Women’s Experiences with Gestational Weight Gain:
A Qualitative Investigation of Canadian Women’s Thoughts,
Experiences and Current Practices

by

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This thesis investigates women’s experiences with their pregnancy weight gain and eating and describes women’s experiences with prenatal care regarding these topics. In total, 15 first time mothers who delivered within a year post partum, participated in one-on-one semi-structured interviews. Thematic analysis was conducted. The results highlight that women’s experiences with pregnancy weight gain and eating are complex, change across pregnancy, and are influenced by many factors. In addition, the study explains women’s experiences with prenatal care, the pregnancy weight gain and eating information they receive and ideas for future resources. It identified four main gaps within prenatal care: 1) Prenatal care is not individualized, 2) Taking a client centered approach, 3) Educational opportunities earlier and later, and 4) More guidance on eating and weight gain. Data reveals opportunities to optimize prenatal care to best support future outcomes for mom and baby.
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BMI: Body Mass Index
CI: Confidence Interval
DM: Diabetes Mellitus
GDM: Gestational Diabetes Mellitus
GHT: Gestational Hypertension
HEI: Healthy Eating Index
IOM: Institute of Medicine
Lbs.: Pounds
MES: Canadian Maternity Experiences Survey
NICU: Neonatal intensive care unit
NRC: National resource counsel
OR: Odds Ratio
PHAC: Public Health Agency of Canada (PHAC)
WC: Waist Circumference
CHAPTER 1: LITERATURE REVIEW

Excess gestational weight gain is defined as gaining above the Institute of Medicine’s (IOM) (2009) recommendations. It is associated with risks for both the mother and the infant during pregnancy, labour and delivery, and post partum. This study aims to understand pregnant women’s experiences with gestational weight gain. The literature review begins with an overview of the IOM pregnancy weight gain guidelines, consequences associated with gaining too much weight in pregnancy, and the Canadian prevalence rates of excess gestational weight gain. Since there are a wide variety of factors that influence gestational weight gain, the review focuses on the exploration of the sociocultural, physiological and psychological factors. This review will also explore women’s experiences, knowledge, thoughts and attitudes towards their weight gain; and experiences with their health care providers. It is important to understand what women are practicing regarding gestational weight gain management; therefore, this review will conclude with descriptions of the motivators, barriers and strategies encompassing these practices.

1.1 IOM Guidelines

1.1.1 Weight Gain Recommendations According to the IOM Guidelines

In 2009 the National Resource Counsel (NRC) and IOM published a report with gestational weight gain guidelines based on long term and short term consequences of variations in pregnancy weight gain for both the mother and the infant (see Table 1) (NRC, 2009). The guidelines are categorized based on pre-pregnancy body mass index (BMI) and state that underweight women (BMI ≤ 18.3kg/m²) are recommended to gain between 28-40 pounds (12.5-18kg), normal weight women (BMI 18.5-24.9kg/m²) are recommended to gain between 25-35
pounds (11.5-16kg), overweight women (BMI 25.0-29.9) are recommended to gain between 15-25 pounds (7-11.5kg), and obese women (BMI $\geq 30$ kg/m$^2$) are recommended to gain between 11-20 pounds (5-9kg). The guidelines also suggests that the majority of pregnancy weight gain should occur in the second and third trimesters (NRC, 2009). Currently, Health Canada implements the IOM 2009 recommendations for use in clinical practice.

<table>
<thead>
<tr>
<th>Pre-Pregnancy BMI Category</th>
<th>Recommended Total Weight Gain During Pregnancy</th>
</tr>
</thead>
<tbody>
<tr>
<td>BMI &lt; 18.5 Underweight</td>
<td>12.5 – 18.0 kg</td>
</tr>
<tr>
<td>BMI 18.5 -24.9 Normal Weight</td>
<td>11.5 – 16.0 kg</td>
</tr>
<tr>
<td>BMI 25 – 29.9 Overweight</td>
<td>7.0 – 11.5 kg</td>
</tr>
<tr>
<td>BMI $\geq$ 30.0 Obese</td>
<td>5.0 – 9.0 kg</td>
</tr>
</tbody>
</table>

*Table 1. IOM recommended pregnancy weight gain guidelines*
1.2 Consequences of Excess Gestational Weight Gain

1.2.1 Maternal Outcomes Associated with Excess Gestational Weight Gain

1.2.1.1 Gestational Hypertension (GHT) and Pre-eclampsia

Research has found a strong positive relationship between excess gestational weight gain and developing gestational hypertension (GHT) and pre-eclampsia. A large national study conducted in 2,102,642 women from the United States, found the odds of developing GHT and pre-eclampsia were increased by 1.68 times for women who gained 1-19lbs over the guidelines (95% CI = 1.65 – 1.71), and were increased by 2.78 times for women who gained 20lbs or more over the guidelines (95% CI = 2.82 - 2.93), compared to women who gained within the guidelines (Truong, Yee, Caughey, & Cheng, 2015). In addition, the risk of developing eclampsia increased by 1.55 times for women gaining 1-19 lbs. above the guidelines (95% CI = 1.42 – 1.70) and by 2.51 times for women gaining 20 lbs. above the guidelines (95% CI = 2.82 – 2.93) (Truong et al., 2015). Similar results were also found in a Canadian study conducted in 5377 women from Newfoundland and Labrador (Crane, White, Murphy, Burrage, & Hutchens, 2009). The study found that, compared to those with normal gestational weight gain, women who gained excess weight had a 27% greater risk of developing GHT (95% CI = 1.08 – 1.49, p < .01) and women with an overweight pre-pregnancy BMI who gained excess weight had a 31% increase in risk of developing GHT (95% CI = 1.10 – 1.55, p < .01) (Crane et al., 2009).

1.2.1.2 Gestational Diabetes Mellitus (GDM)

Excess gestational weight gain is also associated with an increased risk of developing gestational diabetes mellitus (GDM). A retrospective case control study was conducted to assess the relationship between gestational weight gain before 24 weeks gestation and the development of GDM. A total of 163 women with GDM compared to 163 matched controls showed that
pregnant women who developed GDM gained significantly more weight by 24 weeks gestation (M = 14.8lb) than the women who did not (M = 11.2lb, p < .001) (Gibson, Waters, & Catalano, 2012). In addition, the study found that gestational weight gain at 12 weeks gestation for the GDM group (M = 4.0lb) was significantly greater than the women without GDM (M = 2.3lb, p < .05), suggesting that excess weight gain early in pregnancy may have a stronger influence on the development of GDM (Gibson et al., 2012).

The large cohort study by Troung and colleagues had different findings. Women who gained below the guidelines were 1.39 times more likely to have been diagnosed with GDM (95% CI= 0.91- 0.94), compared to women who gained within the guidelines. In addition, women who gained 1-19lbs over the guidelines and greater than 20lbs over the guidelines did not have any difference in odds of being diagnosed with GDM (OR= 0.92, 95% CI = 0.91 -0.94 and OR = 0.99, 95% CI = 0.96-1.01 respectively) (Truong et al., 2015). However, this study assessed total gestational weight gain, and women diagnosed with GDM likely receive dietary and counselling interventions that may minimize overall gestational weight gain in the third trimester. Also, the development of GDM is more likely to occur based on gestational weight gain rates in the first trimester and this study may have found different results if they assessed weight gain across trimesters rather than total pregnancy weight gain.

1.2.1.3 Excess Gestational Weight Gain and Labour Complications

Excess gestational weight gain is associated with an increased risk of labour and delivery complications such as being induced, delivery by C-section and emergency C-section, and birth trauma. Truong and colleagues (2015) found that compared to women who gained within the guidelines, women who gained above the guidelines had a 23% greater likelihood to be induced if they gained 1-19lb over the guidelines (CI = 1.22 – 1.24) and a 56% greater chance if they
gained greater than 20 lbs. over the guidelines (CI = 1.54 – 1.57) (Truong et al., 2015). In addition, the study found that women who gained greater than 20 lbs. over the guidelines had a 2-fold increased odds of delivering by C-section compared to women who gained within the guidelines (Truong et al., 2015).

Similar results were found by Haugen and colleagues (2014) in a Norwegian study done in 56,101 women. This study showed that compared to women who gained within the IOM (2009) guidelines, nulliparous women with a normal, overweight, and obese pre-pregnancy BMI, who gained excess gestational weight, had a significantly increased OR of having an emergency C-section (OR= 1.44, 95% CI = 1.28 -1.62, p < .001; OR = 1.42 95% CI 1.14- 1.77, p < .01; OR = 1.39, 95% CI = 1.04 -1.84, p < .05; respectively) (Haugen et al., 2014). In addition, the study found that parous women who gained excess gestational weight with a normal and overweight pre-pregnancy BMI had a significantly increased odds of having an emergency C-section (OR = 1.48, 95% CI =1.23 -1.78, p < .001; OR = 1.95, 95% CI = 1.41 -2.69, p < .001; respectively) (Haugen et al., 2014).

**1.2.1.4 Long-term Maternal Outcomes of Excess Gestational Weight Gain**

In addition to the numerous pregnancy and delivery complications, excess gestational weight gain is associated with a multitude of post-partum consequences. Women who gain excess weight in pregnancy, and that are unable to lose the weight post-partum are more likely to enter their next pregnancy overweight and obese. This is associated with a host of other complications in that subsequent pregnancy. A meta-analysis of 12 studies from different continents, found that women who gained excess gestational weight retained an additional 3.18 kg (7 lbs.) at 21 years post-partum. In addition, the study found that post-partum weight retention followed a U shaped pattern, with a decrease in weight early post-partum and an increase in
weight in the later follow-up period (Mannan, Doi, & Mamun, 2013). A study conducted in Nova Scotia with 12,380 mothers, found that women who gained above the IOM (2009) guidelines were significantly more likely to retain the weight post-partum (M = 5kg, SD = 8.9) compared to women who gained within (M = 2.1kg, SD = 7.1) or below the guidelines (M = 0.4kg, SD = 8.2, p < .001) (Ashley-Martin & Woolcott, 2014).

Recent literature suggests a positive connection between trimester specific weight gain and post-partum weight retention. A study by Walter and colleagues (2015), assessed trimester specific weight gain and maternal adiposity at 3 and 5 years post-partum (Walter et al., 2015). The study found an association between excess weight gain in the 1st trimester and post-partum weight retention and waist circumference in both normal weight, overweight and obese women (Walter et al., 2015). However, no significant associations were found between excess weight gain in the 2nd and 3rd trimesters and post-partum weight retention and waist circumference (Walter et al., 2015). This study demonstrates that controlling first trimester gestational weight gain may decrease the chance of weight retention post-partum. However, further studies are needed to assess if weight control methods in the 1st trimester can attenuate post-partum weight retention.

Research also suggests that excess gestational weight gain may increase the mother’s risk of cardio metabolic complications postpartum. An Australian study of 3386 women found that women who gained excess weight in pregnancy had a 47% increased odds (OR = 1.47, 95% CI 1.11 -1.94) of developing diabetes mellitus (DM) at 21 years post-partum compared to women with an adequate weight gain (Abdullah A. Mamun et al., 2010). In contrast, the study noted above by Walter and colleagues (2015) found no relation between excess weight gain and insulin resistance at 3 or 7 years post-partum; however, they did see an association between 1st
trimester weight gain and systolic blood pressure at 3 years post-partum (Walter et al., 2015). This research suggests that excess weight gain may contribute to cardio metabolic complications but these may develop over longer time periods. Future studies with longer follow-up periods are needed to assess the long-term risk factors associated with excess gestational weight gain.

1.2.2 Neonatal Outcomes Associated with Excess Gestational Weight Gain

1.2.2.1 Short-term Outcomes of Excess Gestational Weight Gain on the Fetus

Excess gestational weight gain may lead to fetal complications during pregnancy and delivery. There is strong evidence demonstrating gaining above the IOM guidelines can increase the odds of delivering a macrosomic infant. The large U.S. study by Truong and colleagues (2015) cited above, found that, compared to women with normal gestational weight gain, there was an increased odds ratio of 2.3 for delivering a large for gestational age baby (>97th centile) (95% CI = 2.24 – 2.42) among women who gain 1-19 lbs. over the guidelines, and an odds ratio of 5.7 (95% CI = 5.46 – 5.92) for women gaining greater than 20 lbs. more than the IOM guidelines (Truong et al., 2015). The Truong study also showed that gaining above the guidelines can result in other birth complications such as an increase in the odds of having birth trauma (OR = 1.23, 95% CI = 1.09 – 1.40 for women gaining 1-19lbs over the guidelines; and OR = 1.56, 95% CI = 1.34 – 1.83 for women gaining greater than 20 lbs. over the guidelines) (Truong et al., 2015).

1.2.2.2 Excess Gestational Weight Gain and Long Term Risks on the Infant

Excess gestational weight gain also leads to long-term consequences for the infant, particularly childhood obesity and cardio metabolic risk factors. A systematic review and meta-analysis of 12 studies, examined excess gestational weight gain in 247, 470 women and children from different continents, socio-economic statuses, ethnicities, and cultures (A. A. Mamun,
Mannan, & Doi, 2014). The study found that for mothers who gained above the IOM recommendations, their offspring had a 40% increased risk of developing childhood obesity (RR= 1.40, 95% CI 1.23 – 1.59, $I^2= 65\%$). However, the study found the relative risk of obesity decreased across the lifespan, with a relative risk of 1.91 (RR= 1.91, 95% CI 1.21-3.02) for offspring <5yr of age, 1.32 (RR= 1.32, 95% CI 1.14- 1.53) for offspring between the ages of 5-18, and 1.47 (RR= 1.47, 95% CI 1.21- 1.77) for offspring greater than 18 years of age (A. A. Mamun et al., 2014).

Another study assessed excess gestational weight gain and offspring outcomes in 313 mother and child pairs at 10 years of age (Kaar et al., 2014). This study found that a higher pre-pregnancy BMI was associated with greater offspring adiposity at 10 years of age, measured by BMI, waist circumference (WC), subcutaneous and visceral adipose tissue, and lipid markers. In addition, the study found that women who gained gestational weight within the IOM guidelines attenuated the risk that their child would have excess adiposity regardless of their high pre-pregnancy BMI. This study demonstrated that both adequate gestational weight gain and having a normal pre-pregnancy BMI may protect against childhood obesity and excess adiposity (Kaar et al., 2014).

Lastly, long-term neonatal complications may be associated with trimester specific gestational weight gain. A study done in 977 Greek women and their offspring examined the link between excess gestational weight gain and the child’s weight parameters at 4 years of age (Karachaliou et al., 2015). The study found that the rate of weight gain in the 1st trimester was positively associated with a higher child BMI at 6 months, 1 year, 2 years, 3 years and 4 years of age. First trimester weight gain was also associated with an increased risk of a higher WC (RR= 1.13, 95% CI 1.04- 1.23), and skinfold thickness (RR= 1.15, 95% CI 1.02 – 1.29) at 4 years of
age. Additionally, the study found that excess gestational weight gain might contribute to cardiometabolic consequences in the offspring, demonstrating a positive association with 1st trimester weight gain and diastolic BP at 4 years ($\beta = 0.43$ mmHG, 95% CI 0.00-0.86). However, no association was found between 2nd and 3rd trimester rates of gestational weight gain and childhood BMI and no significant association was found between trimester specific gestational weight gain rates and blood lipids, adiponectin, and c-reactive protein (Karachaliou et al., 2015).

1.3 Weight Gain Interventions

1.3.1 Systematic Reviews

The current literature has found mixed results assessing the effectiveness of weight management interventions on limiting gestational weight gain and minimizing the associated maternal and infant complications. A recent Cochrane review from 2015, evaluated the effectiveness of interventions for the prevention of excess gestational weight gain from 65 randomized control trials. A total of 49 studies including 11, 444 women were included in the review (Muktabhant, Lawrie, Lumbiganon, & Laopaiboon, 2015). The review found high quality evidence, that women in the intervention group had a reduced risk of having excess gestational weight gain (RR = .80, 95% CI 0.73 - 0.87, $I^2 = 52\%$). Results were consistent although a variety of interventions were used such as both nutrition and exercise, exercise only and low glycemic load trials. Eleven of the reviewed RCTs assessed the likelihood of experiencing low gestational weight gain when following these interventions and they found that women in the intervention group were more likely to experience low gestational weight gain than the controls (RR = 1.14, 95% CI 1.02 to 1.27, $I^2 = 3\%$). No significant differences in neonatal and maternal complications were found between the intervention and control groups for cesarean delivery, pre-term birth,
infant macrosomia, shoulder dystocia, neonatal hypoglycemia, hyperbilirubinemia, and birth trauma (Muktabhant et al., 2015).

In contrast, another systematic review and meta-analysis published in 2012 evaluated the effectiveness of diet and lifestyle interventions on gestational weight gain and obstetric outcomes. They assessed articles published up to January 2012, and included 34 randomized control trials consisting of 5481 women (Thangaratinam et al., 2012). In addition, they found no significant differences in the proportion of women who gained excess gestational weight (above the IOM recommended guidelines). However, they found an overall modest significant difference in mean reduction in weight of 1.42kg (95% CI 0.95-1.89kg, p < 0.001, I²= 80%), compared to controls and found the largest reductions in weight were in the interventions that were diet focused (M = 3.84kg, 2.45-5.22kg, p <0.001, I²= 92%). Thirty-one of these trials examined neonatal outcomes, and collectively, they showed no significant differences in birth weight between groups. Also, no significant effects were found for gestational age at delivery, rates of cesarean section, induction, hemorrhage, neonatal admissions to the NICU, and neonatal hypoglycemia. They did find a significant reduction in risk of shoulder dystocia by 61% in the intervention compared to control, from pooled results from 15 trials consisting of 3905 women. For maternal outcomes, 36 trials were included consisting of 6543 women. Pooled results found a significant risk reduction in the development of pre-eclampsia by 26% in the intervention group compared to the control (RR 0.74, 0.60 – 0.92; p < 0.001, I²= 31%). Lastly, there were trends towards a reduction in gestational diabetes, gestational hypertension, and pre-term delivery, however no significant effects were found (Thangaratinam et al., 2012).
1.3.2 Randomized Controlled Trials

Two large randomized controlled trials have been completed since the above systematic reviews were conducted. The first trial evaluated the effectiveness of a low cost nutrition and physical activity intervention in 445 women (Ronnberg, Ostlund, Fadl, Gottvall, & Nilsson, 2015). They found a small but significant difference in mean gestational weight gain between the intervention group (mean = 14.2kg) and the control (mean = 15.3kg) ($p < .05$). The intervention also decreased the proportion of women who exceeded the IOM recommended guidelines, with only 41% in the intervention group gaining above the IOM guidelines compared to 50% in the controls, however this difference was not statistically significant ($p = .086$) (Ronnberg et al., 2015). The intervention’s effectiveness on maternal and infant complications was not assessed in this trial.

The second trial, the Limiting Weight Gain in Overweight and Obese Women During Pregnancy to Improve Health Outcomes: randomized control trial (LIMIT), is the largest RCT to date, assessing 2152 overweight and obese women and 2142 of their infants (Dodd, 2014). The LIMIT trial showed that women improved their diet and physical activity behaviours during the intervention (Dodd, 2014). Women significantly increased fruit and vegetable consumption, fibre consumption, decreased saturated fat consumption, improved HEI scores and increased total participation in physical activity (Dodd, 2014). However, these improvements were not maintained at the post-partum follow-up, suggesting that a lifestyle intervention can improve diet and physical activity behaviours short term during pregnancy but not produce lasting behaviour change (Dodd, 2014).

Overall, evidence suggests there is potential for lifestyle interventions to reduce gestational weight gain, although further trials are needed to provide stronger evidence of the
efficacy of nutritional interventions in reducing gestational weight gain and thereby decreasing maternal and neonatal complications. In addition, based on the emerging evidence demonstrating the importance of adequate gestational weight gain in the 1st trimester, future interventions need to target women pre-pregnancy or early in pregnancy to assess if intervening in the 1st trimester has greater effects on reducing the risk of maternal and neonatal complications.

1.4 Prevalence of Excess Gestational Weight Gain

1.4.1 Prevalence in Canada

Rates of gestational weight gain above the IOM guidelines are high among Canadian women. A secondary analysis of the Canadian Maternity Experiences Survey (MES) conducted by the Public Health Agency of Canada (PHAC) showed that 48.7% of women gained above the guidelines, 32.6% of women gained within the guidelines, and 18.7% of women gained below the guidelines. Excess gestational weight gain rates were high in all provinces with 56.2% of women in Eastern Atlantic Provinces (Newfoundland and Labrador, Nova Scotia, Prince Edward Island, and New Brunswick), 50.2% in the Western Prairie Provinces (Manitoba, Saskatchewan, and Alberta), 48.1% in the Western British Colombia provinces (British Columbia), 47.4% in the northern territories (Yukon Territory, Nunavut, Northwest Territories), and 47.7% in the eastern central provinces (Quebec, and Ontario) gaining above the recommendations (Kowal, Kuk, & Tamim, 2012).

1.4.3 Prevalence Across Pre-pregnancy BMI

Women entering their pregnancy with a higher pre-pregnancy BMI are more likely to gain excess weight above the guidelines. Kowal and colleagues (2012) found significant differences between the proportion of woman gaining excess gestational weight across pre-
pregnancy BMIs, with 30% of underweight women, 41.4% of normal weight women, 67.6% of overweight women and 60% of obese women gaining weight above the IOM recommendations. Moreover, the study found that, compared to women entering their pregnancy with a normal BMI, women entering their pregnancy with an overweight and obese BMI were 3 times more likely to gain above the recommendations (OR= 3.07, 95% CI 2.56-3.68, \( p < .05 \) & OR = 3.05, 95% CI 2.43-3.82, \( p < .05 \), respectively) (Kowal et al., 2012). This is likely due to the guidelines recommending a lower amount of weight gain for women with an overweight or obese pre-pregnancy BMI, making the recommendations harder to adhere to.

### 1.4.4 Prevalence Across Age and Gravida

Kowal and colleagues found significant differences in weight gain based on the mother’s age. Younger women were significantly more likely to gain excess gestational weight, with 63.8% of women who were less than 20 years of age gaining above the guidelines (Kowal et al., 2012). In addition, the study found that parity was associated with different rates of gestational weight gain, with women in their first pregnancy having the highest percentage of excess gestational weight gain with 53.0% gaining above the recommendations; followed by women in their second pregnancy at 47.9%, women in their third pregnancy at 44.4% and lastly, women in their fourth or greater pregnancy at 46.6% (Kowal et al., 2012).

### 1.5 Sociocultural Factors Affecting Excess Gestational Weight Gain

#### 1.5.1 Socioeconomic Characteristics

Women who are socially disadvantaged may experience additional life stressors during their pregnancy that could lead to excess weight gain (Davis, Stange, & Horwitz, 2012). In addition, women with a low socioeconomic status are more likely to be physically inactive and
have poorer eating habits (Kowal et al., 2012). In the Canadian secondary analysis cited above by Kowal and colleagues (2012), 58% of those with less than a high school education, 52% of those with a high school diploma, 50% of those with a post-secondary diploma, and 44% of those with a university degree had weight gain that exceeded the IOM guidelines. This shows that rates of excess gestational weight gain decrease with greater educational attainment and that women with less than a high school education are significantly more likely to gain excess weight in pregnancy compared to a university graduate (OR = 1.84, p < .05, CI = 1.26–2.69) (Kowal et al., 2012).

Women with a lower income are also at a greater risk of gaining weight above the guidelines. The study by Kowal et al. mentioned above, found differences in the percentage of women gaining above the IOM guidelines between household incomes, with women in the low middle class having the highest proportion of excess gestational weight gain and women in the highest class having the lowest proportion (Kowal et al., 2012). The percentages of women gaining above the recommendations ranged from lowest class a (44.1%), low middle class (51.3%), middle class (50.1%), upper middle class (48.9%), and highest class (46.8%) (Kowal et al., 2012). A similar pattern was seen in a study assessing the association between food insecurity in the United States and gestational weight gain in a sample of 810 pregnant women (Laraia, Siega-Riz, & Gundersen, 2010). This study found that women who were food insecure gained on average 1.87 kg more compared to pregnant women who were food secure (β = 1.87, 95% CI = .13 – 3.62) (Laraia et al., 2010).

### 1.5.2 Social Support

A pregnant woman’s available social support can positively and negatively impact dietary practices and gestational weight gain. The proportion of single Canadian women who
gain above the IOM guidelines (57.1%) is significantly higher than women who are married or living with a partner (47.9%) (P < .001) (Kowal et al., 2012). This relationship was explored in a qualitative study investigating obese pregnant women’s experiences of weight management. The study found that women expressed a lack of social support left them feeling lonely and isolated, which consequently led to unhealthy eating and physical inactivity (Furness et al., 2011).

