumes, nuts/seeds, tofu, eggs, fish) | | | | | |
| Sugar-Sweetened Beverages (e.g. pop, iced tea, slushes, fruit punch, specialty coffees) | | | | | |
| 100% Fruit Juice | | | | | |
| Fruit: Fresh, Frozen or Canned | | | | | |
| Vegetables: Fresh, Frozen or Canned (except: fries, hash | | | | | |

| | Increased/ Added In | Decreased/ Removed | Kept the Same | Don't Know | Not Applicable |
|---|------------------------|-----------------------|------------------|------------|-------------------|
| browns or chips) | | | | | |
| Whole Grains (e.g. oatmeal, brown rice, brown bread, whole wheat pasta) | | | | | |
| Nutritious Snacks | | | | | |
| Sweet Foods (e.g. cake, cookies, chocolate bars, candy, ice cream) | | | | | |
| High Fat Snacks (e.g. fries, chips, cheesies) | | | | | |
| Fast Foods | | | | | |
| Other, please specify: | | | | | |

Demographic information

32. How old are you? _____ years old

33. When was your baby born? _____(please include day, month and year)

34. How many weeks pregnant were you when you had your baby? (e.g. 36 weeks, 40 weeks etc)
_____ weeks

35. How much did your baby weigh when he/she was born?

_____ lbs _____ oz or _____ kg

36. Was your baby a boy or girl?

- Boy
- Girl

37. How long was your baby when he/she was born?

_____ inches or _____ cm

38. What is your marital status?

- Married
- Living common law
- Widowed
- Separated
- Divorced
- Single, never married
- Prefer not to answer

39. How many pregnancies have you had that resulted in children?

- 1
- 2
- 3 or more
- Prefer not to answer

40. What is the highest level of education you have completed?

- Did not finish high school
- High school diploma
- Some education or training after high school
- College diploma
- University degree
- Postgraduate university degree
- Don't know
- Prefer not to answer

41. What is your best estimate of the total income, before taxes and deductions, of all household members from all sources in the past 12 months?

- less than \$20,000
- \$20,000 to less than \$40,000
- \$40,000 to less than \$60,000
- \$60,000 to less than \$80,000
- \$80,000 to less than \$100,000
- \$100,000 to less than \$150,000
- \$150,000 or more
- Don't know
- Prefer not to answer

42. What is your postal code? _____

43. **Comments:** If you have any further comments, please write them below:

Thank you for taking the time to complete this survey!

APPENDIX C: TIME2 HCPS SURVEY

This survey is part of an Alberta Health Services program to promote healthy pregnancy weight gain amongst women in Alberta. Your input and participation in this survey will be used to support healthcare providers in their efforts to help women gain a healthy amount of weight during pregnancy.

Your participation is completely voluntary. This survey will take approximately 5 minutes to complete. Completing this survey implies your consent to participate. Results will be presented in an aggregate format and may be used in future publications related to this project.

Background:

In the fall of 2012, Alberta Health Services provided healthcare providers with a Healthy Pregnancy Weight Gain resource package for their information and use. The package included the following resources:

- A background/ introductory document
- The Healthy Eating and Active Living (HEAL) for Pregnancy booklet
- Singleton weight gain graphs based on pre-pregnancy BMI
- A BMI calculator wheel
- A handout on key actions and messages for health care providers, and
- The Nutrition in Pregnancy webpage (for healthcare providers to use to refer a woman to a dietitian)

1. Please indicate whether you have ever received the Healthy Pregnancy Weight Gain resource package:

- Yes, I did receive the Healthy Pregnancy Weight Gain resource package..... (Go to question 2)
- No, I did not receive the Healthy Pregnancy Weight Gain resource package... (Go to question 3)
- Don't know/Can't remember..... (Go to question 3)

2. Please indicate whether you share the resources from the package with pregnant women:

- Yes, I do share the resources from the resource package with pregnant women
- No, I do not share the resources from the resource package with pregnant women
- No opinion

2a. If no, please describe why you do not share the resources from the resource package with pregnant women.

3. How familiar are you with the following guidelines?

| | Not at all familiar | Slightly familiar | Moderately familiar | Very familiar | Completely familiar |
|---|-----------------------|-----------------------|-----------------------|-----------------------|-----------------------|
| a. Health Canada 2010 guidelines for pregnancy weight gain | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| b. Joint Society of Obstetricians and Gynecologists of Canada (SOGC) and Canadian Society for Exercise Physiology (CSEP) guidelines for exercise in pregnancy | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| c. Physical Activity Readiness Medical Examination (PARmed-X) for Pregnancy | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |
| d. Health Canada's Prenatal Nutrition Guidelines for Health Professionals | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> | <input type="radio"/> |

4. What **weight gain** information resources (print or electronic) do you show, give or discuss with pregnant women? (Select all that apply)

- Healthy Eating & Active Living for Pregnancy booklet
- Singleton Weight Gain Graphs
- BMI or pregnancy weight gain calculator
- Healthy Parents, Healthy Children resource (print or online)
- I do not show, give or discuss any of the above weight gain resources with pregnant women
- Other, please specify: _____

5. What **physical activity** information resources (print or electronic) do you show, give or discuss with pregnant women? (Select all that apply)

- Healthy Eating & Active Living for Pregnancy booklet
- Physical Activity Readiness Medical Examination for Pregnancy (PARmed-X for Pregnancy)
- Healthy Parents, Healthy Children resource (print or online)
- I do not show, give or discuss any of the above physical activity resources with pregnant women
- Other, please specify: _____

6. What **nutrition** information resources (print or electronic) do you show, give or discuss with pregnant women? (Select all that apply)

- Healthy Eating & Active Living for Pregnancy booklet
- Canada's Food Guide
- Healthy Parents, Healthy Children resource (print or online)
- I do not show, give or discuss any of the above nutrition resources with pregnant women
- Other, please specify: _____

f. information resources to promote nutrition during pregnancy

g. programs for referral to promote nutrition during pregnancy (e.g., dietitian, prenatal nutrition classes).

8. What are the best ways to share additional resources with you?

Demographic information:

9. In which Alberta Health Services Zone do you work?

- North
- Edmonton
- Central
- Calgary
- South
- Not sure, please tell us the community(ies) where you work:

10. What is your occupational specialty?

- General Practitioner
- Family Physician
- Obstetrician
- Gynecologist
- Midwife
- Nurse Practitioner
- Registered Nurse
- Registered Dietitian
- Other, please specify: _____

Comments: If you have any further comments, please write them below:

Thank you for taking the time to complete this survey!