Some women also express that their social support networks may negatively influence their health behaviours. For example, qualitative studies have shown that pregnant women report having encouragement from their mothers to eat more (Goodrich, Cregger, Wilcox, & Liu, 2013), or are offered high sugar high fat foods from their partners (Graham, Mayan, McCargar, & Bell, 2013). In addition, pregnant women have reported that their physical activity behaviours in pregnancy decreased due to the influence of their friends and social networks who frowned upon exercise during pregnancy (Hackley, Kennedy, Berry, & Melkus, 2014).

1.5.3 Partner Influences

Women’s pregnancy weight gain may be influenced by their partners’ health behaviours; however there are currently only a few studies assessing this link. One study done with 149 pregnant women and 135 of their partners, demonstrated a strong positive link between the partner’s health and eating behaviours and the pregnant woman’s behaviours (p < .05) (Thompson, Nassar, Robertson, & Shand, 2011).

To date, there is only one qualitative study about men’s perceptions of their partners gestational weight gain (Montgomery et al., 2012). The men in this study discussed the themes of negative perceptions, eating behaviours, health impact, body changes, and their partner’s perceptions of gestational weight gain. When discussing negative perceptions of pregnancy
weight gain, men identified that not losing the weight post-partum was unhealthy, and reported negative views around attractiveness when their partners did not return to their pre-pregnancy body size. Many partners also identified seeing weight gain during pregnancy as inevitable, and described body changes such as increasing belly size and breast size as desirable. However, some men discussed undesirable body changes such as stretch marks, which reinforced for them that their partner’s body was changing and it would not return to how it was pre-pregnancy.

Men also discussed their partners eating habits explaining their partners had strong cravings for unhealthy snacks and fast foods. Some men reported trying to encourage healthy eating habits in their pregnant partners by avoiding bringing unhealthy foods into the home. In comparison, others adopted the belief that their wife was ‘eating for two’ and pregnancy is a time when you can eat what you want. Lastly, the men in the study discussed that pregnancy weight gain bothered their partners more than them and identified that their partners were self-consciousness about their weight gain (Montgomery et al., 2012). This research demonstrated that many partners view the health of the fetus as a joint responsibility. Furthermore, it shows that some men support healthful behaviours in pregnancy, while some have the belief that the woman need to eat for two, and that pregnancy is a time of indulgence. Due to the partner’s influence on maternal health behaviours and their feeling of connectedness to the health of the fetus, including partners in the antenatal care may help support the wife to achieve healthy behaviours during pregnancy and an optimal gestational weight gain. More research is needed to better understand partners’ perceptions of pregnancy weight gain and their role in gestational weight gain management.
1.5.4 Pregnancy Beliefs

The qualitative literature shows that beliefs and social norms significantly influence women’s experiences with gestational weight gain. Multiple qualitative studies have found that women engage in self-talk during pregnancy, which may lead to greater food intake. For example, they describe justifying their food choices with the belief of “eating for two” (Furness et al., 2011), feeling that eating large portion sizes are normal for pregnancy (Herring, Henry, Klotz, Foster, & Whitaker, 2012), and pregnancy is a time when you are allowed to overeat and indulge (Graham et al., 2013). Additionally, many pregnant mothers perceive that their fetuses control their hunger and food intake, identifying that cravings are related to specific nutrient requirements, and eating food in excess is important for the babies health (Graham et al., 2013; Heery, McConnon, Kelleher, Wall, & McAuliffe, 2013; Herring et al., 2012). It should be noted, that people of different social and cultural groups within Canada may have differing pregnancy beliefs, and this will be outlined in the next section.

1.5.5 Culture

Canada is a multicultural country therefore it is important to understand how culture and ethnicity influence women’s constructions of their gestational weight gain experiences and their dietary practices. In several studies assessing Asian, African American, First Nations, Hispanic and Iranian populations, women communicate that gestational weight gain and maternal diet are intimately connected (Goodrich et al., 2013; Groth & Kearney, 2009). For example, in a study conducted of African American women by Goodrich and colleagues, women expressed that there was a risk of abnormal fetal development with unhealthy eating. In a qualitative study from Canada conducted with 30 Cree women, the women saw a different link between diet and the
baby’s health. They reported that delivering a healthy baby meant that their gestational weight gain was adequate (Vallianatos et al., 2006).

Many of the women across studies and cultures have identified post-partum weight loss as a motivator to healthy dietary practices during pregnancy (Goodrich et al., 2013; Groth & Kearney, 2009; Jette & Rail, 2014; Vallianatos et al., 2006). For example, in the study by Vallianatos and colleagues (2006), Cree women discussed attempting to limit gestational weight gain and placed importance on returning to their post-partum weight (Vallianatos et al., 2006). Conversely, this was not the case in a study of African American women, where women identified that a “thicker” figure is desirable in their culture and post-partum weight retention was anticipated and expected (Groth & Kearney, 2009).

It is important to note that these are small qualitative studies that take place in various locations across the world. Therefore generalizability to the Canadian multi-cultural context is limited. However, these studies demonstrate both the types of similarities and differences in beliefs that can be seen in different cultures.

1.5.6 Contradicting and Confusing Messages

Pregnant women often describe receiving contradicting messages regarding gestational weight gain from their health care providers, family members, friends and media, and this confusion may lead to inadequate gestational weight gain. In a qualitative study conducted in 15 low-income women from Montreal, women expressed receiving opposing messages between their mothers, friends and health care practitioners (Jette & Rail, 2014). Moreover, in another qualitative study assessing women’s views on gestational weight gain guidelines on online
pregnancy forums, women discuss getting inconsistent advice among their health care providers (Arden, Duxbury, & Soltani, 2014).

Not only are pregnant women receiving conflicting advice, the information that is available is confusing, which was reported in a systematic review of eight qualitative studies (Campbell, Johnson, Messina, Guillaume, & Goyder, 2011). For example, in this review they explain that when advice was given, it addressed healthy eating rather than how to manage their pregnancy weight, and that the advice received lacked clarity and specific examples.

A recent Canadian study assessing women’s experiences with sugar consumption in pregnancy reported that health care providers that did emphasize proper gestational weight gain provided little dietary advice on how to meet these recommendations (Graham et al., 2013). Furthermore, many women reported not receiving any advice from health care professionals about healthy eating during pregnancy beyond the foods to avoid, and some women reported not receiving advice about proper gestational weight gain (Heery et al., 2013; Jette & Rail, 2014). In addition, in the study mentioned above by Arden and colleagues (2014), women discussed receiving depersonalized advice from health care providers and a lack of information on ideal gestational weight gain (Arden et al., 2014). When women receive a lack of advice they were more likely to seek out alternative information from resources that may lack accuracy, such as from the internet, family and friends (Arden et al., 2014). Therefore, it is important that health care providers learn how to give appropriate recommendations on gestational weight gain management that pregnant women can easily adopt and understand.
1.6 Pregnancy Symptoms

1.6.1 Nausea and Vomiting

Nausea and vomiting is a common pregnancy symptom, with 78.5% of Canadian women reporting these symptoms (Lacasse, Rey, Ferreira, Morin, & Berard, 2009). These symptoms are normally experienced in the first to second trimester starting between 5 and 8 weeks gestation, peaking at 9 weeks gestation and subsiding by 12 weeks (Chortatos et al., 2013). Research has shown that women may try to combat nausea and vomiting by changing their dietary patterns to eating foods that are higher in energy, sugar and salt. A large study in 51,675 women from the Norwegian Mother and Child Cohort study found that women who experienced nausea and vomiting in pregnancy had a significantly higher average caloric intake compared to women who did not experience these symptoms. In addition, the study found that pregnant women who experienced both nausea and vomiting consumed higher sugar foods compared to women who only experienced nausea, or women who experienced no symptoms. Lastly, they found that women who experienced only nausea without vomiting were significantly more likely to consume food with a sour and salty taste (Chortatos et al., 2013)

Qualitative research may provide a more descriptive background as to why women may change their dietary habits due to nausea and vomiting. In a qualitative study of obese pregnant women, women identified morning sickness as one of the primary reasons to overeat (Furness et al., 2011). The findings from Graham et al (2013) and Arden et al (2014) add more detail. In these studies women reported that eating constantly throughout the day was a strategy used to stop nausea (Graham et al., 2013) and identified that women expressed overeating later in the day to overcompensate for not eating while experiencing morning sickness (Arden et al., 2014).
It is evident that nausea and vomiting in pregnancy influences dietary habits; however, the relationship with gestational weight gain is not well understood. The study noted above, by Chortatos et al (2013), found that, while they had a higher caloric intake, overall gestational weight gain was lower in women who experienced nausea and vomiting in pregnancy (Chortatos et al., 2013). Similar results were found in a U.S. retrospective study in 81,486 pregnant women (Temming et al., 2014). It is hypothesized that this relationship could be due to the dehydration or the purge in calories that occurs with frequent nausea and vomiting. Future prospective studies on nausea and vomiting are needed to assess the relationship between changes in dietary habits, severity of the symptoms, and the effect on gestational weight gain by trimester.

1.6.2 Cravings

Many women report an increase in cravings for specific foods during pregnancy, and that these cravings change at different point throughout pregnancy. However, the majority of the literature assessing pregnancy cravings is dated (Bayley, Dye, Jones, Debono, & Hill, 2002; Gendall, Joyce, & Sullivan, 1997; Hook, 1978; Pope, Skinner, & Carruth, 1992). A study in 200 pregnant women reported the most common cravings experienced in pregnancy are for sweets such as chocolate and candy (Orloff & Hormes, 2014). The study also noted that pregnant women craved low nutrient, high calorie density foods, for example: pizza, chips, ice cream, pretzels, and fast foods (Orloff & Hormes, 2014). These cravings for specific foods have been linked to an increase in dietary caloric intake. A study of 97 pregnant adolescents found that cravings for sweets and sugar were significantly associated with an increase in caloric intake compared to adolescents who did not experience sweet cravings (Pope et al., 1992). Furthermore, Pope and colleagues (1992) found that pregnant adolescents who craved chips and salty snacks
had a significantly increased consumption of sodium, percent of energy from fat, and calories compared to adolescents without savoury cravings (Pope et al., 1992).

Research often describes cravings as difficult to control and one of the most common barriers to a healthy diet during pregnancy. A study assessing weight gain, weight control methods, and cravings in 110 primigravid women, found that 30% reported feeling out of control of their eating and weight during their pregnancy, and 53 of these women reported experiencing persistent and difficult to ignore cravings for particular foods (Abraham, King, & Llewellynjones, 1994). A qualitative study by Hackley and colleagues reported that pregnant women described feelings of powerlessness over their increased appetite and that cravings were excessive and uncontrollable (Hackley et al., 2014; Herring et al., 2012).

It is evident that cravings in pregnancy can change dietary intake, however there is only one quantitative study linking cravings to gestational weight gain. This study in 120 overweight African American pregnant women, found that an increased dietary intake influenced by cravings was the only eating behaviour associated with gestational weight gain ($r = .21, p < .05$) (Allison, Wrotniak, Paré, & Sarwer, 2012). Persistent cravings during pregnancy are an underexplored area that is likely connected to gestational weight gain. More research focusing on how cravings influence gestational weight gain is necessary to better understand this relationship.

1.6.3 Fatigue and Changes in Appetite

Pregnancy symptoms such as fatigue, and changes in appetite have a significant impact on dietary habits during pregnancy that can drive gestational weight gain. In addition, some
women report higher dietary intakes as a way to combat tiredness that is experienced in pregnancy (Graham et al., 2013).

1.7 Psychological Factors

1.7.1 Body Image

Pregnant women may experience an increase or decrease in body satisfaction during pregnancy. A systematic review of 22 articles identified certain predictors of body dissatisfaction during pregnancy (Fuller-Tyszkiewicz, Skouteris, Watson, & Hill, 2013). This study found that psychological factors such as stress, maternal attachment, perceptions of unattractiveness and depressed mood lead to body dissatisfaction, and women experiencing depressive symptoms and body dissatisfaction early in pregnancy were more likely to continue to experience depression later in pregnancy (Fuller-Tyszkiewicz et al., 2013). In addition, they found that sociocultural pressure from family and friends to look thin led to body dissatisfaction later in pregnancy (Fuller-Tyszkiewicz et al., 2013).

In contrast, some literature suggests that women may experience an increase in body satisfaction during pregnancy. A study of 955 women comparing body satisfaction between pregnant and non-pregnant women found that the mean body satisfaction for the sample of pregnant women was significantly higher than the non-pregnant women (Loth, Bauer, Wall, Berge, & Neumark-Sztainer, 2011). Similar results were found in another a small study, where pregnant women reported less body dissatisfaction compared to non-pregnant women (F [1,99] = 9.85, P < .01) (Clark & Ogden, 1999).

Qualitative literature may provide some insight on why there are changes in body satisfaction in pregnancy. A systematic review of 17 qualitative studies explored the
psychological impact of pregnancy on body image and found three overarching themes explaining a greater body satisfaction and dissatisfaction that occur during pregnancy (Hodgkinson, Smith, & Wittkowski, 2014). The first theme discussed how pregnancy becomes a public event, and socially constructed ideals accept some body changes such as an increase in breast size and a bigger body size. However, body changes that happen during pregnancy such as arm and face weight gain, acne, and stretch marks are considered undesirable and socially unacceptable (Hodgkinson et al., 2014). In addition, another meta-analysis of 6 qualitative studies in obese pregnant women discussed that pregnancy is a period where these women feel liberated from the stigma of being overweight and obese, and feel an increased acceptance of their body size from society (Smith & Lavender, 2011).

Changes in body satisfaction during pregnancy may be related to excess gestational weight gain. An Australian prospective study of 442 overweight and obese pregnant women showed that women with a higher degree of body dissatisfaction early in pregnancy (between 10-20 weeks gestation) were significantly more likely to gain excess weight above the IOM recommendations (P < .01) (Z. Sui, D. Turnbull, & J. Dodd, 2013). In comparison, Skouteris et al. (2005) examined longitudinal changes in the body image of 128 women and did not find a significant association between weight gain and perceived attractiveness (Skouteris, Carr, Wertheim, Paxton, & Duncombe, 2005). However, the study found that women felt significantly less attractive, less fit and fatter as they progressed though their pregnancy, suggesting that body satisfaction decreases throughout pregnancy (Skouteris et al., 2005).

Collectively, this literature shows a link between body dissatisfaction and weight gain during pregnancy; however, it is unclear whether a decrease in body satisfaction increases gestational weight gain or if an increase in gestational weight gain decreases body satisfaction.
There is currently only one study evaluated the mediating effects of body satisfaction on weight gain in 151 pregnant women and found that 2nd trimester body image satisfaction can influence and act as a mediator for depression later in pregnancy, but found no significant mediating effects of body satisfaction on gestational weight gain (Rauff & Downs, 2011). This research demonstrates that the mechanisms that link body satisfaction to gestational weight gain is unclear, and that future research is required to understand this connection.

1.7.2 Stress, Anxiety and Depression

Psychological factors such as stress, anxiety, and depression during pregnancy can influence dietary patterns and gestational weight gain. A study assessed psychological risk factors for excess gestational weight gain in 1605 pregnant women at three time points (Webb, Siega-riz, & Dole, 2009). They found that women scoring high in depressive symptoms at baseline and in the second trimester were significantly more likely to gain above the recommendations when compared to women reporting lower levels of depressive symptoms (Webb et al., 2009). However, in this analysis anxiety, stress, and self-esteem were not found to be significant predictors of weight gain in pregnancy (Webb et al., 2009).

In comparison, a study conducted in China involving 1800 women found a significant positive association between experiencing stressful life events in the first trimester and gestational weight gain (Zhu et al., 2013). In addition, a study from Australia in 134 women found a significant relationship between anxiety, stress, and fatigue and variations of dietary patterns in pregnant women (Huberty et al., 2010). Specifically, they reported higher levels of fatigue, anxiety and stress were positively associated with higher dietary intake, particularly in the snack and sweet food groups (Huberty et al., 2010). This research demonstrates that
psychological distress can have a profound effect on dietary intake and weight gain in pregnancy.

A qualitative study in 59 women provided some insight as to why women experience psychological changes, stress or anxiety in pregnancy and their link to gestational weight gain (Thomas et al., 2014). The women in this study discussed experiencing an increase in anxiety, relating it to their pregnancy and their transition to motherhood. They also identified their health and weight as a source of stress, and felt defeated by their inability to gain weight within the guidelines. Furthermore, women frequently linked stress and eating together, identifying eating as a coping mechanism for stress that is brought on during pregnancy and identified feeling a temporary sense of happiness when they overate (Thomas et al., 2014).

Though studies have linked maternal mental health to gestational weight gain, few studies have explored whether weight gain is a contributor to maternal mental health symptoms, or if mental health symptoms mediate gestational weight gain. A recent longitudinal study in Australia assessed this relationship in 183 pregnant women. The study found that pre-pregnancy BMI did not predict anxiety symptoms, and anxiety symptoms remained relatively stable at all the time points (McPhie, Skouteris, Fuller-Tyszkiewicz, et al., 2015).

In comparison, another recent study assessed the influence of stress on dietary intake in 213 low-income overweight and obese pregnant women, (Chang, Brown, Nitzke, Smith, & Eghtedary, 2015). The study found stress was associated with a decrease in fruit and vegetable intake and an increase in fat intake in the first trimester. Moreover, the study found that depression mediated the relationship between stress and fat intake in the first trimester but did not mediate the relationship between stress and fruit and vegetable intake. No relationships were
found between stress and depression and dietary intake in the 2\textsuperscript{nd} and 3\textsuperscript{rd} trimesters (Chang et al., 2015). These preliminary findings demonstrate that stress can influence dietary intake in the first trimester. Currently, there is little literature assessing the mediators between psychosocial variables and gestational weight gain and more studies are needed to understand how psychosocial variables contribute to gestational weight gain.

1.7.3 Perceptions and Knowledge of Gestational Weight Gain

1.7.3.1 Perceptions of Appropriate Gestational Weight Gain

Research suggests that many women overestimate the appropriate amount of weight gain for a healthy pregnancy (McPhie, Skouteris, Hill, & Hayden, 2015). A study assessing the association between knowledge and gestational weight gain in 330 pregnant women, found that women who perceived they needed to gain weight above the recommended guidelines were 11 times more likely to gain excess gestational weight (adjusted OR 11.18; 95% CI 4.45 to 28.06) (McDonald et al., 2013). In comparison, in a study of 775 pregnant women that assessed if inaccurate perceptions of pre-pregnancy weight status was associated with excess gain found the risk of gaining excess gestational weight was 2.5 times higher in overweight and obese women who inaccurately report their pre-pregnancy BMI compared to overweight women who accurately reported their pre-pregnancy BMI (adjusted OR= 2.5, 95% CI 1.7-3.4) (Mehta-Lee et al., 2013). This suggests that inaccurate perceptions of pre-pregnancy size may increase the risk of gaining excess weight according to the IOM guidelines, with overweight and obese women being at the greatest risk.
1.7.3.2 Knowledge of Gestational Weight Gain and Nutrition

Research suggests that most pregnant women are aware that excess gestational weight gain increases their risk of pregnancy complications; however they do not have strong knowledge about these risks. A study in 353 pregnant women identified that 94% of the women believed that excess gestational weight gain was associated with pregnancy complications, although knowledge about the specific nature of these complications was lacking (Shub, Huning, Campbell, & McCarthy, 2013a). Only two thirds identified excess gestational weight gain as a risk for the fetus, and of those, only 18.4% suggested macrosomia as a potential complication. Similar results were also demonstrated in an Australian mixed methods study assessing 464 overweight and obese women’s views about making healthy changes during pregnancy (Z. Sui, D. A. Turnbull, & J. M. Dodd, 2013). This study found that the majority of respondents reported that excess gestational weight gain influenced maternal outcomes; however, only 43% recognized that gestational weight gain was linked to neonatal outcomes (Z. Sui et al., 2013).

A qualitative study conducted interviews with 49 pregnant women to get a more detailed account of their gestational weight gain knowledge (Groth & Kearney, 2009). Only half of the 49 pregnant women identified a number within the IOM guidelines when they were asked to give a range of appropriate weight gain. In addition, only some participants identified that pregnancy weight gain was based on pre-pregnant BMI. When discussing adverse outcomes of gaining outside the recommendations, women emphasized risks associated with gaining too little weight and a third of respondents expressed that excess gestational weight gain would not significantly increase health risks and focused on the difficulty in losing excess weight post-partum. This suggests the women did not have a strong knowledge of the risks associated with excess gestational weight gain (Groth & Kearney, 2009).
In addition to knowledge of the guidelines, Shub et al. (2013) investigated women’s knowledge of how to manage their pregnancy weight gain (Shub, Huning, Campbell, & McCarthy, 2013b). Women identified strategies that were believed to manage pregnancy weight such as eating an organic diet, drinking more fruit juice, not eating after 8pm, and choosing higher fat dairy products, (Shub et al., 2013b). Collectively, these studies show that women could benefit from more information regarding gestational weight gain and controlling their gestational weight gain.

1.8 Experiences with Gestational Weight Gain

There are few studies that explore women’s experiences with gestational weight gain. A study of 110 women reported that 30% of women felt out of control with respect to their eating, their weight during pregnancy, and felt they were preoccupied with the thought of food and weight as compared to before they were pregnant (Abraham et al., 1994). The theme of feeling ‘weight gain as out of control’ is also prevalent throughout the qualitative literature. A study that interviewed 37 pregnant women found issues surrounding control of gestational weight gain as a recurring theme for pregnant women (Wiles, 1998). These issues varied between participants; with some women feeling that they had complete control of their weight gain during pregnancy, and other women identifying weight gain as inevitable and desirable. Further, some women acknowledged changes in feelings towards their growing body size; however, they were aware that these changes were transitory and expected during pregnancy (Wiles, 1998).

In comparison, an article exploring women’s feelings and attitudes about weight gain during pregnancy in 29 Hispanic women, discussed that women expressed negative feelings towards their weight gain and reported feelings of self-consciousness, frustration, feeling fat and more sensitive to the topic of weight (Tovar, Chasan-Taber, Bermudez, Hyatt, & Must, 2010). It
is evident that each woman may have a different experience with their weight gain during pregnancy in terms of how they feel about their weight.

### 1.8.1 Are Women Thinking About Weigh Gain and Nutrition?

Women’s awareness of weight gain and dietary habits in pregnancy is an important factor that may influence gestational weight gain. One meta-analysis of six qualitative studies in overweight and obese pregnant women discussed increased nutrition awareness, placing importance on good nutrition and increased motivation to eat healthier (Smith & Lavender, 2011). However, the women in this study emphasized the importance of weight loss post-partum rather than focusing on their weight during pregnancy (Smith & Lavender, 2011). Similar themes were found in another qualitative study in women of all body sizes (Groth & Kearney, 2009).

In comparison, a qualitative study in 60 women who are pregnant and hoping to conceive described that women’s nutrition awareness and healthy eating behaviours could be classified into three groups: going all the way, taking the flexible way and continuing the same way (Szwajcer, Hiddink, Koelen, & Woerkum, 2007). Women ‘going all the way’ were conscious about the importance of nutrition and used nutrition was a way of controlling and supporting the development of the fetus. Nutrition became a dominant part of these women’s lives, and they expressed following advice given by books and experts in the field (Szwajcer, Hiddink, Koelen, & Woerkum, 2007). Women taking ‘the flexible way’ thought about nutrition but made decisions about which changes they would and wouldn’t implement their diet. These women felt that having small indulgences would not hurt the baby, with some women justifying indulgences as a stress reliever (Szwajcer, Hiddink, Koelen, & Woerkum, 2007). There were two types of women in the ‘continuing the same way’ category, the first type always thought about nutrition prior to their pregnancy and this consciousness was continued into their pregnancy, and the
second type thought that nutrition was not important. The women in the latter believed that the fetus will take what it needs from the mother regardless of what she eats (Szwajcer, Hiddink, Koelen, & Woerkum, 2007).

Two other studies by Szwajcer and colleagues assessed timing of seeking nutrition information and when women were most open to nutrition behaviour changes (E. M. Szwajcer, G. J. Hiddink, M. A. Koelen, & C. M. J. V. Woerkum, 2005; E. M. Szwajcer, Hiddink, Maas, Koelen, & van Woerkum, 2008). They found that women were most interested in nutrition in the first trimester (E. M. Szwajcer et al., 2008), and that seeking information in the first trimester is influenced by the newness of the situation and the onset of pregnancy symptoms (E. M. Szwajcer et al., 2005). They also found that at the end of the first trimester, nutrition information seeking may decrease, and that nutrition information seeking was generally lower in a women’s second pregnancy compared to the first (E. M. Szwajcer et al., 2005). Lastly, the authors found that women’s nutrition seeking behaviours were dependent on the level of feeling maternal. Women who felt like mothers early were more likely to look for nutrition information compared to women who did not feel like mothers earlier on in pregnancy (E. M. Szwajcer et al., 2005).

Although many women do think about nutrition and weight gain during their pregnancies, some women may not. Huberty et al. explored the beliefs about health and weight in a sample of young pregnant women with a low socioeconomic status. A small subset of these women acknowledged the importance of appropriate weight gain in pregnancy; however, none of the women mentioned monitoring their weight gain to not exceed the recommendations (Huberty et al., 2010).
In addition, experiencing previous pregnancies may change women’s attitudes towards gestational weight gain. A qualitative study exploring second time pregnancies of mothers with a history of macrosomia reported that women were less weight conscious during their pregnancy and felt more relaxed about their weight and diet (Heery et al., 2013).

This research suggests that some, but not all women experience an increase in nutrition and weight gain awareness in pregnancy. Future studies are needed to better understand the relationship between nutrition and weight gain in pregnancy and its connection to health behaviour change.

1.8.2 Motivators

The most commonly cited motivators in pregnancy were fetal health, social expectations, and post-partum weight loss. These factors motivated the women to practice healthy eating behaviours and will be explained in the following paragraphs.

1.8.2.1 Fetal Health

Qualitative research has shown that many women identify the health of their fetus as a primary motivator to improve dietary habits in pregnancy (Goodrich et al., 2013; Graham et al., 2013; Groth & Kearney, 2009; Harper & Rail, 2012; Sui, Turnbull, & Dodd, 2013; Wiles, 1998). A study conducted by Goodrich et al, reported that 85% of the 33 women interviewed cited fetal health as a strong motivator to eating healthy (Goodrich et al., 2013). In addition, women expressed a strong desire to consume a diet that meets the nutritional needs of their fetus (Wiles, 1998). Another descriptive study in 15 Canadian women provided more insight by exploring the theme of ‘controlling my health for the health of the baby’ in women of differing cultures, ethnicities, socioeconomic statuses, parities and body sizes (Harper & Rail, 2012). All of the
women in this study placed fetal health above their own health, and expressed the belief that their own dietary habits were strongly connected to their baby’s health. They also discussed that poor health and dietary habits would put the baby’s health at risk and expressed the need to control their own health to create the most optimal environment for the development of the baby (Harper & Rail, 2012). These studies demonstrate that women feel that their health behaviours are strongly connected to their baby’s health and development.

1.8.2.2 Societal Expectations

Society may place certain health behaviour expectations on pregnant women, which equates them to being perceived as a ‘good mother’. This societal pressure may motivate women to improve their dietary habits during pregnancy. Women in a study by Harper and Rail discussed how outside pressures to be good mothers placed responsibility for the health of the fetus on the mother. In addition, some participants viewed this as a positive instigator to help them adopt healthier behaviours such as diet, physical activity and trying to control their weight gain (Harper & Rail, 2012). Similarly, the importance of social pressure was evident in another qualitative analysis done by Szwajcer et al, in which expectations of the social environment was a dominant theme. Women in this study discussed an increase in comparing themselves within the expectations of the social environment when determining what constitutes a healthy pregnancy (Szwajcer, Hiddink, Koelen, & Woerkum, 2007) In addition, they observed that women perceived social pressure to increase in the second and third trimester once the pregnancy became more public to family and friends, and more visible (Szwajcer, Hiddink, Koelen, & Woerkum, 2007). It is evident that societal norms play an important role in how women think about their nutrition and weight during pregnancy. However, currently there is little research on discussing the effect of societal expectations on the health behaviours of women.
1.8.2.3 Post-partum Weight Loss

Research has shown that many women are motivated to control gestational weight gain so that their post-partum weight loss is easier. In a qualitative analysis in pregnant women with a low income, most women identified post-partum weight loss as a reason to monitor or restrict their weight gain, in addition to discussing the fears of not being able to lose the weight post-partum (Huberty et al., 2010). Similar results were found in Smith and Lavendar’s meta-analysis of 6 qualitative studies in overweight and obese women. In this review, authors described how women felt that healthy eating during pregnancy is important; however they placed an emphasis on planning to lose their excess weight post-partum (Smith & Lavender, 2011). In Wiles’ qualitative study of 37 pregnant women, women identified issues surrounding losing control of their weight in pregnancy, and wanting to regain this control by returning to their pre-pregnancy weight post-partum (Wiles, 1998). This research suggests that some women may not be as motivated to eat health during pregnancy because they intend to put more effort into losing the weight postpartum.

1.8.3 Barriers

1.8.3.1 Time Constraints

A survey conducted in Australia assessing 464 women’s views on their ability to make healthy choices during pregnancy, found that the most common barrier to health eating was time constraints (Sui et al., 2013). This may be due to the increasing demands of their time for example having multiple commitments to family and kids, work and pregnancy related appointments and activities (Heery et al., 2013; Tovar et al., 2010). Furthermore, the feeling of time constraint and tiredness may lead to the consumption of fast food because of convenience, which was found in a qualitative study conducted with 25 African American women (Goodrich et al., 2013). Larger portion sizes and snacking frequently to combat pregnancy symptoms, such
as increased appetite and nausea, were barriers also commonly discussed among pregnant women (Tovar et al., 2010).

1.8.4 Strategies Women are using to Practice Healthy Eating Behaviours

Only one study to date has assessed women’s strategies for controlling their dietary intake during pregnancy. Graham et al. explored strategies for consuming a diet low in sugar through semi-structured interviews with 15 pregnant women (Graham et al., 2013). Women described several approaches to control their intake. The first strategy was planning in advance. Women mentioned cooking meals ahead of time when they were feeling well so that they would have low-sugar foods ready for when they experience unpleasant pregnancy symptoms. They also said that by preparing meals in advance they were less likely to grab fast foods. The second strategy discussed was finding low-sugar alternatives, for example exchanging ice cream for yogurt and fruit. Third, women set goals for their sugar consumption such as making sure the baby had received all of the required nutrients before they indulged. Lastly, women resisted social pressure by informing their social groups that they are decreasing their sugar consumption for the health of their baby, and continued to teach them on the importance of nutrition for fetal development (Graham et al., 2013; Van Teijlingen, Rennie, Hundley, & Graham, 2001).

1.9 Experiences with Health Care Providers

1.9.1 Are Health Care Providers Talking about Weight Gain?

Pregnancy is an ideal time to discuss healthy lifestyle changes and appropriate weight gain, as women are more motivated to adopt healthy behaviours for the benefit of their child. A Canadian study of 174 health care providers found 69% of providers reported counselling women on appropriate gestational weight gain in accordance with the IOM guidelines (Ferraro,
Boehm, Gaudet, & Adamo, 2013). There were differences in the weight gain recommendations used by the different types of health care providers, with midwives on average recommending higher mean weight gains compared to obstetricians. General practitioners and midwives were more likely to offer counselling to women on physical activity, nutrition and gestational weight, and maternal fetal specialists were least likely to provide this counselling (Ferraro et al., 2013).

In comparison, two corresponding Canadian studies assessed gestational weight gain counselling both from health care providers and the patient’s perspectives (Lutsiv et al., 2012). The first study by Lustiv and colleagues (2012) consisted of 42 obstetricians, family physicians, midwives, nurses, and physician assistants (Lutsiv et al., 2012) and the second study by McDonald et al (2011) included 310 pregnant women (McDonald et al., 2013). These studies reported that 95% of health care practitioners recommended a specific range of gestational weight gain (Lutsiv et al., 2012), while only approximately 30% of pregnant women reported receiving a weight gain recommendation (McDonald et al., 2013). This research demonstrates that there are large disparities between the perceptions of health care professionals providing advice on weight gain and the perceptions of patients receiving the advice.

1.9.2 Dietary Advice is Overwhelming

A study of pregnant women’s experiences with receiving diet advice from health care providers, found that women reported dietary advice to be overwhelming and not personalized (Ferrari, Siega-Riz, Evenson, Moos, & Carrier, 2013). In addition, they expressed concern over not meeting their nutritional requirements due to the amount of advice on dietary restrictions in pregnancy received. Moreover, women identified that the advice they received about nutritional requirements during pregnancy to be confusing and constantly changing, such as recommendations to increase a nutrient but not providing examples of foods that contain those
nutrients (Ferrari et al., 2013). This was also expressed in other qualitative literature and further outlined in the contradicting message section of this review (Arden et al., 2014; Campbell et al., 2011; Graham et al., 2013).

**1.9.3 Are Women Following Advice?**

A systematic review found four studies that assessed women’s acceptance of gestational weight gain and dietary advice from health care professionals (Johnson et al., 2012). They found that some advice was taken with caution, particularly when it lacked personalization (Johnson et al., 2013). In contrast, Ferrari et al. found that despite receiving confusing advice many women still followed the advice received in antenatal care because they felt secure that they were doing everything they could for the health of their baby (Ferrari et al., 2013). Furthermore, pregnant women reported following advice because they valued their provider’s opinion, and that it improved healthy behaviours such as decreasing sugar sweetened beverage consumption and increasing water intake (Ferrari et al., 2013). Future research is needed to better understand if the advice provided by health care providers actually leads to healthy behaviours change during pregnancy.

**1.9.4 Being Weighed and Weight Stigmatization**

Women have differing perspectives of having their weight monitored at antenatal visits. Johnson et al reported that some women felt reassured when they were weighed (Johnson et al., 2012) and in a quantitative analysis, women reported being weighed as a motivator to eat healthier (Abraham et al., 1994). In contrast, some studies have shown that women report feeling anxious about being weighed and felt that they were ‘handing their body over’ (Johnson et al., 2012).
In addition to sensitivities to being weighed, women who are obese may feel more scrutinized by their health care providers (Mulherin, Miller, Barlow, Diedrichs, & Thompson, 2013). For example, several qualitative studies exploring the experiences of overweight and obese women in pregnancy found that these women felt stigmatized, stereotyped as unhealthy, and felt judged by health care professionals (Furber & McGowan, 2011; Furness et al., 2011; Mills, Schmied, & Dahlen; Schmied, Duff, Dahlen, Mills, & Kolt, 2011; Smith & Lavender, 2011). Studies have also found that overweight and obese women expressed depersonalization of care from the medicalization of their “obesity” when pregnant, such as being considered high risk and having their providers focus on the potential consequences for the fetus without being aware of their emotions (Furber & McGowan, 2011; Smith & Lavender, 2011).

Health providers also identify that there is difficulty providing pre-natal care to overweight and obese pregnant women, as they feel topics surrounding weight are hard to communicate effectively (Furness et al., 2011; Schmied et al., 2011) and there are concerns about offending patients (Schmied et al., 2011).

1.9.5 Conclusions for Practice

Evidence shows little agreement between providers advice on gestational weight gain management. There are also differences between provider’s perceptions of giving gestational weight gain and dietary advice and pregnant women’s perceptions of receiving such advice. In addition, women report that diet and weight gain counselling can be overwhelming, lack personalization, may stigmatize the patient and is sometimes taken with caution. Since there is a multitude of complications associated with excess gestational weight gain, it is important for health care providers to develop effective counseling strategies that are straight forward,
personalized, and free from stigmatization. In addition, future research is needed to assess if women are able to follow their provider’s advice.
CHAPTER 2: RATIONALE AND RESEARCH QUESTIONS

2.1 Rationale

Gaining too much weight in pregnancy is associated with an increased risk of pregnancy and future health complications for both the mother and her offspring. Short-term complications found to be associated with excess gestational weight gain include GHT, pre-eclampsia, GDM, delivery complications and macrosomia. Associated long-term complications include an increased risk of post-partum weight retention and chronic disease in the mother and child, and later life obesity for the infant. Although research has found an association with negative health outcomes, rates of excess gestational weight gain remain high with approximately half of Canadian women gaining above the healthy gestational weight gain guidelines.

Research has identified that women’s gestational weight gain is attributed to various barriers and drivers. For example, nausea and vomiting, cravings, changes in body satisfaction, stress, and anxieties have been associated with an increased risk of gaining above the national guidelines. Women’s experiences of gestational weight gain are also influenced by positive and negative interactions with external and community factors. These include cultural norms and the support from partners, family, friends, and health care providers. Due to the broad internal and external influences, it is pertinent that to gain a broad and in depth understanding of the sociocultural, personal, and environmental factors that influence gestational weight gain, in order to develop the best care possible.

Evidence has shown that thoughts about gestational weight gain differ between women. Some pregnant women place an importance on good nutrition and are improving their dietary practices during pregnancy. In contrast, some pregnant women do not think about their
pregnancy weight gain, lack awareness of the importance of gestational weight gain, and lack knowledge of gestational weight management goals and strategies (Mcphee et al; Sui et al, 2012; Shub et al, 2013). In addition, some women are open to learning about nutrition and healthy gestational weight gain and this is driven by infant health, post-partum weight loss and societal expectations.

Research has identified a gap in provision of gestational weight gain counseling from health care professionals. Women are interested and concerned about gestational weight gain, however there is disconnect between the health care providers giving advice on gestational weight gain and women receiving advice. Encouragingly, recent studies support that gestational weight gain guidance can be effective in minimizing health complications for both the mother and infant. This presents pregnancy as an opportune time to gain a better understanding of women’s experiences in order to suitably educate women on gestational weight gain and diet in pregnancy.

Currently, there is little literature exploring women’s experiences of gestational weight gain. Many of the studies focus on specific populations (i.e. obese women) and are conducted outside of Canada. Specifically, there is a lack of exploration of women’s thoughts about gestational weight gain, their current weight control behaviours, and how the experience changes throughout pregnancy. Due to the importance of appropriate gestational weight gain in pregnancy, there is a need for research to understand the nature of pregnant women’s weight gain thoughts, experiences, and behaviours, and this research aims to fill these gaps. An increase in our knowledge of these experiences can help improve the development of prenatal counselling and interventions that will be feasible for the Canadian pregnant population and the health care system.
2.2 Objectives

The objectives of this research study are:

1. Explore whether women think about gestational weight gain; describe how women think about gestational weight gain, what factors influence their thoughts, and how their thinking changed throughout their pregnancy.

2. Explore the nature of pregnant women’s experiences with gestational weight gain. Describe how perceptions of their body, expectations, physiological, emotional, and psychological factors related to weight gain change throughout their pregnancies.

3. Explore how women describe their health behaviours and how this influences pregnancy weight gain. Describe the motivators, barriers and strategies to practicing health behaviours in pregnancy.

4. Explore how social networks including partners, coworkers, family, friends, and strangers shape women’s experiences with gestational weight gain.

5. Explore women’s experiences with prenatal care and health care professionals. Describe the prenatal nutrition and weight gain advice they receive and gain an understanding of what types of prenatal weight gain and nutrition resources they use and would like to have.
2.3 Research Questions

1. How are pregnant women thinking about their pregnancy weight gain?
   a) Why do they think about their weight and weight gain in pregnancy?
   b) What do they think influences weight gain?
   c) What are women thinking about in terms of weight gain from pre-pregnancy to post-partum?

2. What is the nature of women’s experiences with pregnancy weight gain throughout their pregnancy with respect to perception of their body, expectations, physiological, emotional, and psychological factors?

3. What health behaviours are pregnant women currently practicing throughout their pregnancy?
   a) What motivated and inhibited the practice of health behaviours?
   b) What strategies were used to help practice health behaviours?
   c) How did their health behaviours change throughout pregnancy?

4. How are pregnant women’s experiences shaped by their interactions with social networks including partners, friends and family in regards to gestational weight gain?

5. What are women’s experiences with prenatal care and health care professional?
   a) What prenatal nutrition and weight gain advice and resources do they receive?
CHAPTER 3: METHODS

3.1 Justification of Methodological Choices

A qualitative approach was used in this research as it is concerned with finding the meaning of a phenomenon and aims to gain an in depth understanding of an experience (Willig, 2013). Qualitative analysis attempts to comprehend multifaceted emotional and psychological responses that lead to findings that may not be discovered in a quantitative analysis (Jervis & Drake, 2014). It was used for this research as it provided an opportunity to explore new ideas and generated an in-depth explanation of the influences on gestational weight gain and maternal diet in pregnancy (Jervis & Drake, 2014). Therefore, the qualitative approach, thematic analysis, was applied in this study as it aligned with the objectives to understand women’s thoughts, experiences and behaviours regarding their pregnancy weight gain. It also allowed for flexibility to assess a variety of discourses associated with gestational weight gain that resulted in rich descriptions of the personal, social, community, and societal influences on gestational weight gain and pregnancy eating behaviours.

3.2 Epistemology and Ontology

A critical realist approach is the epistemological position adopted in this research study. Critical realism attempts to capture the truth of a phenomena by assessing the causal effects of the underlying factors (Willig, 2013). This approach was appropriate as it attempted to understand the reality of an experience. It also considered the role of the researcher in the interpretation of the data and the underlying factors such as culture, race, and socioeconomic statuses that contribute to experiences (Willig, 2013).
3.3 Personal Reflexivity

Personal reflexivity acknowledges how the researcher shapes the interpretation of the research process and reveals how your own reactions lend to certain insights on the research (Willig, 2013). Reflexivity is important to include in qualitative research because it demonstrates how the researcher is connected in the research and its findings. My own experience working as a research assistant with pregnant women with Type 1 and Type 2 diabetes shaped my interpretation of the research, as this population often struggles with gaining appropriate gestational weight. Although I empathize with these women on their difficulty with gestational weight gain management, I take the perspective of a health care professional, as I know the importance of appropriate pregnancy eating habits and weight gain. This role, combined with my background in nutritional sciences may have created certain biases that were brought forth when listening to women’s accounts of their pregnancy weight gain and eating behaviours. This may have affected my interpretation, as I might not have fully understood why practicing healthy eating habits in pregnancy can be difficult when it is paramount for their health and the health of their infant. However, while being submerged in the interviews, I progressively gained a better understanding of the hardships that pregnant women go through that may influence their eating behaviours in pregnancy and I was able to empathize more with the women.

I also have never been pregnant, which hindered my ability to fully grasp the pregnancy weight gain experiences in the women’s narratives. Nevertheless, not having experienced pregnancy provided a unique opportunity to analyze the narratives objectively, in line with the realist approach, without biasing the interpretations with my own experience. This helped reduce the amount of bias by capturing the true representations of the women’s narratives.
### 3.4 Research Ethics

An application requesting ethical approval from the *University of Guelph* was sent before commencing recruitment. Certification was obtained on November 2nd, 2015, with the confirmation number 15OC012. For a copy of the ethics approval please refer to Appendix A. The researcher conducting the interviews was trained and certified in Good Clinical Practice guidelines as described by the International Conference on Harmonization (GCP-ICH), in addition to Canada’s Alliance for Excellence in Clinical Research Network of Networks standard operating procedures (N2 SOP). Each participant was given an informed consent form to sign before participating in the study (see Appendix B).

### 3.5 Participants

#### 3.5.1 Inclusion and Exclusion Criteria

Participants were eligible to participate if they were older than 18 years of age, ≤ 1-year post-partum, had a singleton birth, primiparous, English speaking, and did not experience gestational diabetes or pre-gestational diabetes (see Figure 1 below). These criteria have successfully been applied in previous qualitative literature assessing gestational weight gain experiences (Furness et al., 2011; Goodrich et al., 2013; Hackley et al., 2014; Heery et al., 2013; Z. Sui et al., 2013). In addition, the criteria were chosen for the following reasons: (1) Adolescents may have differing experiences and stressors that affect gestational weight gain (Moore Simas et al., 2015); (2) Recruitment of women within a year post-partum was to ensure women can accurately recall pregnancy experiences and consequently refer back to their entire pregnancy ranging from the first trimester up until delivery; (3) Primigravid women were singularly included as experiencing pregnancy for the first time is different than experiences from subsequent pregnancies and primiparous women are at a greater risk of excess gestational
weight gain (Kowal et al., 2012); (4) Multiple births were excluded due to having a different IOM gestational weight gain recommendation (NRC, 2009); (5) Non-English speakers were excluded due to a lack of resources to obtain an interpreter; (6) Women with diagnosed gestational diabetes and pre-gestational diabetes often receive nutrition and lifestyle advice that affect their pregnancy weight gain experiences.
**Inclusion Criteria:**

1. Ages $\geq 18$ years
2. $\leq 1$ year post-partum
3. Singleton birth
4. Primiparous
5. English speaking
6. Did not experience gestational diabetes or pre-gestational diabetes

**Exclusion Criteria**

1. Ages $\leq 18$ years
2. $\geq 1$ year post-partum
3. Multiple birth (2+ fetuses)
4. Multiparous
5. Non-English speaking
6. Had gestational diabetes or pre-gestational diabetes during pregnancy

*Figure 1. Inclusion and exclusion criteria for participation in the study*
3.5.2 Number of Participants

Fifteen one-on-one semi-structured interviews were conducted. The number of participants was based on previous qualitative literature and an article by Guest (2006) that demonstrates 12 interviews were sufficient to reach theoretical saturation (Guest, Bunce, & Johnson, 2006). Additionally, previous qualitative literature assessing similar topics conducted 15 semi-structured interviews to reach saturation (Graham et al., 2013; Harper & Rail, 2012; Jette & Rail, 2014). For example, a Alberta study assessing sugar consumption habits in pregnancy reached saturation at 15 interviews (Graham et al., 2013); a Montreal study assessing low-income pregnant women’s experiences with gestational weight gain reached saturation at 15 interviews (Jette & Rail, 2014); and a Ottawa study assessing how pregnant women construct their experiences of gestational weight gain reached saturation at 15 interviews (Harper & Rail, 2012).

3.5.3 Recruitment Method

Purposive sampling techniques were applied for recruiting women for this research study, as this was successfully used in previous health related research to ensure a diverse and representative study population (Graham et al., 2013; Sandelowski, 1995). Recruitment took place through snowball sampling and an advertisement for the study on social media. Interested participants contacted the researcher via e-mail and more information on the study was given. Potential participants were screened against the inclusion/ exclusion criteria and the first 15 eligible participants were then scheduled for interviews.
3.6 Semi-structured Interview Guide

One on one semi-structured interviews were conducted for this research as it provided an in-depth descriptive narrative of participant’s perspectives and experiences and is commonly used in the health care literature. Moreover, it provided an opportunity to gain information on a large range of topics compared to an unstructured interview, which may have resulted in a lengthy explanation on one topic. It also allowed for the elaboration and discovery of topics that may be important to the participant that the research team originally discounted and generates a rich data set of women’s experiences that would not be achievable through a quantitative survey.

In addition, weight and pregnancy weight gain is perceived as a sensitive topic and it presented a safe opportunity to explore these sensitivities, where as in a group environment women may have not wanted to disclose their experiences. However, semi-structured interviews are very individualized and you only receive information on the experiences of the women who are interviewed. This may prevent generalizability to other situations or women. Previous qualitative literature assessing women’s experiences with gestational weight gain have used this method successfully (Goodrich et al., 2013; Graham et al., 2013; Groth & Kearney, 2009; Harper & Rail, 2012; Heery et al., 2013; Huberty et al., 2010; Jette & Rail, 2014; Z. Sui et al., 2013).

3.6.1 Development and piloting of semi-structured interview guide

3.6.1.1 Socioecological model

The development of the interview guide was based on the socioecological model (see Appendix C). The socioecological model looks at the reciprocal relationship between the personal (attitudes, behaviours, genetics), social (family, peers), community (health care), and society, and their combined impact on a phenomenon (see Figure 2 below) (Swinburn et al., 2011). This model was applied in the development of this interview guide because it is
commonly used in research assessing weight gain factors, as dietary and physical activity habits are influenced by many personal and external factors (Willows, Hanley, & Delormier, 2012). In addition, this model was effectively applied to the interview guide in a qualitative study assessing influences on pregnancy weight gain in African American women (Goodrich et al., 2013).

*Figure 2. Socioecological Model*
3.6.1.2 Development of Semi-structured Interview Questions

The research team including a Dietitian and expert in qualitative research methods developed the semi-structured interview guide. The guide’s questions were based on the research objectives, while taking into consideration the different levels of influence in the socioecological model and previous qualitative literature assessing weight gain experiences (refer to interview guide in Appendix B) (Graham et al., 2013; Huberty et al., 2010; Jette & Rail, 2014). As outlined by Harrell (2009), the guide included a mix of grand tour questions to lead to long discussions and mini tour questions that ask about specific instances of experiences (Harrell, 2009). Probes were used to provide clarification for answers that were not understandable and to expand on topics that were not discussed in enough detail.

3.6.1.3 Pilot Testing and Assessing the Interview Guide

The interview guide was piloted to assess the clearness, flow and conversation that result from the questions (Van Teijlingen et al., 2001). First, two research team members with expertise in pregnancy research and qualitative methodology reviewed the questions for validity. Second, the questions were piloted in two women who are <1-year post-partum to ensure feasibility, clarity and acceptability for the study’s population. Based on their feedback, amendments to the questions were made. Lastly, at the end of each interview participant feedback was collected on comprehension, order of the questions, duration of the interview, and the delivery of the questions. The researcher assessed and documented the quality of the conversation, possible revisions, and ideas for generation of future questions. Adjustments to the interview guide were made based on this feedback. For example, it was common for the women to discuss looking on the Internet for pregnancy diet and weight gain information and therefore this was probed at subsequent interviews.
3.6.1.4 Pregnancy Timeline

A pregnancy timeline was created for the participants to map out significant events throughout their pregnancy and use these events to anchor memories of their experiences with pregnancy weight gain and eating (see pregnancy timeline in Appendix E and list of events in Appendix F). During the interviews the participants could refer back to and write on the timeline demonstrating when their experiences happened at certain time points throughout their pregnancy.

3.7 Interview Procedures

Interviews took place at a comfortable location chosen by the participant such as the participant’s home or a local coffee shop. The interviews ranged from approximately 40 minutes to 1 hour and 45 minutes depending on the length of the participants’ discussions. This amount of time was chosen as it was assessed to be sufficient to obtain detailed data based on previous qualitative studies examining gestational weight gain experiences (Furness et al., 2011; Graham et al., 2013; Harper & Rail, 2012; Jette & Rail, 2014). The interview protocol was used as a guideline on how to conduct the interview and included an introduction, informed consent and documentation of informed consent procedures, length of interview time, assurances, and the types of analyses that will result from the data. Additionally, a short demographic questionnaire was given prior to the initiation of the interview, to collect information on the participant’s age, months post-partum, marital status, education, household income, and ethnicity (see Appendix D). The interviews were audiotaped.

After the interview, the audio tape recordings were stored on a secure laptop at the University of Guelph. Notes were taken on non-verbal or situational data based on the audio recordings and the demographic questionnaire, and the interviews were transcribed verbatim.
The researcher and a trained research assistant completed transcription. To ensure anonymity and confidentiality, an alias name was chosen by the participant for use in the study. Data collection and analysis occurred simultaneously.

3.8 Data Analysis

Thematic analysis techniques were used to analyze the data in this research study. Thematic analysis was chosen as it is a flexible method for identifying, examining, and reporting patterns within the data that result in strong descriptions (Braun & Clarke, 2006), and this method has been used in previous qualitative health literature assessing experiences with gestational weight gain (Arden et al., 2014; Furness et al., 2011; Harper & Rail, 2012; Heery et al., 2013; Jette & Rail, 2014). The analysis was conducted according to the six phases outlined by Braun and Clarke (2006) below (Braun & Clarke, 2006). Movement through each step was a recursive process that vacillated from one phase to another. Data analysis was organized and completed in Dedoose version 6.1.1 (6.1.18, 2015).

3.8.1 Phase One: Familiarization with the Data

The researcher practiced prolonged engagement with the data to understand the breadth and depth of the content. This was initially done through transcription of the verbal data and checking for accuracy in the transcriptions completed by the research assistant (see Appendix G for transcription instructions). The content was then “actively read” searching for possible meanings, patterns and ideas within the data transcripts, and an initial list of ideas of potential codes was generated.

3.8.2 Phase Two: Generation of Initial Codes
The transcribed content was read and all relevant codes, and patterns were identified and organized into a code identification chart and Dedoose. To ensure the codes were generated objectively, codes were identified using a semantic approach, which generated codes based on the explicit meaning of the data, not on what is said “beyond” what was written. The code list was conceptually organized based on the socioecological model and divided into individual, interpersonal, interactions with health care providers (community), and societal categories. The following was documented for each code in Dedoose as outlined by MacQueen (1998): (1) a brief definition (2) a full definition that explains the entire code (3) a “when to use” that explains when the codes should be applied (4) a “when not to use” that explains when the code should not be applied (5) an example section of quotes pulled from the data (MacQueen, 1998). The generation of codes continued until all transcripts were coded.

3.8.3 Phase Three: Searching for Themes

 Codes were then sorted into potential themes and subthemes based on the socioecological model. Then the collection of codes that were relevant to the research questions were assembled into potential themes.

3.8.4 Phase Four: Reviewing Themes

Potential themes were reviewed and irrelevant themes were discarded or re-arranged. These included themes that did not have enough data to support them, did not fit within the research topic of interest, or were too broad. Themes were judged according to “internal homogeneity” to assess if the codes within the themes cohere, and “external heterogeneity” to assess if there are clear differences between the themes. This involves two sub phases. In the first sub phase, the collated codes were reviewed to ensure they formed a coherent pattern. In the second phase, the entire data set was reviewed to ensure the validity of the individual themes,
and whether the thematic map accurately reflected the meanings evident in the entire data set. In addition, any additional codes that were missed in the previous phases were coded in this second level.

3.8.5 Phase Five: Defining and Naming Themes

Theme names were created based on the topic of interest and the importance of the theme. A detailed analysis identifying the narrative of the theme was conducted taking into consideration the research objectives. In addition, the broader context such as culture, ethnicity, etc., of theme was taken into account throughout the analysis. Themes in relation to others, and themes relationships with subthemes were also considered. By the end of this phase the themes were clearly defined and the scope of each theme was coherent and concise.

3.8.6 Phase Six: Producing the Report

The beginning of this phase was marked by a set of fully worked out themes. The analysis of the themes was written up in a concise, coherent, logical, and interesting manner. Examples from the data that capture the essence of the theme were included to provide examples and increase study rigour.

3.9 Scientific Rigour

Rigour was established using the following strategies throughout the data collection and analysis stages. The methods for selecting the participants were described thoroughly. Prolonged engagement with the data was spent to ensure a strong understanding of the content in the transcripts and my personal reflexivity with the data was reported. Thick descriptions of my methods were provided, in addition to describing how and why things were coded. Finally, verbatim quotes were used as evidence in the report of the interpretation of the analysis.
CHAPTER 4: RESULTS

4.1 Demographics

The demographics of the sample are shown in Table 2. In total, 15 one on one semi-structured interviews were conducted. The duration of the interviews ranged from 40 minutes to 100 minutes. The women’s ages ranged from 22 to 39 years old, with an average age of 32 years old. Overall, the majority of the participants were Caucasian, and upper middle class. In addition, all of the women were married or in a common law relationship and had completed or were currently completing higher education. Months post partum ranged from 2 to 11 months, with an average of 6 months post partum.
Table 2. Characteristics of Study Participants (n=15)

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<th>Mean (Range)</th>
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<td>Maternal age</td>
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<tr>
<td>Years (mean [range])</td>
<td>32 (22-39)</td>
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<tr>
<td>Months post partum</td>
<td></td>
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<tr>
<td>Months (mean [range])</td>
<td>6 (2-11)</td>
</tr>
<tr>
<td>Marital status (n)</td>
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<tr>
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<tr>
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</tr>
<tr>
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</tr>
<tr>
<td>Upper ($125,000+)</td>
<td>3</td>
</tr>
</tbody>
</table>

* Both currently enrolled in University
4.2 Introduction Based on the Socioecological Model

The women in this study identified many factors that influenced their experiences and behaviours regarding pregnancy weight gain and eating. To illustrate this, the results are organized based on the socioecological model into the following sections: personal, social and community, and societal. In addition, the results then describe the type of nutrition and weight gain information women looked for and received in pregnancy, and the identified gaps in prenatal counselling around nutrition and weight gain. Refer to Figure 1 for a visual representation of the results section.
Figure 1. Outline of the results section based on the socioecological model
4.3 Personal Influences on Experiences with Eating and Gestational Weight Gain

4.3.1 Thinking about Eating and Weight Gain

The interviews showed that women are thinking about their eating and weight gain in pregnancy. Participants unanimously described how, why and when they are thinking about their pregnancy eating and weight gain. All of the women were conscious of their eating and almost all of the women were conscious of their weight gain during pregnancy and identified a drive to make healthier choices. This was demonstrated in a statement from Caroline, “I wanted to eat healthier, I made a big effort to eat less junk food” (Caroline). In addition, several of the women discussed becoming more conscious of their eating habits and diet, expressed in this comment “I was really conscious about all of the things you’re not supposed to eat. And whether or not I believed in them. You’re not supposed to eat sushi but I did anyways” (Jasper).

Women’s thoughts on eating and weight gain during pregnancy fluctuated depending on their trimester. Several of the women thought about their pregnancy diet and weight gain before becoming pregnant, particularly if they had planned to conceive. This was illustrated in this excerpt from Jo Ray:

“When I was thinking about it. Um, I’d say even before, like before I got pregnant I was thinking about it. Um, and that’s simply because I’ve always been heavier, and my concern was, oh my god I’m going to get pregnant and I am going to become the size of a house, like It was not healthy and it’s not safe probably for the baby, so we went through um, uh some healthy you know eating and weight loss plans before.” (Jo Ray)

Furthermore, a few of the women identified having difficulty making a mental shift in order to accept their pregnancy weight gain, as evidenced by this statement from Jasper:

“You are supposed to gain weight and you’re supposed to eat more, and there is a reason why you are gaining weight. And that’s/ intellectually I completely
understand that and I don’t have a problem with that, um but it’s really hard to go from literally in a day, like the day you find out you’re pregnant, you’re all of the sudden like oh I’m going to gain weight now and I have to be ok with it.” (Jasper)

Almost all of the women thought about their eating and approximately half of the women thought about their gestational weight gain in the first trimester. The women identified this period in pregnancy as the most important time to have an adequate nutrient and folic acid intake for the development of the baby. This is illustrated in these words from Owen:

“Oh, Uh, (…) I would say somewhere in the beginning, in the first trimester for sure. Um, (.) where, you know you get all the blood work done to see if your levels are all ok, and I think my iron was low even though I was taking vitamins. So I was just kind of doing some research on what I should be eating, and then like Google happened, you know you know you Google like everything that you should and shouldn’t be eating, and how much weight you’re supposed to gain, and um, that was the first time I really thought about it I guess.” (Owen)

In the second trimester, consciousness of eating and weight gain tended to decrease. Several of the women reported feeling more relaxed in this trimester, as stated by Jasper:

“Honestly I think when I felt very good in the second trimester I probably thought less about weight gain then because I felt awesome and normal and I didn’t even feel that I was pregnant for a lot of that time, so I thought less about it then.” (Jasper)

Finally, in the third trimester, thoughts around weight gain tended to increase when the women were dissatisfied with the amount they were gaining and decreased when they were satisfied. In this comment from Vanessa Rahimpour her thoughts around weight gain decreased in the third trimester:

“One of the things that influenced the amount, um or the amount of time I thought about my weight gain was, um when I was gaining less weight at the end I didn’t think about it as much, even though I was the heaviest I was during my whole pregnancy.” (Vanessa Rahimpour)
Additionally, approximately half the women thought about eating more in the third trimester, specifically when they thought they were gaining too much weight. Whereas the other half of women thought about eating less frequently attributing this change to caring less as pregnancy progressed. Thinking about eating in the third trimester due to excess weight is expressed in a comment from Jasper:

“Towards the end, um because I had gained a lot more than I expected to, and I was measuring big always, and I didn’t know if that was because I gained a lot of weight or because I had a big baby. Um so I had midwives, and they had suggested to me that I curbed my sugar intake to try and avoid gaining a lot more weight and also avoid having the baby gain a lot more weight for delivery. Um so it was probably one of the times I was the most conscious about what I was eating, and how I was consuming food and what I chose.” (Jasper)

4.3.2 Weight Gain and Eating Beliefs and Expectations

This cohort of women did not believe in commonly seen pregnancy myths and expectations such as eating for two, you can eat what you want in pregnancy and you’re supposed to gain weight in pregnancy. However, some of these women would state similar beliefs to justify their food choices, for example Leigha stated “I think I took advantage of I’m pregnant so I can eat these things, um I definitely ate a lot of poutine at the mall.” (Leigha), Jasper explained “oh I am supposed to gain weight so like it doesn’t matter if I have fries again” (Jasper), and Monica discussed “(...) also like I’m eating for two mentality of never feeling guilty about eating ice cream or extra dessert or fried food yea.” (Monica).

In addition, several of the women shared the amount of weight they expected to gain in pregnancy and if these expectations were met or not met. Some women thought they would be able to control the amount of weight they gained in pregnancy and some of the women compared their weight gain against the IOM (2009) guidelines. For example, Vanessa Rahimpour
expressed comparing her weight to the IOM recommendations, “I remember reading, um what was normal for pregnancy weight gain per week and trying to compare myself to that, and being way over what the normal amount was supposed to be.” (Vanessa Rahimpour).

The women also shared that their pregnancy eating habits were different from before pregnancy and weren’t what they expected. For example Rachel comments on this:

“I wasn’t a big snacker and I had/ I would eat bear paws, do you know those bear paws, those have a ton of carbs in them as well I learned, but I would keep those in my desk because I heard/ I started to develop this mindset of like don’t be hungry don’t be hungry. So anything I felt the slightest bit hungry I would eat something and I don’t know where/ I guess it was trying to feed the baby or I don’t know where that came from but keeping food at my desk was not something I ever did before.” (Rachel)

These excerpts demonstrate that women had expectations about how much weight they would gain and how their eating would change during pregnancy, however, these expectations were often not met.

4.3.3 Internal and External Influences on Thinking

There were many factors that influenced women’s thoughts and behaviours regarding pregnancy weight gain and eating that can be categorized into internal and external influences (see Figure 2 below). Internal influences included thinking about the baby, pregnancy body changes, body image, emotions and feelings, and pregnancy symptoms. External influences included maternity clothes, being weighed, health care providers, family, friends, weather, work and media. These influences will be discussed in the following paragraphs.
Figure 2. Internal and External influences on thinking and behaviours regarding gestational weight gain and eating.
4.3.3.1 Internal Influences

4.3.3.1.1 Thinking About the Baby

Thinking about weight gain and eating in the context of the baby and pregnancy was the most commonly mentioned influence throughout women’s narratives. The women would think about how eating healthfully would influence the health of the baby and this would motivate them to eat healthier. In addition, the women would connect their pregnancy weight gain to the growth and size of the baby. This is evident in this statement: “No, I had a ten pound baby, so like I think that that was a big contributor to why I gained 50 pounds.” (Jasper).

4.3.3.1.2 Pregnancy Body Changes

Almost all of the women discussed how the changes in their body, other than weight gain, influenced their thinking. For example Leigha exclaimed, “You know more stretch marks come, and my belly getting bigger, I thought about how big she was and that kind of thing.” (Leigha). Some of these women would discuss how the physical limitations of pregnancy such as not being able to fit certain places made them think of their pregnancy weight gain. The timing of their weight gain and whether they were showing influenced several of the women’s thoughts. In addition, several of the women thought about how they were going to look post partum as evidenced in Julie’s comment:

“Well I think that I (…), it was like very obvious to me that my body was never going to be the same. It was like so after I am done here, like, what’s going to happen to my body. Like I was so concerned about that. I was like, is this going to make me more you know/ is it going to make me gain weight faster, or like is it going to just change the way that I look?” (Julie)

It is evident that there are pregnancy body changes other than weight gain that can influence women’s perceptions about their bodies during pregnancy.
4.3.3.1.3 Body Image

Almost all of the women reported having both a positive and negative body image during pregnancy, which affected their perceptions and experiences with pregnancy weight gain. This was influenced by many social and psychological factors such as time point in pregnancy, desirable and undesirable body changes, interactions with people, and thinking about pregnancy.

4.3.3.1.3.1 Time Point in Pregnancy

Experiencing a positive or negative body image was dependent on trimester. Most women had a positive body image in the second trimester and few reported a positive body image during the first and third trimesters. Some women had a negative body image in the first trimester, few reported a negative body image in the second trimester, and almost all the women had a negative body image in the third trimester. For the first and second trimesters, becoming visibly pregnant and experiencing fewer pregnancy symptoms had a positive influence on women’s body image. In contrast, in the first trimester, feeling heavier but not visibly pregnant had a negative influence on women’s body image. For example, Jasper discusses how her body image was affected in the first trimester because she gained weight and had not started showing:

“Umm, at the beginning you just feel bloated and fat because you are gaining weight and you do have a lot of bloat but it doesn’t look like a belly yet, so I don’t know I felt uncomfortable, and like gross.” (Jasper)

It was also common for the women to discuss the second trimester as a positive time in their pregnancy that contributed to a positive body image. One interviewee, Tyson, explained that ‘I felt like myself’ and ‘those were the best times’ (Tyson). She also said ‘I felt like I was pregnant but I didn’t feel huge’. Similar phrases were found throughout the other women’s dialogues, suggesting that there is a ‘sweet spot’ in the second trimester that contributes to women having a more positive body image. However, most women also observed that body
changes in the second trimester such as having to shop for maternity clothes had a negative influence on their body images as it reminded them that their body is changing and that these pregnancy changes might be permanent. This is explained in an excerpt from Alex: “you can’t help but think like am I going to feel like myself, am I going to be able to fit in my clothes again, it’s weird. And it gets worse as you get bigger (laughs) ya.” (Alex)

For the third trimester, almost all of the women expressed that as pregnancy progressed and they gained more weight, their body image decreased as a result of feeling bigger and bloated. Additionally, many of the women discussed feeling dissatisfied towards their bodies due to swelling and hot weather.

4.3.3.1.3.2 Desirable and Undesirable Body Changes

Almost all of the women identified desirable and undesirable body changes that influenced body image. Most of the women described desirable body changes as gaining weight in the stomach, getting bigger breasts, hips, and butt, and undesirable body changes were weight gain in the arms, face, thighs, and hips. There was some overlap between undesirable and desirable body changes due to differing insecurities experienced by the women prior to pregnancy. For example, Patches described that her increase in breast size as an undesirable body change because she previously did not like the size of her breasts whereas Jasper enjoyed the increased size of her breasts. In this example, Gemma expresses positivity towards her pregnancy belly:

“(…) I was more pleased with my body image the more pregnant I became. (…) So, this lovely period where I was showing this nice round belly, um and I can remember actually going my husband and I went for a weekend away in um, January. So ya, so probably about seven and a half months pregnant then. And, um wearing a bikini to the pool we were at, and just being like really pleased with that. And I can remember thinking like I never like wearing bikinis, (…) I was just
like very pleased with how I looked, and um and I felt good in my body and um felt really attractive (...)” (Gemma)

In contrast, Patches discusses experiencing undesirable body changes:

“Um, I would always like, I think because I only gained weight in my stomach and in my breasts and I hated that, um I would just basically just catch myself in the mirror and go like uch, which is not nice to yourself, you have a little more compassion about what you’re going through (...) also just because of the way my stomach was, it wasn’t like a big ball, it just looked like it, I definitely looked pregnant, but it wasn’t like the basketball pregnancy it was just like oh I can tell your pregnant but more of a wider stomach towards the bottom. So it was I felt like oh well definitely fat (...).” (Patches)

A few of the women expressed feeling more positively towards their pregnancy weight gain, when they thought about their pregnancy body changes in the context of pregnancy. For example, one interviewee discussed feeling more positive towards her pregnant body compared to her pre pregnant body:

“And that was uh, but I struggled with weight my whole life, like my whole whole life, and it’s been a very sensitive subject for me [and] my whole family. Um, so, I’m it’s something I am always very conscious of, but, I did feel, even though I was gaining weight during pregnancy, I felt beautiful you know. And that was, that was really really refreshing you know.” (Jo Ray)

In addition, some of the women had a more positive body image when they thought about their pregnancy weight gain in the context of pregnancy and thinking about how their weight gain is supporting the baby’s growth and subsequently their health.

4.3.3.1.4 Emotions and Feelings

Emotions and feelings were common themes and almost all of the women identified negative and positive emotions and feelings associated with pregnancy weight gain and eating. These included feeling worried and anxious, stressed, guilt, and feeling healthy.
Almost all of the women expressed they were either worried or anxious about their eating or weight gain during pregnancy and this was attributed to health related concerns, gaining too much or too little weight, and external messages about weight. The women were most concerned about preventing health complications for their health and their baby’s health, and expressed worry about their weight gain because of the development of birth complications and maternal complications such as gestational diabetes and pre-eclampsia. For example, Josephine commented about her fear of developing gestational diabetes and hypertension:

“Uhhh yea like I said with the gestational diabetes, that really worries me, terrified me, just because I know it puts you at risk of having it later on after pregnancy and yea all of the risk that could possibly happen with being overweight like I even thought of oh what if I get like hypertension or something like that but I wasn’t worried so much about that because they checked my blood pressure all the time and it was good yea.” (Josephine)

Similarly, a few of the participant’s eating habits were influenced by pregnancy complications they were experiencing such as a marginal cord, or kidney problems. For example, Josephine had a marginal cord and she ate more because she was worried her baby would not get enough nutrition.

Gaining too much or too little weight influenced most of the women to worry about their pregnancy weight gain. For example, Rachel discusses that she didn’t become “sensitive or worried about what I was eating until I started gaining more and more weight and getting bigger and bigger and bigger”. Specifically in the third trimester, most of the women expressed concern that gaining too much weight could lead to a big baby and delivery complications and some women discussed worrying about gaining too little weight if their weight gain stopped or slowed down towards the end of their pregnancy. Additionally, a few of the women were
worried about not looking pregnant enough, which was common in the first trimester and due to feeling like they gained weight but not looking pregnant. About half of the women reported worrying about their ability to lose weight post partum and placed importance on looking like themselves after delivery. Patches reported:

“I made sure that I ate but a lot of like, anxiety stemmed from that just how I was going to look after, um I know that sounds very vain.” (Patches)

Finally, the women’s worry was influenced by external messages about weight. Some of the women reported that being weighed at prenatal visits increased their anxiety because they didn’t like to see the number on the scale and it persuaded them to think they were gaining too much or too little weight. This was summarized in the following comment from Tyson:

“I went for my like, I was like a 16 week checkup with my OB and I got on the scale and I had already gained like ten pounds, and I was like very tired and I burst into tears, um, and, I was just like, and a lot of the things that I have read before were like you are not supposed to gain any weight in your first trimester, and so then I was like oh my god I am going to gain so much weight, and I’m going to be like huge, and I was also just really stressed out and sleep deprived, and I kind of had a little bit of a meltdown with my doctors nurse.” (Tyson)

Tyson also discussed worrying because she gained outside the recommended guidelines. A few of the other women expressed that the guidelines caused them to worry about their weight. Similarly, one interviewee mentioned worrying about the eating guidelines for the first trimester and said that she “was a little bit concerned about it, because you’re not really supposed to eat any more calories at the beginning of your pregnancy” but found it hard because she was "so much hungrier all of the time."(Jasper). Lastly, comments from family members and friends about their pregnant body size led to some of the women feeling anxious or worried that they have gained too much or too little weight.
4.3.3.1.4.2 Stress

Most of the women discussed stress affecting their eating habits and weight gain in pregnancy. For some women, stress led to eating less because they felt busy and overwhelmed, whereas for others, it led them to eat more as they found eating helped them deal with stress. For example, Julie discussed her realization that when she was stressed, she tended to eat more than she regularly would:

“Uh (...), well I realized that I stress ate (laughs), um, I think that I was really emotional in my first trimester I was like would just fly off the handle for no reason (...).” (Julie)

This was common with other interviewees, where stress from a job would lead to snacking more on high sugar foods, or stress from a move or renovation would lead to choosing more convenience and fast foods.

4.3.3.1.4.3 Guilt and Fear

Almost all of the women discussed feeling guilty about their eating habits and about indulging in cravings. In addition, they discussed being fearful when they didn’t follow the food safety recommendations and were being weighed at prenatal appointments. This was internally influenced or externally influenced from interactions with people or the internet.

Almost all of the women felt guilty at some point in their pregnancy about their food choices, and described this as a constant “mom guilt” that would drive them to think about how their food choices were affecting their baby. For example, Julie suggested she experienced “mom guilt” and this affected her eating habits:

“(...) It was like, I need to make sure that if I am going to eat a burger I have to have a salad with it. And everything that I put in my mouth, I was like it is going to affect my baby. Everything. So it was like, I missed um my prenatal vitamins
and stuff and so its like, oh well/ oh my god I missed a prenatal vitamin this morning/ its like oh well they are not getting the nutrition they need. So maybe I need to eat more kale today. Or like spinach, or stuff like that.” (Julie)

Additionally, most of the women felt guilty about eating unhealthy foods or indulging in cravings that were unhealthy, stating “everything I put in my mouth I felt guilty about” (Julie). They connected the foods they ate to what the baby was eating and this would motivate them to make healthier food choices.

Interactions and recommendations from health care providers such as the food safety recommendations and being weighed at prenatal visits triggered fear and guilt in some of the women. For example, the women expressed that when they deviated from the food safety recommendations, for example eating deli meats or soft cheeses, they were scared that they harmed their baby. Furthermore, a few of the women discussed the fear of seeing the number on the scale when they were weighed at their prenatal visits.

External influences from people and the internet affected whether women felt guilty or fearful towards their eating and weight gain. This included negative comments about eating or weight gain from family members that would lead to feeling guilty about food choices or fear that they have gained too much weight in pregnancy. Moreover, for a few of the women identified that information on the internet made them fearful of doing something wrong when they read about a new food recommendation or a supplement they should have been taking. For example, in this excerpt Julie discusses reading about omega-3 supplements: “(...) So freaked out that I went out and bought DHA like my last trimester. I was like crying I was like oh my god should I have been taking DHA this entire time?” (Julie).
Women would deal with this guilt and fear in different ways. The first was compensation, where women would choose healthy foods to compensate for indulging or forgetting to take prenatal vitamins. This was demonstrated in a comment from Rachel:

“Umm I don’t think so because I already knew I was eating/ if I ate something that was not very healthy I would feel a little bit of guilt, a little tiny bit of guilt. Like my husband loves poutine and if we had poutine for supper I would think Ughh this probably wasn’t the greatest day for the baby’s nutrition but I kind of took it in stride thinking I’ll make up for it the next day (...).” (Rachel)

The second way women dealt with fear was by consulting a health care professional or friend. This was frequently done with food safety concerns and issues found on the Internet. Finally, women dealt with a fear of being weighed by avoiding seeing the number on the scale, which helped mitigate their fear and feel better about their pregnancy weight gain.

4.3.3.1.4.4 Feeling Healthy

Some of the women expressed feeling healthy in their pregnancy because they ate healthy foods, felt like themselves, were able to exercise, and met guidelines. For example, Gemma explains that her craving for mandarin oranges during pregnancy, made her happy that she was craving a food that she thought was healthy for both her and her baby. Cravings for other fruits and vegetables were also mentioned by other women, and had a positive influence on women’s thoughts about their health during their pregnancy.

In addition, some of the women expressed that they felt healthy when they felt like themselves during their pregnancy, particularly in the second trimester when they were able to continue with their routine physical activity. This influenced the women’s perceptions and actions, as some of the women expressed taking care of themselves by exercising and eating well, which led them to feel like they are doing something right. Interestingly, one interviewee
discussed how gaining within the recommendations and seeing her weight gain progress according to the guidelines, reassured her that she was practicing the correct healthy behaviours in pregnancy.

4.3.3.1.5 Pregnancy Symptoms

Pregnancy symptoms were unanimously mentioned as having a profound impact on pregnancy dietary habits and weight gain and included, cravings, fatigue, increase and decrease in appetite, food aversions, and nausea and morning sickness. These pregnancy symptoms were commonly mentioned as influences on women’s thinking and behaviours around their weight gain and eating.

4.3.3.1.5.1 Cravings

Cravings were a widely discussed topic among the women’s interviews. The women described what their cravings looked like, the cultural and environment triggers, and how they reacted to their cravings by either indulging or resisting. Almost all of the women experienced cravings in pregnancy, with some experiencing cravings in the first trimester, some in the second trimester, and some in the third trimester. In addition, approximately half of the women explained that they experienced cravings throughout their entire pregnancy and this changed from trimester to trimester. When asked to describe their cravings many of the women mentioned craving sweet things, such as ice cream, chocolate and candy. Fruit was also a common sweet craving, where many of the women discussed craving fruit as positive because they felt like they were eating something healthy for their baby. Some women mentioned craving comfort foods such as pizza and cultural dishes they grew up with. Almost all of the women discussed that they thought the stereotypical cravings such as pickles and ice cream was a myth and that they themselves did not experience this and only a few women mentioned experiencing
unique cravings during their pregnancy, for example ketchup on pasta. A few of the women mentioned that their cravings were triggered by the environment, such as an ad on the television or a restaurant in close proximity. Moreover, many of the women said that the types of foods they were craving changed in pregnancy compared to pre-pregnancy. For example, Patches describes how her cravings changed from salty to sweet:

“I never liked cookies, like I never ate cookies, I never ate Timbits, and I was just like I need sweets, like I needed sweets, I don’t know why it was just so bizarre” (Patches).

Some of the women described their cravings as persistent and unavoidable. For example, one participant said: “One day I had five corn beef sandwiches I think in one day because I had to have corn beef sandwiches.” (Monica). In addition, almost all of the women discussed indulging in their cravings at some point in their pregnancy. However, many of these women discussed limiting their indulgences or only indulging within reason, which meant not giving themselves a free pass to eat whatever they wanted and limiting to one or two treats per day. If they discussed being out of control of their cravings it was usually a rare occasion. Furthermore, almost all of the women tried to limit themselves or resist their cravings at some point in their pregnancy, with a few of these women limiting themselves for the health of their baby or to limit their weight gain. In a few instances, resisting cravings led to overindulging later.

### 4.3.3.1.5.2 Fatigue

Most women identified that fatigue influenced their weight gain and eating during pregnancy as it prevented them from practicing healthy eating habits. A few women mentioned feeling tired in the first trimester and most of the women mentioned feeling tired in the third trimester. They attributed this fatigue in the first trimester to changes in hormones, and in the third trimester to feeling too big. Women commonly reported that fatigue prevented them from
practicing healthful eating habits or they used it as an excuse to indulge in cravings. For instance, Vanessa Rahimpour discusses how feeling tired led to justifying an indulgence:

“(...) I was allowing myself, indulgences as a pregnant women who had you know, who was, tired all the time, who was carrying extra weight, who was moody and all that stuff, and um giving myself the, the ability to treat myself quite a lot (laughs).” (Vanessa Rahimpour)

In contrast, a few of the women found that their indulgences and unhealthy eating would lead to them feeling tired, and they used this as a motivator to practice healthy eating habits more often.

4.3.3.1.5.3 Increase and Decrease in Appetite

The women discussed having an increase in appetite that influenced their pregnancy weight gain and dietary habits. Most of the women experienced this throughout their pregnancy, however, some of these women discussed how their appetite increased as their pregnancy progressed and a few of these women mentioned it was the most persistent in the first and third trimesters. In addition, they described the increase in hunger as constant throughout the day and unusual, as they had never experienced this pre-pregnancy. The women discussed having to change their dietary habits in pregnancy, by snacking more frequently or keeping food at their desk because they were constantly hungry. Also, a few of the women discussed never feeling full and having large eating sessions. For example, Vanessa Rahimpour said:

“Um, (...) having big eating sessions (laughs) you know where I’d be like, I’d eat dinner and it would be a huge amount of food, and then I would eat, and then I’d have like a dessert, then I’d have like another dessert (laughs), or I just, or I was just eating all day long like constantly, constant eating, like constant hunger, ya.” (Vanessa Rahimpour)
In contrast, some of the women discussed that their appetite decreased in pregnancy and this specifically occurred towards the end in the second and third trimesters. This affected their dietary habits as they felt full quickly and would compensate by eating smaller more frequent meals. For example, one participant said:

“Um at the end I noticed like as you fill up with the baby, you eat less because your stomach is compressed and you have less room, so I noticed my appetite went down then.” (Jasper)

In addition, a few of the women discussed forcing themselves to eat even though they weren’t hungry, to make sure the baby is receiving enough nutrients. One woman explained:

“(…) I didn’t have much of an appetite at all during my pregnancy, um, I some people I know are just like constantly hungry and that wasn’t my experience in my second and third trimester, um, like I’d definitely made a point to eat three good meals a day and stuff, (…)” (Tyson)

4.3.3.1.5.4 Food Aversions

Some of the women discussed experiencing food aversions in their pregnancy. Aversions most commonly mentioned were aversions to meat or protein and spicy foods. This was discussed in the context of having low blood iron levels, in which the women had to be creative or research sources of iron because they were unable to get it from meat. One of the participants discussed coming up with creative solutions to include more iron in her diet:

“The iron umm, so when I was pregnant I uhh, the only food aversion I had was meat. I didn’t want to eat meat at all, it really was the only thing that could bring me very close to vomiting, and so umm my iron levels were low and I was taking iron supplements. I just don’t remember who told me that kale could be a good substitute or umm (…) or something.” (Caroline)
4.3.3.1.5.5 Nausea and Morning Sickness

Most of the women experienced nausea or morning sickness during their pregnancy. This was commonly experienced in the first trimester and stopped anywhere from eight weeks to sixteen weeks gestational age. This affected their dietary habits as they ate less or weren’t able to eat certain foods that triggered nausea. Food choices were based on “whatever will go down” (Kate) or “I would kind of avoid foods that weren’t as nice coming up.” (Leigha). Foods that the women discussed that helped combat nausea were foods high in carbohydrates such as saltines, cereal, and toast. In addition, dairy and ice cream also helped combat nausea and was described as refreshing. For example, one participant discusses how dairy helped her nausea:

“(...) Quite a bit of nausea and that was the thing that really seem to kind of like settle my stomach be easy to tolerate, um tasted good, the milk was kind of like refreshing and then, but then I also really um had along with that this craving for like soft serve ice cream.” (Gemma)

Also, some women said that they felt nauseated or sick when they had an empty stomach and would constantly have to eat to make sure their stomach never felt empty. In this case, eating small frequent meals throughout the day helped, and for women who didn’t previously eat breakfast, eating breakfast helped improve their nausea.

4.3.3.1.5.6 Heartburn

Only a few of the participants experienced heartburn during their pregnancy. One participant experienced heartburn throughout her pregnancy, and discussed how this prevented her from over indulging in cravings or eating too much, because if she did indulge her heartburn would get worse.
4.3.3.2 External Influences

4.3.3.2.1 Maternity Clothes

Growing out of pre pregnancy clothes and shopping for maternity clothes were the most
cited external influences on women’s thoughts around pregnancy weight gain, as explained by Jo
Ray, “when you start not even being able to wear your jeans, your like oh man, oh man you’re
getting big, right (laughs).” (Jo Ray).

4.3.3.2.2 Interactions with Health care Providers and Being Weighed

Weighing themselves or being weighed by a health care provider was the second most
commonly discussed influence on thinking about pregnancy weight gain. Furthermore,
interactions with health care providers and routine tests such as the gestational diabetes test
increased thinking around weight gain an eating. For example, Jasper explains how her
interactions with her midwives increased her consciousness around eating and weight gain:

“And then my midwives I would say are a second big influence, because um they
weigh you and monitor your growth and talk to you about eating habits, and I
think you know they made me feel conscious of it.” (Jasper).

Furthermore, Gemma explains how the gestational diabetes test increased her thinking:

“Um it came up a little bit around the fasting glucose test, sort of thinking I want
to, I want to pass the test (laughs), and uh then thinking right around then oh I
shouldn’t be eating like so many muffins or I shouldn’t be you know I need to like
not eat sweets and that kind of thing (...) so that so that I’m my you know my
blood sugar stays even.” (Gemma)

4.3.3.2.3 Weather and Media

Approximately half of the women discussed the weather during the summer having a big
influence on thoughts around eating, such as choosing fruits and vegetables that were in season
or going to more social events. This was explained in an excerpt from Monica: “inevitably you’ll
be pregnant in the summer but I felt like that was a big part of my pregnancy was in the heat and the summer so that was a big part of eating yea” (Monica).

Lastly, approximately half of the women discussed how the media influenced their thinking:

“Um just other like, just like bullshit on like Instagram. You see like these women and you don’t look pregnant and you’re like seven months pregnant and then they give birth then five days later they’ve got abs again. I’m just like go to, you know it’s not true and you know it’s just like how they shed that baby weight, like those garbage like magazine just your typical things that destroy women’s you know ideas of themselves and what they should be just media garbage.” (Patches)

4.3.4 Women’s Health Behaviours and Strategies for Practicing Behaviours

In analyzing the interviews, all the women discussed daily eating habits and behaviours. Many of the women identified practicing healthy behaviours in their pregnancy and mentioned strategies they put in place to practice these healthy behaviours. This will be discussed in the following sections.

4.3.4.1 Daily Behaviours

4.3.4.1.1 Behaviours Practiced

All of the women mentioned practicing healthy eating behaviours in pregnancy. This included eating more fruits and vegetables, incorporating more variety into their diets, decreasing their sugar and salt intake, taking their prenatal vitamins and increasing their water consumption. Most of the women increased their fruit and vegetable consumption and identified fruit as sweet, convenient, refreshing, and a healthy choice if they were having a sweet craving. They also discussed integrating certain fruits and vegetables to get key nutrients they were deficient in. For example, incorporating kale in their diet if they had low blood iron levels or eating more avocados because they are high in folic acid.
Some women discussed incorporating more variety to their diets. This included becoming more creative with meals and adding foods they didn’t eat prior to pregnancy, such as beans, hemp hearts, flax, avocado, and yogurt. This was to increase protein or their fibre intake if they experienced constipation in pregnancy. The women also discussed eating a variety of different foods throughout their day like protein, whole grains, fruit, vegetables, and healthy snacks. For example, Jasper describes that she tried to eat a varied diet in her pregnancy:

“(…) Lunch would always be like probably leftovers from dinner the night before, so it would be a lot of like stir fries (…) It’s not like there is one thing I ate for lunch and dinner every single day, I tried to eat a good balance of like vegetables, protein, limit like white carbs, um eat healthy whole grains. I don’t know. Mostly I tried to eat a lot of whole foods, we cook a lot so it’s easy (…)” (Jasper)

In addition, most of the women discussed decreasing or choosing foods that are lower in sodium and added sugars, to decrease swelling experienced by some of the women in the third trimester or to avoid gestational diabetes. For example Leigha discusses: “and then getting closer to the end, to stay away from gestational diabetes (…) so I tried to stay away from super super sugary foods as well to avoid getting that” (Leigha). Two of the women cut back on their carbohydrate intake to slow down their weight gain in the third trimester.

Almost all the women mentioned that taking a prenatal vitamin was important to them and identified that taking a daily prenatal vitamin provided a sense of security that their baby is receiving enough nutrients, even if they didn’t practice the healthiest eating habits that day. Some of the women increased their water consumption in pregnancy. For example Tyson discussed: “Um, I tried to drink a lot more water too, actually that was a big thing, I was making a big effort to drink a ton of water”. One of the reasons to drink more water was to help reduce edema towards the end of pregnancy. Women discussed trying to make water more easily accessible to them by buying a water bottle and keeping it at their desks. In addition, a few of the
women discussed that although they ate healthfully in their pregnancy, they were less restrictive with their eating compared to pre-pregnancy and would allow themselves an extra serving of food or a treat more often than they would have compared to before pregnancy.

4.3.4.1.2 Time Point Healthy Behaviours were Adopted

Most of the women practiced healthy behaviours prior to pregnancy and discussed carrying over these habits into pregnancy. For some of the women who did not eat as healthfully prior to pregnancy, they adopted healthier eating habits in the first trimester. In a few cases, the women discussed healthy pregnancy eating habits and weight gain with a health care professional prior to their pregnancy and adopted these healthier habits then. For example Rachel discusses adopting healthier habits pre-pregnancy:

“I know before we decided to start trying like I wanted to start incorporating some healthier habits into our, my husband and I, our lifestyle so that it wouldn’t suddenly be alright, now we’re gonna try to have a baby let’s change everything so I like started thinking alright you’re supposed to have fish once a week so lets make sure we do that and then we’d already had been drinking skim milk, I started buying omega-3 eggs again just for her, but because I was already a healthy eater, I didn’t really have to change too much at all.” (Rachel)

4.3.4.1.3 When Healthy Behaviours Were Practiced

Healthy behaviours were practiced more often in the first and second trimesters and less in the third trimester. The women discussed how the first trimester was the most critical time period in pregnancy because the baby is developing and therefore it is the most important to eat healthfully and take prenatal vitamins. In the third trimester the women reported not practicing healthy behaviours as often and attributed this to reassurance from the doctor that the baby is fine, fatigue from carrying the baby for nine months, and being busy preparing for the baby. For example, Julie discusses how her pregnancy eating habits changed throughout her pregnancy:
“And uh, then my third trimester, (...) I just was done, there is a reason why, I swear, its like by the end of your trimester, your just/ you basically thrown everything that you’ve been doing for the past two trimesters out the window. Cuz your just like my body is sore, I just need to get this baby out, so I am done (laughs).” (Julie)

4.3.4.2 Strategies for Practicing Behaviours

All of the women talked about strategies they incorporated into their pregnancy in order to help them practice the healthy behaviours. These included preparing food, eating more frequently, researching and keeping track of their food intake, and de-stressing.

Most of the women participated in food preparation in order to make sure healthy options were available at their disposal. This included meal planning for the week, being prepared with groceries, making sure that they had ingredients, and buying containers to store the food. Some of the women started cooking more frequently at home during their pregnancy and ate out less frequently. For example Owen discusses cooking more, eating out less, and preparing the ingredients:

“I was trying to cook a lot more at home. We used to eat out a lot/ Um, so I was trying to cook for myself, trying to buy more organic, and it was like towards the end, (...) we would always go to farmers market, just to try and get uh good foods so we can cook with it.” (Owen)

In addition, food preparation such as making extra batches for lunch or to freeze and preparing snacks were common strategies. The women discussed preparing healthy snacks for work to keep at their desk such as crackers and cheese and preparing snacks for night in case they woke up hungry. Having vegetables cut up in advance was commonly mentioned and keeping snacks in their purse such as a granola bar or a handful of nuts was also common, as discussed by Jo Ray:
“(…) I would just get hungry on a whim, so I would always have something in my purse, whether it was a healthy type of granola bar or a little bag of nuts, or whatever it was, um, so that always that saved me a lot of the times, from going out and buying something at the gas station or something like that you know.” (Jo Ray)

Most of the women discussed eating more frequently or on a schedule to help stave off hunger and improve pregnancy symptoms such as nausea and poor appetite. Similarly, women tried to increase their food intake to ensure the baby is receiving enough nutrients. For example, Leigha discusses scheduled eating to make sure her baby was getting proper nutrition:

“I think I tried to eat more like on a schedule because I was so used to just eating, being a student and that, I was so used to just eating whenever I had time and then I found finally said ok I need to be making sure I am not missing meals, and getting all of my food groups, like that kind of thing (…)” (Leigha)

Furthermore, some of the women would research foods and read nutrition labels, a few kept a food diary, and a few counted servings according to Eating Well with Canada’s Food Guide. For example, one participant made sure she was getting enough vegetable servings by counting her vegetable intake on her hands. A few of the women tracked and monitored their sugar intake by limiting or budgeting their treats. For example, Caroline said:

“(…) I eventually had to give myself a sugar budget or like a chocolate budget (laughs) so that it was like okay you can have like if it’s a chocolate bar you can have one row per day and if you’re having a really shitty day then you can have two rows of that chocolate bar, but that’s all you get. Like the ones with the blocks and umm it helped (laughs)” (Caroline)

Lastly, a few of the women tried to not get stressed out about what they ate, and used this as a strategy to practice healthy behaviours. They discussed trying to de-stress because they thought being stressed or worried about eating certain foods is worse for their baby than actually eating something unhealthy.
4.3.5 Motivators and Barriers to Eating Healthfully in Pregnancy

4.3.5.1 Motivators

There were 3 main motivators to practicing healthful behaviours in pregnancy. These included health of the baby, personal motivators, and external motivators.

4.3.5.1.1 Health of the Baby

Almost all the women talked about how the health of the baby was the primary driver to practicing healthful behaviours in pregnancy and placed the baby’s health above their health. For example, Kate discusses “my kind of motivation throughout the whole thing was eat as healthy as possible and eat as many of varied healthy foods as possible, so she would get the best nutrients” (Kate). This was common in other women’s interviews where they discussed eating healthfully so their baby could get the best possible start in life. Some of the women connected their food intake to what the baby was eating which motivated them to practice healthy eating habits more. For example, on participant explained:

“(...) I thought about eating well for the baby a lot, like I wanted/ I like/ I guess visualized eating kale and like having those nutrients from the kale get into my baby instead of thinking about it for my own health and weight gain.” (Monica)

In addition, eating healthfully was seen as their role as the mother to ensure they are doing everything right so the baby is growing well. Lastly, as mentioned above, women practiced healthy eating habits to avoid pregnancy complications not just for their health but also for the health of their baby.

4.3.5.1.2 Personal Motivators

Personal reasons such as having a healthy pregnancy, delivery, easy recovery post partum, and losing the weight post partum were important motivators to practicing healthful behaviours
during pregnancy. Almost all the women discussed practicing healthy eating behaviours to feel good and healthy during their pregnancy. For example, Alex said, “(...) I just wanted to be as healthy as possible and have a healthy pregnancy, that was the most important thing to me.”

(Alex) Post partum weight loss was also mentioned by almost all of the women. The women hoped that by not gaining too much weight and practicing healthy eating behaviours; they would have an easier time losing weight post partum. For example, Tyson discusses practicing healthy behaviours to have a healthy pregnancy, easy delivery, and an easy post partum weight loss:

“Um I tried to think about, how I would feel, after, I gave birth. And I tried to think about how like; I would want to, feel like myself. And I kind of said to myself (...) you know you’re going to gain weight when you’re pregnant, and you want to gain the recommended amount, but I was like you don’t want to go crazy because everything that comes on has got to come off in the end, and losing it is going to be a (...) BITCH. Um, and I also wanted to have like an easier delivery, so I thought about kind of how I wanted to, ya, be able to hopefully like not have a C-section, and um and I wanted to feel like myself afterwards.” (Tyson)

Similarly to Tyson’s excerpt, half of the women discussed having an easy delivery as a reason to practice healthy behaviours and control weight gain. Specifically, many of the women reported that if they ate healthfully and were able to control their weight gain the baby might be smaller and therefore easier to deliver. The women defined an easy delivery as one that included fewer drugs and a vaginal birth rather than a cesarean section. Having an easy recovery from the delivery was rarely mentioned.

Lastly, women reported that avoiding excess weight gain during pregnancy was a motivator to practice healthy habits. However, most of these women didn’t mention why it was a motivator except in one case where an interviewee mentioned the reasons were weight loss post partum and having an easier pregnancy. This suggests that some of the women thought their
pregnancy eating habits influenced their pregnancy weight gain and that the above motivators were also motivators to not gain too much weight in pregnancy.

4.3.5.1.3 External Motivators

Women discussed external motivators to eating healthfully during pregnancy such as friends and other people’s pregnancies, interactions with health care providers, and stigma. Some of the women said that other people’s pregnancies, including friends or family members, motivated them to eat healthier. This was related to hearing and seeing friends that gained too much weight in their pregnancy, and knowing that it affected their health, delivery, and losing weight post partum. Thinking about this would deter the women from practicing unhealthy behaviours in their pregnancy. Specifically, the women mentioned friends they didn’t expect that developed gestational diabetes, and that this made them think about decreasing their sugar consumption. Alternatively, hearing about positive experiences from friends and family who did not gain as much weight and experienced an easier time with their delivery and weight loss post partum, motivated women to try to control the amount of weight they gained and adopt similar habits. For example, Tyson discusses how seeing family and friend’s positive and negative experiences motivated her:

“For definitely my friends experiences, um friends and family. Um, having seen like, my cousin who like gained a bunch of weight and it took her a while to get back, or just seeing different people’s experiences. My friend who like the year before me had gotten pregnant and given birth and looked like herself definitely within two months.” (Tyson)

A few of the women reported that positive reinforcement from health care providers was a motivator to continue to eat healthfully in their pregnancies. For example, Owen said:

“Every time you go for an ultrasound or a doctor’s appointment and they’re like everything is great and he seems great, growing fantastic, and you’re like ya, I am
"doing something right! And you kind of think like maybe it's what I am putting into my body is helping." (Owen).

In addition, they discussed that seeing that their baby is growing well was an indicator that they were doing something right and should continue the healthy habits they were currently practicing.

A unique theme showed that a few of the women felt the stigma of eating something unhealthy was a motivator to practicing healthy eating habits. For example, Caroline said:

"Just the stigma sometimes is enough to keep you focused and/ people always see you with a cookie or something/ um that was enough to keep me motivated to not just eat whatever I wanted." (Caroline)

Several women described this in the context of “mom guilt” and the fear of being viewed as a bad mother because you weren’t eating what was considered the healthiest for your baby.

4.3.5.2 Barriers

The women described barriers to practicing healthy behaviours in their pregnancy, such as fatigue, being busy with work and school, environment, pregnancy symptoms and boredom. Almost all the women mentioned fatigue as a main barrier to practicing healthful eating habits. They discussed how they were too tired to cook and instead chose more convenient foods from fast food restaurants, or making something quick that might not be as healthy. For example, Monica describes being tired and choosing a more convenient food option:

"Oh I guess being tired after work and not wanting to put together a nice salad and instead having a box of Kraft dinner, for sure I did that a lot, so I guess yea fatigue and convenience yea." (Monica)
Being busy with school and work was mentioned by some of the women. In this case they were also more likely to choose convenient foods that weren’t as healthy but were fast and accessible. In addition, some of the women mentioned that their environment and having fast food and restaurants around was also a barrier, particularly when they were tired or busy. For example, Alex describes how exposure to unhealthy options in her environment influenced her eating habits:

“The cravings, like I swear (laughs). Um and like, summer too like, we have such a different lifestyle in the summer, where there is so much going on, like BBQ’s and people and like, food trucks everywhere, um just the accessibility to um bad habits, it’s like, you’re so easily influenced” (Alex)

Some of the women saw pregnancy symptoms as a barrier to practicing healthy habits in pregnancy. The women discussed that nausea and morning sickness would affect their eating habits, as they would choose foods that they were able to tolerate and keep down and these foods were often unhealthy choices. For example Leigha said: “Or again being sick you just kind of do whatever you can, I understand that. And it’s hard to make healthy decisions when crackers are all you can eat.” (Leigha) Leigha also identified boredom as a barrier to practicing healthy eating habits in pregnancy:

“Um, and again being home like when I stopped going to school and stuff like that, that influenced my habits, because I think I was available to eat more, like I was, it was like eating out of boredom right? So that was definitely a thing as well.” (Leigha)

In conclusion, it is evident that women face many barriers to practicing healthful eating habits in pregnancy.
4.4 Social and Community Influences on Pregnancy Eating and Weight gain

4.4.1 Social Support

The women reported receiving positive and negative social support from many different sources, which influenced their experiences with eating and gestational weight gain. These sources include partners, coworkers, family, friends, prenatal yoga classes, health care providers, and strangers and will be discussed in this section.

4.4.1.1 Positive Social Support

4.4.1.1.1 Partners

Partners were reported as the primary source of positive support for the women during pregnancy. Almost all of the women discussed having positive support from their partners, which included reassuring comments, encouragements, compliments, getting involved in their health and their baby’s health, helping with the food preparation and planning, and setting joint goals to eat healthier. Most of the women discussed receiving reassuring comments, encouragements and compliments as a form of support during their pregnancy from their partners. This would comfort the women and improve their self-esteem. This perspective is summarized in the following comment from Jo Ray about her partner’s support:

“My husband. Totally like he’s even without pregnancy you know, he’s just, he’s so supportive, and he’s always said you know whatever makes you happy, and however you feel healthy you know, you constantly tell me you look beautiful, and he would listen to me complaining about you know especially in the first trimester I’m like I’m getting so fat and no one can even tell that I am pregnant! And he was just like ok well you’re going to be pregnant, you’re going to look pregnant soon enough so try and enjoy this time and like he was just like a great sounding board. Ya.” (Jo Ray)
When the women were worried about their health and the baby’s health, partners would also provide reassuring comments. In addition, partners would assist in the health care decision-making.

Most of the women said that their partners took on a role with the cooking and meal preparation during their pregnancy, and this made it easier for the women to practice healthier eating habits. Roles for partners included researching foods, ensuring there were healthy foods available, doing the grocery shopping, and helping to cook. This can be illustrated by the words of Caroline:

“When umm just researching what a, what foods are high in nutrition. So when we used to buy/ he read the labels a lot more. So he would come back with foods and showing me the food labels like this one is high in this this this, and this is you know good for pregnancy so that would be/ like yea that’s all that really comes to mind. (...) I (in lowered chuckled tone) hungry ALL the time (laughs) and he just kept feeding me (laughs) so.” (Caroline)

In addition, a few of the women discussed making joint goals with their partners to eat healthier, to eat less junk food, and to go out for dinner less often. Having a partner with the same goals helped keep the women on track and motivated them to eat healthfully in their pregnancy. This was demonstrated in Owen’s excerpt:

“My husband was really good at like, keeping us both on track, because he was like, he wanted to eat healthier too, whether he did or not he told me he did.” (Owen)

Finally, the women reported that their partners would support them by having the foods they craved such as ice cream, stocked in the house, or would bring them these foods because they knew they were always hungry. Rachel discusses this support in her pregnancy:

“We were watching a lot of things on Netflix towards the end and we would set these chairs up in front of his computer and I remember he would set out probably
a glass of milk and I was eating these cookies, (...) these little spice snack cookies, thin ones and he would set out like, I think it was two cookies and a glass of milk and like that would just kind be like a comforting thing cause he knew that I would get hungry a lot. So yea that’s/ that was one thing.” (Rachel)

4.4.1.1.2 Coworkers

Most of the women worked until or close to their due date and therefore a majority of their time spent in pregnancy was in a work environment. Some of the women received positive support from their coworkers such as receiving helpful advice and compliments and some reported reaching out to a mentor or a colleague at work for advice around eating and weight gain during pregnancy. The colleague most often had previously gone through pregnancy and was described as one of the best sources of advice during pregnancy because they were relatable. This was shown in Alex’s statement: “Probably my coworker, like my boss, she was very supportive, and she was very understanding because she had gone through the process (...)” (Alex).

4.4.1.1.3 Family

Families were another source of positive support, with most of women reporting that they received positive comments and compliments, encouragements, emotional support and advice from family members. The type of support received was dependent on which family member was providing the support. Most of the support came from compliments and encouragements and a few of the women discussed going to their family for emotional support and advice during their pregnancy. When the women sought out advice it was often from siblings who were pregnant or had recently gone through pregnancy. Some of the women reported not going to their mothers for advice because they perceived their views as outdated and not relevant, and women reported that they mostly received positive encouragements from their mothers. Lastly, the women who
lived away from their families discussed sending pictures of their growing belly to their family. The women reported that it was a nice way to get the family involved with their pregnancy when they couldn’t be there, however, sometimes would find it frustrating if they didn’t have any visible progress to show.

4.4.1.1.4 Friends

Almost all of the women reported receiving positive support from friends, which included positive compliments and advice. Compliments around how the women looked were important, as shown in this statement from Caroline: “*umm yea they were always so nice, they just complimented ALL the time. Like your carrying so well and you look great, healthy and happy.*” (Caroline). In addition, the women frequently identified reaching out to friends who were currently pregnant or had previously been pregnant for advice around eating habits and weight gain. The women would ask about what foods they should and shouldn’t be eating and get reassurance if they had eaten something unhealthy or outside the food recommendations. They reported that they “*compared notes*”, and that this was a good source of advice because their friends had similar experiences. This perspective is summarized in the following comment from Jasper:

“So ya, just connecting with other people who are also pregnant to talk about what you are going through is really helpful. I think, making yourself feeling normal about what you are doing is a really great way to deal with any negative thoughts you have about that.” (Jasper)

For friends who weren’t pregnant or didn’t have children, compliments and encouragements were the types of support received. Lastly, a few of the women also reported that their friends’ healthy eating habits created a positive supportive environment that helped them eat healthy, as shown in Monica’s statement: “*I think my circle of friends too are good*
healthy eaters so it wasn’t that hard to eat well during my pregnancy because I was eating well before that anyways.” (Monica)

4.4.1.1.5 Prenatal Yoga

Prenatal yoga classes were attended by a few of the women and identified as a positive supportive environment. The women described their classes as a safe environment for pregnant women to share troubles and tribulations of pregnancy with women who are also pregnant and the women described creating a network of friends within the classes. In addition, they felt that the instructor was knowledgeable and gave helpful advice, explained by Rachel:

“Umm one person I/ she just popped into my head when you asked this question but I don’t really know her well but the yoga instructor that I saw, she was just great she was very, I guess very sensitive and she would always give really helpful advice about whatever we were, all the different moms were bringing up in the groups so I feel because she had been pregnant, I think her daughter was two at the time when I was taking the class she/ I figured like you’ve been here before so I just feel/ and now she was training to be a doula at the time so I just feel like she had been a good, a good person to talk to about it (Rachel)

4.4.1.1.6 Health Care Professionals

Almost all of the women discussed having a positive experience and receiving positive support from their health care providers around gestational weight gain. The women stated that they found their health care provider to be reassuring, non-judgmental, and positive. Having the reassurance that their weight gain is on track helped decrease anxiety towards gaining weight in pregnancy, expressed by Jo Ray:

“(…) I’ve always been heavier, and my concern was, oh my god I’m going to get pregnant and I am going to become the size of a house (…) But my doctor is really great and she really encouraged me, she said listen you know, you’re fine you’re going to be fine um, um, but she said if you start heavier you tend to not gain as much weight anyway (Jo Ray)
In addition, some of the women expressed that their health care provider was non-judgmental towards their weight gain and felt reassured that it was not addressed unless there was a concern. The women found that reassurances and non-judgmental comments helped women think more positively towards their pregnancy body image and weight gain. This was summarized in the following excerpt from Caroline:

“They really were like unless there was a reason to be concerned, it was not problem so they watched but they never made you feel big and the belly was something I was always concerned about was how big the belly was and at one point even I said are we sure there’s just one baby right um and they, they tried to just normalize it, they were just like well you know you’re measuring normal and some people when they lay down and when they stand up, you look different so even though I’m carrying like big, I look big when I stand up, when/ if you measure me and you measure the next women we’re all normal in the same place, so they were aware of things like that so in a way it’s nice” (Caroline)

Finally, a few of the women identified positive strategies their health care provider employed to help the women feel at ease with their pregnancy weight gain. Examples stated include: being weighed backwards or not looking at the scale, measuring their belly for progress instead of tracking weight, and showing weight gain progress on a chart to see the overall picture. For example, Tyson discusses the option of being weighed backwards:

“She was very much like, you don’t have to look at the scale, don’t worry, if you want you can go off backwards, and we’ll just tell you if there’s a problem, um, so at that point they were more just like we don’t want you to be upset.” (Tyson)
4.4.1.2 Negative Support

4.4.1.2.1 Partners

The majority of comments about the women’s partners support were positive, however, a few of the women discussed receiving negative support from their partners. This type of support was typically on a single occasion. For example Rachel said:

“But he had told me once, he said sometimes I’ll eat the junk food so that you won’t because I don’t want you to gain too much weight. He was worried from a health perspective but I/like that just kind of rubbed me the wrong way” (Rachel)

It is evident in Rachel’s excerpt that she did not appreciate her husband’s support in this way. A few of the women also reported that their husbands created an unhealthy food environment, which they saw as negative support. For example, Julie discusses that her partner’s differing eating habits created an unhealthy eating environment for her:

“(…) And I would get up in the morning and I’m like I am really hungry, like I would be instantly hungry, and I would just like I’m hungry I need to eat right now. And he would be like la la la la la (singing), just waiting, and I was like I need to eat right now. And I would get angry at him and just lose my shit on him because I needed to right then, and he didn’t understand the fact that I needed to eat right then.” (Julie)

4.4.1.2.2 Coworkers

The main types of negative support from coworkers included receiving unsolicited comments about body size and an unhealthy work environment. Some women discussed receiving unsolicited comments about their body size at work, which decreased self-esteem and body image. This was evidenced in Gemma’s statement:

“My work colleague was like oh you’re pregnant, I thought you were just getting fat (laughs). And that sort of was like did you actually just say that to me (laughing).” (Gemma)
In addition, some of the women identified that work created an unhealthy food environment and reported that it was difficult to resist the unhealthy foods in the office. Coworkers would feed them unhealthy foods because they were pregnant, as evidenced by Patches’ statement:

“Actually, I am pretty sure my baby is made up of chocolate glazed Timbits, like people at my day job would bring them in, and it started to piss me off because I’m like am I growing this baby in my belly or my butt.” (Patches)

Some women also said they were constantly being fed by their coworkers or at office functions where they would be given an extra serving of cakes or cookies. This frustrated the women because they wanted eat healthfully during pregnancy but found it hard to resist when the treats were given to them. Finally, one woman explained that she had to tell her coworkers to stop bringing her treats because she had a high blood sugar level and was worried about developing gestational diabetes.

4.4.1.2.3 Family

Almost all of the women reported receiving negative support from their family members in the form of unsolicited advice and comments on their body. For example, an extended family member of Monica’s stated “I can’t believe how big you have gotten” (Monica) and a comment from Caroline’s sister stating “I’m excited that you’ll finally get fat” (Caroline). Alternatively, Tyson reported receiving comments from her parents about how she was gaining too little weight in pregnancy. A few of the women discussed receiving comments from their family members about how pregnancy is a “get out of jail free card, you can do what you want.” (Caroline) and that many of the family members adopted stereotypical pregnancy beliefs such as you’re eating for two. However, when these comments were made the women either disregarded the comment or corrected the person.
Furthermore, a few of the women discussed receiving comments from their mothers to not gain too much weight, watch sugar intake, and “make sure you get your body back” (Alex). These types of comments would make the women feel guilty about gaining weight and eating certain foods in pregnancy. For example, Alex’s mother would put pressure on her to not gain too much weight. This was rooted in her Dominican cultural background where they emphasize a thin body and expect women to return to their pre pregnancy weight. This perspective from Alex is summarized in the following comment:

“That was probably like all throughout my pregnancy my mom would be on my case all of the time. Ohh (high pitched voice to mimic mother) make sure you eat properly not only eating properly but don’t gain weight, which is really bad because it’s (small laugh) setting such unrealistic expectations for women. (Alex)

Lastly, a few of the women discussed receiving unhelpful advice regarding eating and weight gain in pregnancy from their mothers, mother in laws, and other family members. This perspective is summarized in the following comment:

“My husband’s fucking mother [in a whispered tone, then laughs] always thought she had helpful comments of things that are good to eat but umm I still don’t remember what she said whether she had helpful comments, I didn’t really pay much attention to her advice.” (Caroline)

4.4.1.2.4 Friends

Some of the women discussed receiving negative support from friends during their pregnancy. This was similar to the negative support received from family members and included comments on body size, the stereotypical pregnancy beliefs such as “you’re eating for two”, and unwanted advice. In one extreme case, Patches cut out a friend because of the comments made on her pregnancy body change, as shown in this excerpt:
“Every time I saw her she talked about the size of my breasts. No matter how many times I told her, you know what this makes me uncomfortable can you please stop? It got to the point where I just completely cut her out, and I haven’t spoken to her.” (Patches)

In addition, some of the women observed that friends who have never been pregnant didn’t understand why they were trying to eat healthfully in pregnancy and found these friends hard to relate to.

4.4.1.2.5 Health care Professionals

A few women discussed receiving negative support from their health care providers; this included dismissing concerns, feeling rushed through appointments, and not receiving enough information on pregnancy diet and weight gain. For instance, one woman described “she brushed everything off I felt like kind of like we were like cattle.” (Josephine). Similarly, Jo Ray said:

“I would have them (questions) written down on my phone so I would go in, and I would, you know she would be try to fly out the door and I would pull up my notes (laughs) you know hold on can I just ask you one more question, you know, so that’s what I didn’t like about them, they were really rushed.” (Jo Ray)

Finally, several of the women identified they did not receive enough information on diet and weight gain and felt as though they had to figure it out themselves. This can be illustrated by the words of Leigha:

“The one with my doctor I can’t say I really liked. I felt like I was kind of just left to figure it out myself. Almost like there is a lot of things that you should avoid while you’re pregnant, (...) So you could be eating all of these high mercury fish, or like deli meat, I never knew before, like those kind of things that if I hadn’t gone out and find it myself, there is no one really to tell you. (...) That kind of thing, um, so I didn’t find him very helpful in that. And then the nutritionist, again it helped me with my kidney stones, but she didn’t dictate that around my pregnancy very
In conclusion, women identified these positive and negative social interactions having a large influence on their thinking and perceptions of their pregnancy weight gain and eating.

4.4.2 Pregnancy is a Time When you’re on Display

All of the women reported receiving unsolicited comments throughout their pregnancy and identified feeling like pregnancy is a time period where the women’s social communities thinks it’s ok to comment on a women’s body, particularly when these comments would have been unacceptable prior to pregnancy. Moreover, the women reported feeling that their eating and activity behaviours were on display and judged. The following will be discussed in this section: unsolicited questions and comments, unsolicited advice, and judgment about pregnancy eating behaviours and food choices.

4.4.2.1 Unsolicited Comments and Questions

All of the women received unsolicited comments and questions about their pregnancy weight gain and body changes. For example, a common question asked by strangers, family members, friends, and coworkers, to almost all of the women, was “are you sure you’re not having twins”. In addition, Caroline reports receiving unsolicited comments from coworkers:

“This one women she was saying how BIG I was and are you/ and in the course of one elevator ride she asked me twice am I SURE I’m not having twins and I was like VERY SURE. She’s like ohhh then it’s probably just not your first pregnancy right? And I was like nope, it’s the first one. She’s like IT’S YOUR FIRST ONE AND YOUR THIS BIG!? And I was like (...) Yuup.” (Caroline)

Similarly, most of the women received comments on how big they were and where their belly was sitting such as “you’re carrying high” or “you’re carrying low” (Owen). Women
reported that these comments decreased their self-esteem. Patches discussed receiving comments to the point where she was so frustrated she retaliated:

“But I’m like she’s pushed it to the point where I’m like kind of shut up, like think what you’re saying. Like under no circumstances is that appropriate to say, like oh my god your tummy is so big, you’re so big, it’s like fuck you.” (Patches)

Women said that they just hoped someone would “ask how they are feeling” rather than commenting on the size and shape of their body. Lastly, Rachel discusses how she didn’t expect getting this unsolicited attention towards her body during pregnancy:

“I knew that I would be pregnant I would get bigger but I was just not/ I wasn’t prepared to kind of be judged for what my body looked like and it was beyond my control.” (Rachel)

4.4.2.2 Unsolicited Judgment

Some of the women also reported receiving judgment on their dietary behaviours during pregnancy from family, friends, and strangers. For example, Tyson expresses how having a glass of wine made her vulnerable to unsolicited judgment, even though her health care professional said it was acceptable:

“(…) Um one thing that I found weird, um and I feel like you get judged, if there were a handful of times, when we were out at a special occasion, and I was like/ during the second and third trimester and the doctor said it was fine I could have like one glass of wine at meals, and I felt like people, once you became visibly pregnant, if you had a glass of wine in your hand, people looked at you like you were smoking crack.” (Tyson)

4.4.2.3 Unsolicited Stories and Advice

A few of the women reported that people such as friends, family, and strangers, would be quick to share their experiences with pregnancy weight gain and eating without asking. In
addition, most of the women received unsolicited advice. Owen said “I have never had so much free advice in my life, SO much.” Some of this advice was described as helpful, when it was tailored to the women. However, if it was based on old wives tales such as eating foods to induce labour, eating for two, you can eat what you want because you are pregnant, or about craving pickles and ice cream, it was described as frustrating and in some cases amusing. For example, Caroline discusses unsolicited advice she receives from a stranger:

“Noo some people, the lady at the bank, she always/ whenever I was there, she would say eat fish soup or whatever so [laughs] I don’t know her and she doesn’t know that she’s told me about the fish soup every time I visit the bank so.” (Caroline)

In conclusion, unsolicited comments, judgments, stories, and advice, are a reality for pregnant women and this demonstrates the public nature of the pregnant body in social and community interactions.

4.5 Societal Influences on Eating and Weight gain in Pregnancy

4.5.1 Societal Expectations on Pregnancy Weight Gain and Eating

Almost all of the women discussed their weight gain in comparison to the North American Ideal, which was described as skinny pregnant, basketball bump pregnancy, and only gaining weight in desirable areas such as the stomach. When women compared themselves to this ideal, it decreased their satisfaction with their pregnancy weight gain. This is summarized in a comment from Jasper:

“Um I would say that we have this culture of this is what a good pregnancy should look like and this is what you know, these celebrities, these like perfect little bumps, and it looks like they just have a basketball shoved under their shirt. I think that that made me think more negatively about like how I didn’t look like
that. Umm, and it’s hard to get away from that, even though I was like ok it is not realistic that everybody is going to look like this and like I don’t know.” (Jasper)

In addition, women identified celebrity culture and social media exacerbating these feelings by making their weight gain feel inadequate, as they would constantly compare themselves to ideal pregnancies that were portrayed in the media. This is illustrated in a comment from Vanessa Rahimpour:

“Um, it was like, woah I’m getting big quickly, um, I’ve never weighed this much in my life, not even close, um, I, feel, I’m comparing myself to um, the duchess (Kate Middleton) because our, we had, she had her, her, her due date was like right around the same time as mine, and she was TINY. Like she had like no bump and I was always comparing my bump to her bump (laughs), and um, so, I guess I was, I was thinking about how big I was, and, um, (...) but then at the same time, I was also thinking I’m pregnant, this is what is meant/ I’m meant to gain weight, um, it’s, it’s totally ok, I’m just on that higher side of normal, ya.” (Vanessa Rahimpour)

Some women also mentioned losing the weight quickly post-partum as a societal expectation set by the media, as explained by Patches:

“Um just other like, just like bullshit on like Instagram. You see like these women and you don’t look pregnant and you’re like seven months pregnant and then they give birth then five days later they’ve got abs again. I’m just like go to, you know it’s not true and you know it’s just like how they shed that baby weight, like those garbage like magazine just your typical things that destroy women’s you know ideas of themselves and what they should be just media garbage.” (Patches)

Only one woman identified how her cultural background influenced her experiences with her pregnancy weight gain and that the pressure to watch her pregnancy weight and look a certain way post pregnancy influenced her behaviours and motivated her to eat healthfully in pregnancy. In this excerpt from Alex she explains how her Latin background put pressure on her to control her pregnancy weight gain and eating and how it was always at the back of her mind during her pregnancy:
“Uhhh, I am from a Latin background and we take like weight gain very seriously and my family made a point don’t gain a lot of weight like it is not going to be good for the baby it is not going to be good for yourself at the end of the day so try and limit yourself (...) eat properly/ it was always a big deal from the very beginning of my pregnancy because basically like Latin women are /not myself but in general are very vain so you have to keep a certain standard and oh no you’re supposed to look a certain way/ so which is not ideal at all and not realistic. But it is something that is always ingrained, oh don’t eat too much don’t eat that don’t go crazy (...) you’re not expected to gain that much weight and if you do it should be all baby. And you should uh, it’s going to sound bad but almost sacrifice yourself in order not to eat that much,” (Alex)

4.6 Nutrition and Weight Gain Information and Resources

4.6.1 Experiences with Health Care Providers

Health care providers were identified as the women’s main source of advice and included obstetricians, family doctors, midwives, and nurses. Only a few of the women reported speaking to a dietitian, nutritionist, or a naturopath about diet in pregnancy. The women referred to their health care professional as the authoritative figure on pregnancy weight gain and nutrition and described them as evidence based, practical, and having an in depth knowledge of the women and their pregnancies. This perspective is summarized in the following comment from Gemma:

“I think um, (...) the I would say that I would most want the information to come from midwives. I feel like they were very evidence based, um, the seemed very like up to date in terms of things they were saying weren’t just like/ friends and family kind of give you either old wives tales or just give you sort of things that they hear about, um but I felt like whatever information we got from our midwives were very much based on the best possible available evidence so I trusted what they had to say as being um, informed and not just sort of anecdotal. ” (Gemma)

Women’s experiences with their health care providers will be discussed in this section and split into two main categories: dietary advice and weight gain advice. In addition, identified
gaps within the women’s prenatal care and the women’s dream prenatal resource will be discussed.

4.6.1.2 Dietary Advice

Almost all of the women received or asked for dietary advice in pregnancy. Dietary habits were often discussed at the first prenatal visit with their family doctor. However, a few of the women reported not discussing dietary habits until their first visit with their obstetrician or midwife around twelve to seventeen weeks gestational age. In addition, only a few of the women reported their health care providers initiating conversations around their dietary habits at each prenatal visits with questions such as “are you eating well”, and only one woman was referred to a dietitian for the risk of developing kidney stones. The women discussed that nutrition was not a focus at prenatal appointments and the advice received was described as basic, summarized in this comment from Jo Ray:

“Only the basics, like the bare bones basics, like we would go in for our appointment she would be like ok so for the next appointment you know you need to be eating whatever it was at the time, make sure you are not eating, honey or you’re not eating this, or whatever it was, and um, but it was the standard stuff, it was the stuff that you can find on the internet or in a book or whatever, you know. There was no sort of real conversation about food.” (Jo Ray)

Moreover, a few of the women discussed initiating conversations to receive nutrition advice.

This is summarized in the following comment from Tyson:

“But it wasn’t at no point during my pregnancy, did everyone ever sit me down and be like ok these are the things/ I brought it up with my doctor, just um that I had done some research, and I wanted to make sure/ uh people IMMEDIATELY brought up the importance of taking a prenatal vitamin. Um, but otherwise there wasn’t a lot of um, guidance or discussion given to like diet or weight gain.” (Tyson)
The women reported receiving the following pregnancy diet advice. The most common prenatal nutrition counselling received was regarding prenatal vitamins and recommendations on foods to avoid during pregnancy due to food safety concerns. This was illustrated in Julie’s comment: “My family doctor he was like ok just make sure you don’t eat any soft cheese, or like do this, or you could probably eat sushi but you know you probably shouldn’t” (Julie). In addition, some of the women received specific nutrient recommendations, for example to increase iron or calcium, if their blood work identified they were deficient in nutrients or they had a low dietary intake. A few of the women reported receiving suggestions for their overall dietary intake such as “in the first trimester you don’t need any extra calories.” (Jasper), and “try and eat healthy 90% of the time” (Alex). A few women also received information on how to manage pregnancy complications such as constipation and morning sickness.

Alternatively, a few of the women discussed frustration with not receiving enough information from their health care provider, specifically on the food safety recommendations. This was summarized in the following comment from Leigha:

“Almost like there is a lot of things that you should avoid while you’re pregnant, and again, if you didn’t go out and find it yourself you would never know. (Leigha)

A few of the other women also reported not receiving enough diet information from their health care providers and reported researching this information in baby books or the internet, as summarized in this statement by Julie: “I was constantly Googling what I can and cannot eat. What’s good for me, what’s bad for me.” (Julie).

A few of the women would have liked their prenatal appointments to focus more on diet and felt that this topic should be discussed with questions like “how is your eating?”
And “what does a typical day or meal look like in terms of eating?” Moreover, the women said that comments such as these would have motivated them to stick to healthy eating behaviours in their pregnancy, as summarized in Julie’s comment:

“I don’t think I was ever asked what are you eating, what are the things you are putting in your mouth, what do you eat for breakfast? And I feel like that might have been something that would have helped me check myself a little bit. Do you know what I mean?” (Julie)

Conversely, a few of these women liked how diet wasn’t a focus of their visits because it reassured them that their pregnancy is progressing well and that their health care provider was not wasting time on unimportant topics.

**4.6.1.2.1 What Women Thought of the Advice**

Half of the women liked the dietary advice they received from their health care providers and adopted their recommendations. Particularly, the women were more likely to adopt recommendations when advice was given with reasoning explaining the pros and cons, as discussed by Jasper: “(...) they were just very realistic about things and they were really good at talking about like here are the pros here are the cons now you decide for yourself.” (Jasper).

Furthermore, examples and options appeared to be important to women receiving dietary advice. For example, Jo Ray did not like her doctor’s advice because it lacked examples, but was more receptive to the technique used by her naturopath:

“But the naturopath she was the one who was like you can totally get you know 0% Greek yogurt, like she just sort of would talk me through a couple of different options, um, so in that sense she was good.” (Jo Ray)

In addition, some of the women reported that the advice they received was vague and unrealistic. For example, a few women raised concerns that their doctor recommended to
decrease their carbohydrate intake to help control weight gain, which can be illustrated by the words of Rachel:

“(...) And I have a specific memory of when I was concerned about my weight and my doctor had said you know just limit the carbs and I’d never paid attention to carbs before and then I was grocery shopping I think later that week and mindful of carbs and I realized there’s carbs in everything, EVERYTHING. I swear I remember being very frustrated like what am I supposed to eat,” (Rachel)

4.6.1.2.2 Diet Resources

Most of the women reported receiving resources at their first prenatal appointment. These resources included *Eating Well With Canada’s Food Guide*, government websites, pamphlets and calendars. In addition, a few of the women said that their midwifery clinics had a library of books with pregnancy information that they could access as needed and a few of the women reported receiving a detailed handbook that included a whole range of pregnancy information ranging from dietary recommendations to dealing with morning sickness. For example, Gemma describes the comprehensive booklet she received:

“They had a handbook that they had made up that had all kinds of different um pieces of information in it. Um that definitely had nutritional information, and things like, um, so for example iron, so uh they had like there was like a page that had lists of different kind of foods and how much iron you might expect to get from them (...) and like suggestions if you had to take iron supplement and they upset your stomach, like things you could do so um, that was probably the main resource. They had a library of other books that you and probably you could/there were lots of books on pregnancy. (...)” (Gemma)

The women found it helpful when the resources included example meals and meal plans, or specific foods to include in their diet. For example, one participant who had low blood iron expressed that she appreciated having a link to a government website that had a list of iron rich foods.
Conversely, some of the women did not like the resources received with some of the women expressing that they did not provide enough information. In addition, a few of the women discussed not liking the Canada’s food guide and described it as dated. One woman expressed that she was given too many pamphlets that were disorganized: “And I mean they gave me a book of pamphlets I guess (...) but they were all separated and they were all over the place.” (Leigha). Lastly, a few of the women felt the resources received did not provide new information, stating “because most of the stuff on it I had already known except for the what medications you can’t have and what you can have.” (Josephine).

4.6.1.3 Weight Gain Advice

Some of the women discussed receiving weight gain advice initiated by their health care provider, however most of the women found recommended weight gain ranges online and initiated conversations about weight gain with their health care providers. For example, this was demonstrated in a statement from Caroline:

“I Googled it like a normal weight gain pregnancy and then it’ll you put in your height and weight and pre pregnancy weight and it’ll say here’s your BMI and here’s your range that you should be gaining and that’s what I based it on and when I went to the midwives I would basically be saying this is what I Googled, is this fair and they would say yes or no.” (Caroline)

When discussing pregnancy weight gain experiences with health care providers most of the women reported being weighed at their prenatal visits. Conversely, a few of the women who went to a midwife said that being weighed was not mandatory for their prenatal visit and instead had their bellies measured with a tape measure. A few of the women said that their health care professional only brought up weight if they were gaining too little or too much. This is summarized in Julie’s comment:
“Um, and then I think at eleven weeks they went back in and weighed me again, and she’s like you lost ten pounds, and was like I am really concerned about your weight gain.” (Julie)

In addition, health care professionals rarely discussed excess pregnancy weight gain, and only one woman brought this up:

“One actually the first time I realized I was gaining excessive weight was when I went to one of my appointments and my doctor had said to be OH you gained 5 pounds since last week and I suddenly was really worried because I didn’t know if it was water weight, I was hoping it was but it was just scary and I asked her, what does that mean and she said, oh it just means it’ll be a little harder when you’re going through your postpartum period and so yea that was scary.” (Josephine)

Some of the women would ask their health care providers at their prenatal visits if their weight gain was normal, and strategies health care professionals would use to reassure the women included showing them their progress on a chart, or showing women where the weight gain was distributed. The women reported being receptive to the charts, as they liked seeing their progress. For example Jasper explained:

“The other thing the midwives were really good about was when we talked about weight gain, they would be like by then your uterus is going to be about 5 pounds, your placenta is about two pounds, like they kind of broke it down, so that was interesting.” (Jasper)

In contrast, a few of the women said that they liked that weight gain was not brought up because it decreased their anxiety around weight. This was summarized in a comment from Jasper:

“I think I got weighed like once maybe, then I weighed myself every once and while. But they were really casual about it, and that helped me be a little more casual about it.” (Jasper)
4.6.2 Nutrition and Weight Gain Resources

The women discussed getting their nutrition and weight gain information from various resources such as the Internet, friends, government resources, baby books and previous knowledge. These resources will be discussed in the following sections.

4.6.2.1 Internet

Almost all of the women identified using the Internet as a resource for information on pregnancy diet and weight gain and researched pregnancy diets, foods to include and avoid in pregnancy, how many extra calories per trimester you should eat, and which foods high in certain nutrients that are important for pregnancy. This perspective was summarized in the following comment from Owen:

“Oh, Uh, (…) I would say somewhere in the beginning, in the first trimester for sure. Um, (.) where, you know you get all the blood work done to see if your levels are all ok, and I think my iron was low even though I was taking vitamins. So I was just kind of doing some research on what I should be eating, and then like Google happened, you know you Google like everything that you should and shouldn’t be eating, and how much weight you’re supposed to gain.” (Owen)

In addition, half of the women reported researching appropriate weight gain in pregnancy, and used online weight gain calculators to calculate the appropriate amount of gestational weight gain based on their pre pregnancy BMI and the *IOM Guidelines*, as shown in this statement from Gemma:

“Definitely Googled pregnancy weight gain (laughs), and I think that the one was (…), baby centre.ca? Um and there was/ and that if I’m remembering correctly then that’s the/ that website had like a weight gain tracker that you can kind of put it so it sort of gave the estimated range um based on your BMI, that um, and um, and then there was sort of like a weight gain tracker which I didn’t use, that was um, but I looked from time to time at like what was in the first trimester what was sort of the usual kind of weight gain, and the second trimester or third trimester.” (Gemma)
Most of the women stated that they used Google to research diet and weight gain in pregnancy because they didn’t know of reputable sites. As their pregnancies progressed and they became more familiar with the resources available on the Internet, they reported having several sites they would frequent that included baby blogs, Pinterest, Web MD, and Mom’s groups. In addition, a few of the women identified that they would go to government websites to obtain their pregnancy information. This can be illustrated by the words of Leigha:

“I think I was on WebMD a lot, that’s probably one. Um, Pinterest which was different websites, and I can’t think of which ones they were, but Pinterest has a lot. Um, BabyCenter I think it was called, I had an app for that too, but there is a lot of little blogs and write ups about certain foods to avoid and make sure you are getting stuff, those are probably the main ones I can remember.” (Leigha)

Some of the women reported that they liked the information from the Internet and that it influenced their dietary choices in pregnancy. Women liked the information more when it was scientific and provided reasoning behind the recommendations compared to people’s stories and opinions. This can be illustrated by the words of Jasper:

“... Like I wasn’t reading like journal articles. But um, there’s a really good Canadian website called pregnant chicken, and she actually has/ so this how I thought even to do this. She has like a whole series on her site where she debunks like exactly why you shouldn’t have caffeine, or exactly why/ to be honest I read that site a lot and that’s where I discovered the concern about not eating lunch meat is about listeria and whatever. Um so she’s like combed through a lot of resources and a lot of studies and a lot of expert opinions to kind of compile together like the pregnancy do’s and don’ts, and it’s not just restricted to food it is a lot of other things too. Um so I referred to that site a lot.” (Jasper)

A few of the women also discussed that reading pregnancy blogs and seeing a wide range of people’s experiences on the internet calmed them down and normalized their own experiences for both weight gain and eating. For example, reading about different women’s struggles and experiences with gestational weight gain and post partum weight loss helped improve their self
esteem regarding their own struggles with pregnancy weight gain. Alternatively, some women reported disliking the pregnancy blogs and sites if they were perceived to be immature and unsophisticated, as summarized in this excerpt from Tyson:

“Like I found some of the online stuff like baby center they again they had the kind of treat you like a moron approach. Um, I found it very like paternalistic, and a bit condescending, um. Like even reads like I don’t, like god some of the stuff they were just like oh like you know it was a bit like if you were reading seventeen magazine or something, like just, I was just like I don’t, I would like to read something that is a bit more like talking to an adult. (Tyson)

Lastly, a few of the women felt the internet was overwhelming as there is too much information or they ended up knowing more than they want, which led to feeling anxious.

4.6.2.2 Government Resources

Some of the women identified using government resources to obtain pregnancy information on diet and weight gain. These included Ontario and Canadian government websites, Canadian Pediatric Association, American Pediatric Association, and Eating with Canada’s Food Guide. Women who used these resources liked them because they were seen as reliable. Kate said:

“I would try and go to um, medical websites, like Canadian Pediatric Association, I’m not sure if that’s the right acronym, or CPA, um, American pediatric association, mayo clinic, the kind of accredited ones, um, that I knew were legit as opposed to the basic Dr. Google says.” (Kate)

4.6.2.3 Baby Books

Some of the women discussed reading baby books as a resource in their pregnancy, and identified liking the books, as described by Tyson:

“You’d have what to expect, and then I also read, I read expecting better, um, and I read the bringing up bebe, so that’s about the experience of pregnancy in
France, and then expecting better is written by an economist and she did all these meta-analysis looking at all kinds of things about pregnancy, um but it was her experience when she was pregnant, um and so she did like a ton of numbers?? And it was very interesting, um, so those were kind of my main resources I guess, and then my doctor. ” (Tyson)

In addition, the most common pregnancy book mentioned was the “what to expect when you’re expecting” books. Several of these women did not like this book and described the information as common sense, traditional, dated, and the information in the book overwhelming. This is explained in a comment from Jo Ray:

“Um, (...) well you know there’s that stupid book what to expect when you’re expecting, which even though I like information it usually gives me peace of mind when I have information, that book I hated it like I read two chapters out of it, and I never touched it again, I actually don’t think I know where it is. Um, it was just you know, it can put the fear of god into you about everything that could go wrong, you know it’s it was too much, that was too much. You know?” (Jo Ray)

Alternatively, one woman discussed liking what to expect when you’re expecting book and described it as her ‘pregnancy encyclopedia’.

4.6.2.4 Friends

Almost all of the women stated going to their friends for advice on diet and weight gain in pregnancy. Women most often chose friends who were currently pregnant or had previously gone through pregnancy. Friends who had not gone through pregnancy were not considered a good resource as they didn’t understand what the women were going through and their advice tended to be based on traditional pregnancy beliefs, as evidenced in this excerpt from Owen:

“Um ya, and it’s funny so my friends that aren’t pregnant, they haven’t had a baby yet, um, so it’s interesting to hear their take on it, and I am sure I was the same way before I was pregnant, of like oh ya just eat whatever you want, it’s great you can gain as much weight as you want, don’t even worry about any of that, give in to all of your cravings, and uh ya it’s kind of hard to talk to somebody
that hasn’t been through it. Like you don’t get it, you don’t understand (laughs).”
(Owen)

For friends that were pregnant or had gone through pregnancy, the women reported going
for advice about pregnancy symptoms such as nausea and cravings, how much weight is
appropriate to gain in pregnancy, and to ask questions about the foods to avoid
recommendations. For example, Jo Ray discussed going to her friends as a resource:

“I talked to them about what I things that I should or shouldn’t be eating, because
they were as with Google they were another and they still are a huge source of
information for me because most of them have had their kids you know, and they
have gone through it.” (Jo Ray)

In addition, Julie said:

“So I texted my friend who has had three kids, and she said “I ate cold cuts all
through my pregnancies, don’t worry about it, it’s fine, like these things are pretty
standard now a days (laughs).” (Julie)

In conclusion, women get their pregnancy nutrition and weight gain information from
many different sources, such as the Internet, baby books, government resources, and friends. In
addition, these results suggest that women seek out nutrition and weight gain information in
pregnancy and they want to know more about these topics. Knowing the types of resources
women use and what they like and don’t like about them, can help inform future resources that
pregnant women would be receptive towards.
4.7 Perceived Gaps in Prenatal Care

Overall, there were four main perceived gaps in prenatal care regarding diet and weight gain, and are summarized in Table 3 below.

**Table 3. Perceived Gaps in Prenatal Care Regarding Diet and Weight Gain**

<table>
<thead>
<tr>
<th>Perceived Gaps</th>
<th>Key Topics</th>
<th>Supporting Comment</th>
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<tbody>
<tr>
<td>Prenatal care is not individualized</td>
<td>Felt like they were grouped</td>
<td>“It’s so different for every person, that you can’t be clumped into one big, this is what it should be like.” (Owen)</td>
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<td></td>
<td>Does not take into account background, demographics, and lifestyle</td>
<td>“I feel like it’s all very, very dependent on demographic. I feel like they would need to know about the person’s background and how they like perceive healthy living and that kind of thing. I think they just need to understand that it’s a very individual thing (...)” (Julie)</td>
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<tr>
<td>Lack of individualized nutrition recommendations</td>
<td></td>
<td>“But um, someone that would guide me and say ok this is what, what you’re daily intake should be/ because there are a lot of things online but they are very generalized (...) for example what you should be eating, and this is what you should not be eating, and um, I don’t know. Like its very general here, and I understand because we have so many different backgrounds (...) But, maybe like, I dunno a little more guidance throughout the process would have been nice, because, you, you find yourself at a loss sometimes” (Alex)</td>
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<tr>
<td>Treating the whole patient and taking a client centered approach</td>
<td>Lacks emotion</td>
<td>“(...) What I said before how I think the emotional side is really lacking (...) creating something, that can help address the emotional side of it all. I think that’s really important, and that is definitely not there, ya.” (Jo Ray)</td>
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<td></td>
<td>Lacks sensitivity towards weight gain and nutrition</td>
<td>“In terms of health care providers I guess just maybe spending a bit more time asking how are you feeling about your weight but in a sensitive way so not to bring it up like you should feel weird about this but make space for it or do you have questions about nutrition or something like that to make it more of a conversation opener maybe.” (Rachel)</td>
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<td>Can provide more reassurance</td>
<td>“Ya. What did I need to get a healthy pregnancy? (...) Uh, maybe like, maybe things are not as black and white, um, (laughs), like and cravings are real, like I remember one/ like my family doctor told me oh my god that’s not real, like I find that that’s a more psychological thing, like I don’t think so, like maybe be a little more reassuring, um, and the whole process, um, (...) not everything is um, as cut and dry as like oh here have this pamphlet and read through it, you’re going to be fine.” (Alex)</td>
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<tr>
<td>Provide practical and realistic recommendations</td>
<td>“Offering that balanced practical you know, like my doctor provides me, you know like all of these other resources they are so polarized, and it’s sort of like this is the way and you can’t eat this because it’s going to cause this, you know, so having that balance is I think something that is missing.” (Jo Ray)</td>
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<tr>
<td>Educational opportunities earlier and later than currently provided,</td>
<td>“In terms of establishing healthy behaviours, I think, I think working with people from the very beginning, and that’s one thing just generally I feel like, you find out your pregnant and then oftentimes you don’t meet your doctor for another ten weeks or so. Um, so I think that working with people early, is very helpful. (...) Starting right away is critical.” (Tyson)</td>
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<tr>
<td>Establish healthy habits either before pregnancy or in the first trimester</td>
<td>“And then that sort of idea of what to expect kind of the whole way through and then afterwards I’d say I would include post-partum in thinking about pregnancy. um and weight gain, um partly because I think it’s something that’s on people minds as they are gaining weight” (Gemma)</td>
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</tr>
<tr>
<td>Create expectations early for pregnancy weight gain and post partum weight loss</td>
<td>“Umm I think it would have sort of guidelines on what you should be eating (...) you can also have the what you shouldn’t eat part because I know they like to focus on that cuz of food poisoning (...)” (Josephine)</td>
<td></td>
</tr>
<tr>
<td>More guidance on eating and weight gain</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Shift in focus on prenatal vitamins and food safety recommendations to what you should be eating</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Education on the nutritional demands of pregnancy

“(…) I mean people will I think most people generally know about folic acid it’s certainly talked about um through what kind of nutritional um deficits you might end up having and needing to kind of account for, um of what kind of nutritional demands maybe that pregnancy puts on you” (Gemma)

4.7.1 Dream Resource

After discussing their experiences, interview participants were asked to describe their dream resource they would like to receive on nutrition and weight gain. This was summarized in Table 4 below.

Table 4. Women’s Dream Weight Gain and Nutrition Resource

<table>
<thead>
<tr>
<th>Dream Resource</th>
<th>Supporting Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nutrition and Weight Gain Information</td>
<td></td>
</tr>
<tr>
<td>Access to a dietitian or expert in nutrition</td>
<td>“(...) I think I would have/ if I, like if I were to do it again, (...) I would have definitely gone to dietitian, like a nutritionist, and although like I consider I did a good job, like there were some days when I felt like, (...) I would have liked to have like someone to talk to about it that would be, um, fully, knowledgeable.” (Alex)</td>
</tr>
<tr>
<td>Include examples on what to eat during pregnancy, recipes and food substitutions</td>
<td>“I would love to have something where I know you can like check out websites on meal plans, but just here are the foods I like to eat and if you like this you know, what’s also similar so, similar to kale is Swiss chard (…) So here’s some ideas for Swiss chard so umm.” (Caroline)</td>
</tr>
<tr>
<td>Tips on how to cope with pregnancy emotions and symptoms</td>
<td>“Also I guess I’d want a little bit on there about/ you could have cravings but/ and not just for me but for others as well that you don’t necessarily have to have like a whole cake, you can have like a piece.” (Josephine)</td>
</tr>
<tr>
<td>Information backed with reasoning and</td>
<td>“I think it would be really nice if there were resources available that explained like why you aren’t supposed to have caffeine, and what</td>
</tr>
<tr>
<td>Explanations</td>
<td>listeria is (...) the foods it is most commonly found in. like I think there is a lot of blanket rules of what you should and shouldn’t eat during pregnancy without a lot of explanation.” (Jasper)</td>
</tr>
<tr>
<td>Empowering</td>
<td>“I think that if the information can be delivered in a way that makes it less stressful, not you have to do this or make sure you avoid this, I think if it’s in a way that’s just helpful information and like empowers women to make good choices.” (Monica)</td>
</tr>
<tr>
<td>Breakdown of pregnancy weight gain</td>
<td>“The other thing the midwives were really good about was when we talked about weight gain, they would be like by then your uterus is going to be about 5 pounds, your placenta is about two pounds, like they kind of broke it down, so that was interesting.” (Jasper)</td>
</tr>
<tr>
<td>Incorporate partners</td>
<td>“Maybe get something for their partners to be able to help in healthy eating for food preparation or I guess resources.” (Monica).</td>
</tr>
<tr>
<td>Incorporate cooking skills</td>
<td>“But maybe even cooking classes for pregnant women, where you have dietitians or nutritionists who are actually kind of making the menus, and then you have a fantastic chef who, who is there kind of teaching you and guiding you along the way.” (Kate)</td>
</tr>
<tr>
<td>Aesthetic and Organization</td>
<td>“Like a really beautiful well designed website, um, where you could kind of look through and almost like um what do you call it, like a flow chart of this is what I need you know, are you feeling tired or not, you know maybe you should try this, or um, ya, I feel like, there’s a lot of resources out there (...) it would be nice if they were all in one place.” (Owen)</td>
</tr>
<tr>
<td>Organized by trimester and by pre pregnancy BMI</td>
<td>“So it would be nice maybe if they gave me like a food guide broken down by trimester saying this is what you should eat this is what you shouldn’t. Um you know if you are in this weight category here are some alternatives if you don’t want to be putting on a ton of weight (...)” (Jo Ray)</td>
</tr>
</tbody>
</table>
CHAPTER 5: DISCUSSION

5.1 Introduction

This research provides an in depth depiction of women’s experiences with their pregnancy weight gain and how these experiences influence dietary behaviours in pregnancy. In addition, it builds upon our understanding of women’s perceptions of prenatal care received from their health care providers and provides insight about what opportunities there are to optimize prenatal care in Ontario. Women’s experiences with gestational weight gain and eating was conceptualized based on the socioecological model into four domains of influence: personal, social, community and societal. Findings reveal opportunities to develop resources and programs to best support healthy outcomes for both mom and baby.

5.2 Personal Influences on Pregnancy Weight Gain and Eating

5.2.1 Thinking about Pregnancy Weight Gain and Eating

This study explored whether women think about their gestational weight gain and eating, and described what factors influence their thinking. Women identified being conscious of their pregnancy weight gain and placed an importance on healthy eating during pregnancy for their health and their baby’s health. These findings add to the qualitative literature that have also found that women become more aware of their eating and weight gain, and that they can become preoccupied with their diet during pregnancy (Abraham et al., 1994; Szwajcer, Hiddink, Koelen, & van Woerkum, 2007; Szwajcer, Hiddink, Maas, Koelen, & Woerkum, 2008; Watson, Broadbent, Skouteris, & Fuller-Tyszkiewicz, 2015). This finding emphasizes pregnancy as an
important time period where many women may be more open to receiving education regarding diet and weight gain.

### 5.2.2 Internal and External Influences on Pregnancy Weight Gain and Eating

This study found multiple internal influences that shaped women’s experiences with their gestational weight gain and eating behaviours, which include thinking about the baby, body image, emotions and feelings, and pregnancy symptoms. In addition, the study identified external influences that also influenced their thinking including maternity clothes, being weighed, work, weather, media, and interactions with social networks. This study emphasizes that women’s relationships with their pregnancy weight gain and eating is complex and each experience is unique. All of the women had different experiences with their body image, emotions, and pregnancy symptoms and these all had distinctive effects on their dietary behaviours.

Body image was found to be important in shaping women’s experiences with pregnancy weight gain. Women commonly experienced periods of feeling both positive and negative about their body image and these feelings were influenced by trimester, desirable body changes such as weight gain in the stomach, undesirable body changes such as stretch marks, and both positive and negative interactions within their social networks. Similar findings were reported in a systematic review of qualitative literature by Campbell et. al. (2011) in which it was found that women experience both a positive and negative body image and this can change across pregnancy and Watson et. al. found that women felt more positively towards their body as they became more visibly pregnant (Campbell et al., 2011; Watson et al., 2015). This study provides more detail as it comments on how body image changes through each trimester, specifically that it increases in the second trimester and decreases in the third trimester and describes influences on body image such as pregnancy symptoms. In addition, similar this study, qualitative studies
by Hodgkinson et. al. and Watson et. al. have found desirable and undesirable body changes influence women’s perceptions of their body (Hodgkinson et al., 2014; Watson et al., 2015). The present study adds to the knowledge generated in these previous studies as it is the first to highlight that women’s perceptions of undesirable and desirable body changes can vary from woman to woman based on previous self consciousness about their bodies. For example, an increase in breast size was desirable to some women but not to others based on how they felt about their breasts pre-pregnancy. It’s important for social networks and health care providers to understand the intricacies of women’s perceptions of their body image. For example, knowledge that women experience a decrease in body satisfaction in the first and third trimester could provide insight on when and how to best support women with their changing bodies.

This study found that women experience a range of emotions and feelings about their eating and weight gain that include worry and anxiety, stress, guilt and feeling healthy. These emotions and feelings differed among the women and were influenced by thinking about their baby and risk of developing pregnancy complications. This is one of the few studies to assess how a range of emotions affect women’s experiences with their pregnancy weight gain. Previous research has found that emotions such as guilt, anxiety, fear, and stress influence women’s experiences, however most of these studies focus on either one or two emotions (Heery et al., 2013; Thomas et al., 2014). In addition, this study identified a positive emotion of feeling healthy in their pregnancy. A major finding of this study was that women frequently felt guilty and fearful when indulging in food cravings. This is consistent with another qualitative analysis that found indulging in cravings led to guilt because women wanted to satisfy food cravings but they also wanted to be eating healthy for their baby (Heery et al., 2013). This study adds to these
findings by identifying that guilt and fear is also strongly influenced by food safety concerns, interactions with social networks such as family and friends, and information from the internet.

This is the only study found to date to assess how women changed their behaviours in response to emotions in pregnancy. For example, overcompensating with healthy foods when they felt guilty about missing a prenatal vitamin or eating either more or less when they were experiencing stress. In addition, the women in this study dealt with their anxiety and fear by talking to their health care providers and friends. This knowledge is important because health care providers need to be aware of what emotions and feeling women are going through and how they are dealing with these emotions when providing prenatal care to pregnant women.

Lastly, pregnancy symptoms such as cravings, fatigue, nausea and vomiting, morning sickness, and heartburn influenced women’s dietary choices and their experiences with pregnancy weight gain. This was consistent to other qualitative literature where cravings, nausea, and discomfort influenced women’s dietary choices and were seen as a barrier to eating healthy for the baby (Campbell et al., 2011; Heery et al., 2013; Jette & Rail, 2014). For example, our results were consistent with a qualitative study, which reported that women gave into their cravings in moderation and eating treat foods and healthy foods together was depicted as a normal healthy diet (Heery et al., 2013). Our study is the only one to emphasize that each woman identified experiencing and reacting to pregnancy symptoms differently throughout their pregnancy. For example, some women experienced an increase in appetite in their first trimester whereas others experienced nausea and morning sickness, and some women would frequently indulge in cravings, whereas other women limited their indulgences. It is important to understand what pregnancy symptoms women are experiencing and how it influences their dietary behaviours in order to provide tailored and individualized care to women.
All of the internal influences discussed above including thinking about pregnancy weight gain and eating, body image, emotions, anxiety, and pregnancy symptoms affected the women’s behaviours and experiences differently in each trimester, which underscores that women’s experiences change throughout their pregnancies. For instance, the women identified that in the first and third trimesters women think more about their pregnancy weight gain and eating, and may struggle with body image and pregnancy body changes. This study is one of the only studies to assess the temporal complexities of women’s experiences and behaviours regarding eating and weight gain through each trimester. Most of the current literature touches upon how pregnancy is a time of transition and change and several have identified that body image changes throughout pregnancy however, these studies have not investigated other changes in thinking and behaviours (Campbell et al., 2011; Hill et al., 2013; Kapadia et al., 2015; Watson et al., 2015). For example, women thought more and practiced eating healthy more in the first and second trimesters because they connected their eating to the formation of the baby, whereas in the third trimester women identified practicing healthy eating less often and indulging in cravings more. In addition, women thought more about their pregnancy weight gain at the beginning in the first trimester when they wanted to become more visibly pregnancy, and at the end in the third trimester when they felt like they were gaining too much or too little weight.

This study’s findings present several external influences on women’s experiences, and include being weighed at prenatal appointments, shopping for pregnancy maternity clothes, weather, and environmental triggers. Consistent with our findings, previous qualitative research has shown that growing out of pre pregnancy clothes reminds women about their pregnancy weight gain and leads to body dissatisfaction (Watson et al., 2015). The effects of being weighed were also reported previously in a mixed methods study assessing the feasibility and impact of
being weighed regularly during pregnancy (Daley et al., 2015). Daley et al., found that women were less likely to gain excess gestational weight when they were routinely weighed at their prenatal appointments and found that most women thought positively towards regular weigh-ins while only a few women felt anxious, and it made them more conscious of their pregnancy weight gain and eating (Daley et al., 2015). The present study also found that being weighed at prenatal appointments increased women’s awareness of their pregnancy weight gain. However, this study also identified a wide range of effects of being weighed, and that it could cause worry and anxiety with some of the women. This suggests that the previous research oversimplifies the effects of being weighed, whereas the present study shows that being weighed has a more complex relationship with body image and emotions. These combined results suggest that being weighed at prenatal appointments can influence women to think about their eating and weight gain in pregnancy and promote healthier eating habits, however, individual women may have very different reactions and individualized care should take women’s feelings about their gestational weight gain into account when women are weighed at prenatal appointments.

5.2.3 Women’s current Behaviours and Strategies

All of the women in this study identified practicing healthy eating behaviours in pregnancy for their and their baby’s health. This adds to the current literature showing an increased motivation to eat healthier in pregnancy, presenting a time where women may be more open to learning about nutrition and pregnancy weight gain (Harper & Rail, 2012; Smith & Lavender, 2011; Szwajcer, Hiddink, Koelen, & van Woerkum, 2007).

This is one of the few studies to look at the strategies women use to practice healthy eating in pregnancy. Only one other study to date has reported on women’s strategies for controlling dietary intake in pregnancy and this study focused specifically on controlling sugar
consumption during pregnancy (Graham et al., 2013). Graham et al. found the following strategies helped women decrease their sugar consumption during pregnancy: food preparation, swapping for healthier options, setting goals, and resisting social pressure (Graham et al., 2013). The present study also found that women practiced food preparation, swapped for healthier options, and set goals and it adds to the strategies found by Graham et al (2013) as women in the present study discussed eating smaller and more frequent meals to help with satiety and pregnancy symptoms, researching and tracking food intake, and de-stressing. The women in the current study did not identify the strategy of resisting social pressure to eat unhealthy as one of their strategies for healthy eating. The knowledge of women’s current behaviours and strategies enables health care providers to understand that women are practicing healthy eating in pregnancy and have approaches that help them practice these behaviours. In addition, knowing the current strategies are valuable as it provides insight into methods that could be suggested to other pregnant women.

5.3 Social and Community Influences

Our findings highlight that positive and negative social support played an important role in shaping women’s perceptions around their pregnant bodies, their experiences with weight gain and either aided or inhibited practicing healthy eating behaviours. Women’s identified social networks included partners, family, friends, coworkers, strangers and prenatal yoga classes.

The women identified their partners as the primary source of positive support, particularly when they were effusive towards their pregnant body and supported the women with eating healthfully by helping with food preparation. Negative support was seen as their husbands having differing eating habits or creating an unhealthy food environment. Previous literature has found that positive partner support has a positive influence on pregnancy eating
behaviours and on women’s experiences with their gestational weight gain. A study by Thompson et al. (2011) found a positive association between partner’s health behaviours and practicing healthy behaviours in pregnancy (Thompson et al., 2011). In addition, another study found that women’s eating behaviours were influenced by their partners positively when they made an effort to support healthy dietary habits, and were invested in the baby and negatively when they didn’t share the same eating habits or encouraged them to eat unhealthy foods (Graham et al., 2013; Khazaezadeh, Pheasant, Bewley, Mohiddin, & Oteng-Ntim, 2011). Watson et. al. (2015), reported that when partners gave positive feedback and expressed attractiveness towards the pregnant body, this increased women’s body satisfaction (Watson et al., 2015).

These results, combined with our study’s put an emphasis on the important role of the partner and the need to include the partner when considering women’s experiences with both healthy eating and gestational weight gain.

The present study found that support women got from friends was primarily in the form of reassuring comments, compliments, and positive advice. These findings differ from those of Campbell et. al. (2011), who reported that family and friends were a primary source of advice and information during pregnancy, and that advice about dietary behaviours were strongly influenced by peer support (Campbell et al., 2011). Although, peer support was mentioned by women in this study, it did not take on as prominent a role and most women in the present study reported going to their peers for reassurance rather than advice. This suggests that who women go to for support and advice is inconsistent and may vary depending on many factors.

Women in the present study identified that positive family support came primarily in the form of positive compliments and women did not identify family members as a good source of pregnancy information. This was surprising as receiving advice from family members,
specifically mothers, has been seen as important in other qualitative literature (Harper & Rail, 2012; Jette & Rail, 2014; Tovar et al., 2010). For example, one qualitative study reported that women disregarded medical weight gain recommendations and looked to her mother as the primary source of guidance (Harper & Rail, 2012). However, another study found that, while the participants’ mothers were identified as a source of credible pregnancy information, the women resisted advice from their mothers when they were along the lines of the stereotypical pregnancy beliefs (Jette & Rail, 2014). In the present study, women went to their mothers more for reassurance and positive encouragements, rather than advice because they perceived their views as outdated and not relevant. Interestingly, the women reported going to their coworkers or mentors at work for guidance because they were seen as more relatable.

This study showed that friends, family, and coworkers could also be sources of negative support. Typical types of negative social support reported by women included negative comments about their body, encouraging the women to eat more during their pregnancy and telling women about stereotypical pregnancy beliefs. In a few instances the women discussed having to tell family, friends, or coworkers to stop trying to feed them. This was also found in other qualitative literature, which reported encouragements from family, friends, and coworkers to eat more in pregnancy (Goodrich et al., 2013; Graham et al., 2013; Herring et al., 2012), presenting social pressure to eat unhealthy foods as a key barrier to practicing healthy eating habits in pregnancy.

This study is one of the few studies to identify prenatal yoga as a positive support during pregnancy and it was described as a safe, supportive environment for women to share their trials and tribulations with other pregnant women. This suggests that a classroom environment, where
women can discuss pregnancy weight gain and eating with their peers, may be a successful strategy to teach women about gestational weight gain and eating in pregnancy.

This study found that women felt vulnerable to negative comments on their body size and judgments and advice about their dietary choices from strangers during their pregnancies. This would lead to negative perceptions of their body image in pregnancy. Moreover, the women contemplated why social networks felt involved in their pregnancies, when pregnancy is such a personal experience. Our findings provide an in depth description of how women think about comments and unsolicited advice, which adds to the current qualitative literature that reports the public nature of pregnancy (Hodgkinson et al., 2014; Watson et al., 2015). Watson et. al. also found that women were surprised how often other people commented on the pregnant body despite the inappropriateness of the commentary, and that these comments were sometimes taken positively or negatively (Watson et al., 2015). Our study adds to these findings by providing in depth discussions on women’s reactions to unsolicited advice.

Previous qualitative literature has reported that the visibility of the pregnant body may pressure women to practice healthy behaviours to be perceived as a “good mother” (Harper & Rail, 2012), which was also identified in this study. Contrary to what has been found in other qualitative articles, some of the women who identified experiencing stigma towards their dietary choices in pregnancy such as judgment for having a glass of wine or an occasional deli meat sandwich chose to ignore those opinions as long as their health care provider told them it was safe. This could be due to this sample of women possessing strong opinions on their own food choices during pregnancy.
These findings show how women’s social and community networks influence women’s experiences and perceptions with their pregnancy weight gain and eating. It is important to understand these social influences as this knowledge can raise awareness about how the current social environment affects women. Health care professionals could use this information to better understand the experiences of women and to allow a more open and comfortable environment for women to discuss weight gain and eating during pregnancy. In addition, it identifies the need for awareness in the broader community about what types of comments are potentially emotionally damaging to pregnant women and to change what types of conversations around pregnancy are considered acceptable.

5.4 Societal Expectations

This study explored how societal expectations of pregnant women were important in shaping women’s perceptions of their pregnancy weight gain and eating. There is increasing pressure to adhere to the North American “ideal” pregnancy, where women gain weight in desirable areas such as the stomach and the high expectation to lose the baby weight quickly post partum. Societal pressure and pregnancy norms have been mentioned by other qualitative literature, where societal norms to be perceived as a “good mother” may motivate women to improve their diet in pregnancy and that society sets expectations on women to lose the weight quickly post partum (Harper & Rail, 2012; Huberty et al., 2010; Smith & Lavender, 2011; Szwajcer, Hiddink, Koelen, & van Woerkum, 2007; Wiles, 1998). This current study adds to this literature by providing in depth explanations on how this pressure may affect women’s thoughts around eating in pregnancy. For example, the present study showed that societal pressure may results in women having thoughts to restrict intake to not gain too much pregnancy weight and have an easier time losing the weight post partum. In addition, this study found that societal ideals were
exacerbated by celebrity culture and social media with the women comparing themselves to famous celebrities who were pregnant at the same time. These comparisons made them think negatively towards their changing bodies even though they realized that these societal ideals were unrealistic expectations.

5.4.1 The Internet as a Primary Resource for Information

This study showed that pregnant women seek out nutrition and weight gain information and all of the women identified using the Internet as a resource. This is the first study to get an in-depth look at what type of websites women were looking at, whether they thought these sources were reputable or not reputable, and their receptiveness to internet-based advice. The types of websites women frequented included government and health care websites, mommy blogs, and pregnancy forums. These findings are different than those found previous investigations of nutrition seeking behaviours in pregnancy, where baby books were preferred over the internet (Szwajcer, Hiddink, Koelen, & V. Woerkum, 2005). However, this discrepancy was likely because the internet may have not been as popular as a resource when the Szwajcer et. al. study was conducted. Knowledge of where women are getting their information is important when counselling women. Women in this study also reported that internet-based information could stimulate anxiety, so steering women towards reputable sites that provide good information could help to decrease anxiety. In addition, education on reputable versus non-reputable sources in pregnancy could be beneficial, especially since many pregnancy websites may not provide evidenced based advice. It may be useful to suggest to women that if they read information from the Internet they should verify the accuracy of the advice with their health care provider. Lastly, since the Internet is the number one source of advice for these women, it can provide a potential platform for delivering pregnancy eating and weight gain information.
5.5 Experiences with Health Care Providers

5.5.1 Health Care Providers as a Resource

This study explored pregnant women’s experiences with their health care providers, the type of nutrition and weight gain advice they received, and how they reacted to this advice. This is one of the few studies to investigate pregnant women’s perspectives of prenatal nutrition and gestational weight gain counselling specifically in the Canadian context and whether or not they were receptive towards the counselling received. This study found that women valued their health care providers’ advice and often viewed them as their primary resource for information on nutrition and weight gain in pregnancy. Women were more receptive to advice when the care providers’ advice empowered them to make their own decisions and was backed with evidence based reasons and examples. Women were less likely to be receptive when they felt rushed or that their concerns were not being addressed. Additionally, the study identified that women are open to learning about diet and weight gain in pregnancy. However, the majority of prenatal counselling received by women was on prenatal vitamin supplementation and food safety and little to no counselling on gestational weight gain was received.

These results are consistent with other studies on pregnant women’s experiences with gestational weight gain in prenatal care. For example, one Canadian study identified that women were receptive to the advice provided from their health care provider because they were seen as the expert on nutrition during pregnancy (Ferrari et al., 2013). Other studies found that women were less likely to be receptive to advice when it lacked personalization, clarity, and examples (Johnson et al., 2012). For example, in a study conducted by Arden et al women wanted clarification as to why excess weight gain could lead to health complications. In addition, other qualitative literature found diet advice emphasized prenatal vitamin supplementation and food
safety and that little or no advice was given on appropriate gestational weight gain in pregnancy (Brown & Avery, 2012; Graham et al., 2013; Heery et al., 2013; Jette & Rail, 2014). Literature from the perspective of the health care providers suggests that these topics may be avoided because of insufficient time, thoughts that their counselling methods are ineffective, inadequate training, limited access to a nutrition professional such as a dietitian, and specifically gestational weight gain is perceived as a stigmatizing topic (Coady, 2015; Sargeant, Loney, & Murphy, 2008; Soklaridis, Oandasan, & Kimpton, 2007; Truswell, 2000; Wynn, Trudeau, Taunton, Gowans, & Scott, 2010). Although there are perceived barriers to counselling women, more individualized advice is wanted on nutrition and weight gain and providers may miss a key opportunity to provide valuable education to women.

One important facet of weight gain counselling during pregnancy is the use of the IOM weight gain guidelines. This study found that women had a wide variety of reactions to the IOM (2009) pregnancy guidelines with it putting pressure and stress on some of the women, whereas others who were gaining appropriate weight liked to see that they were doing well. This study also found that women looked up appropriate gestational weight gain on their own, rather than receiving this information from their health care providers. This is consistent with a mixed method study assessing the advice around weight gain provided to pregnant women, where only a quarter of women received counselling on pregnancy weight gain (Brown & Avery, 2012). In addition, Brown et al (2012) found that women want to be informed about healthy pregnancy weight gain. However, another qualitative study reported that women thought there was too much emphasis on weight gain recommendations in prenatal care and a lack of emphasis on other factors such as body image (Watson et al., 2015). This suggests that an individualized approach taking into account women’s feelings about their weight gain is needed when
discussing the guidelines with pregnant women. Counselling approaches found in this study that
the women liked included seeing their pregnancy weight gain mapped out throughout pregnancy
and the reassurance that there is no normal rate of pregnancy weight gain.

5.5.2 Gaps in Prenatal Care

This is one of the few Canadian studies to identify opportunities for further enhancement in
prenatal care regarding nutrition and gestational weight gain and identified four main gaps in
prenatal care. These include 1) Prenatal care is not individualized, 2) Treating the whole patient
and taking a client centered approach, 3) Educational opportunities earlier and later than
currently provided, 4) More guidance on eating and weight gain.

One important gap identified was that there is little to no nutrition and weight gain advice
given in the first trimester. This is a key time period in pregnancy where women may be
receptive to the advice received, however no advice is being given from health care providers.
This is important because women may be more likely to seek nutrition information in the first
trimester (Szwajcer et al., 2005), women in the present study often used the internet to find this
information, which may or may not provide the best information and research shows that excess
gestational weight gain in the first trimester is associated with long term maternal metabolic
outcomes (Walter et al., 2015). Current literature also demonstrates that when nutrition and
weight gain recommendations are provided early, pregnant women are more likely to achieve
optimal gestational weight gain, suggesting that introduction early is feasible and effective
(Coady, 2015; Harrison, Teede, & Lombard, 2014).

These findings have important implications in the way health care providers structure
prenatal care regarding nutrition and weight gain and should include intervening early in
pregnancy or pre pregnancy by having resources available and advertised early on. By
counselling early and setting expectations for pregnancy weight gain and diet, women may be
more likely to adopt healthier eating habits in their pregnancy and be less sensitive to their
pregnancy weight gain and body changes as pregnancy progresses.

5.6 Strengths and Limitations

5.6.1 Recruitment and Representativeness of Sample

This study’s findings should be interpreted in light of its strengths and limitations. To
explore women’s experiences with their pregnancy weight gain and eating, purposive snowball
sampling was used to recruit women through an advertisement on a moms group on Facebook.
This may have led to recruitment of women with greater interest or stronger opinions on this
topic. In addition, snowball sampling may have led to recruitment of groups of women that tend
to have similar beliefs and opinions. Another limitation was the inability to recruit from
community health centers and a wider variety of moms groups, which led to a more homogenous
demographic of the group than expected, as the majority of the participants were Caucasian,
educated, and upper middle class. Although, there were limitations to the generalizability of the
sample, the women gave broad and in depth descriptions of their experiences with pregnancy
weight gain and eating that may be applicable to other women from differing socioeconomic and
cultural backgrounds.

The women reported receiving antenatal care from differing providers such as
obstetricians, family doctors, and midwives. Therefore, this study provides a broad depiction of
prenatal nutrition and weight gain counselling from different types of health care providers
currently available in Ontario.
A strength of this research was that the inclusion and exclusion criteria were rigorously chosen and justified. Recruiting women within a year post-partum may have led to recall bias. However, recruiting this population can also be seen as a strength, as women were able to reflect on the entirety of their pregnancies. In addition, the women were given a pregnancy timeline to map out important pregnancy events prior to the interview to use as an aid to help them remember eating and weight gain events in their pregnancy.

5.6.2 Data Collection and Analysis

One-on-one semi-structured interviews were used for data collection. This was an appropriate method as it provided the opportunity to collect in depth descriptions of women’s experiences. The open-ended nature of the questions allowed women to take the direction most important to them and resulted in elaboration and discovery of new topics. In addition, participant anonymity decreased risk of social desirability bias, although, women may have only shared the information they were comfortable sharing. Objectivity was maintained by having the same trained facilitator conduct the interviews, a semi-structured interview guide, audio recordings, and detailed transcription instructions. Validity of the interview guide was established as an expert in prenatal nutrition and an expert in qualitative methodology reviewed it. Furthermore, it was pilot tested in two members of the target population to ensure the interview guide was acceptable to that population.

A thematic data analysis approach was used, which provided in depth descriptions of the patterns in the data set. A limitation of the study was that data saturation was not met, although the last three participants generated few new codes and there were many recurring themes throughout the women’s transcripts. This emphasizes that the intricacies of women’s experiences with pregnancy weight gain are unique, and although there may be some overlap, every woman’s
experience is different. It should be noted that one-on-one interviews only attest to the opinions of the women being interviewed and therefore cannot be generalized to the entire population. Rather these research findings can provide in-depth insight into what pregnant women are thinking about in regards to their eating in pregnancy and weight gain.
CHAPTER 6: CONCLUSION

This study describes women’s current experiences with their pregnancy weight gain and eating behaviours. Women are very conscious of their pregnancy weight gain and eating throughout their pregnancy and this is important to them. Knowledge that women are thinking about these topics presents pregnancy as a key time period to educate women on proper nutrition and weight gain.

This study highlights that pregnancy is complex and every women’s experience is different. There are many of internal and external factors that influence women’s experiences with their pregnancy weight gain and eating, such as body image, emotions, and pregnancy symptoms and these can affect women in different ways. This emphasizes that that people and health care providers should take an individual approach when talking to women about eating and weight gain.

This was one of the only studies to describe how women’s experiences change through each trimester, and how these changes affect weight gain and eating experiences and behaviours. It’s important to realize the pregnancy is a changing experience, and what women might be going through at one time point in pregnancy may not be applicable in a later trimester. It is important for health care providers to include ongoing conversations around eating and gestational weight gain in prenatal care.

The women in this study were practicing healthy eating behaviours for their health and their baby’s health. In addition, they had many ideas and strategies for how to practice these healthy behaviours. The knowledge of women’s current behaviours and strategies enables health care
providers to appreciate women’s current efforts and these strategies can be adopted or promoted to other pregnant women who want to practice healthy eating habits in pregnancy.

Lastly, women want more information to be provided about pregnancy weight gain and eating. They want more guidance and resources from health care providers on what foods should be included, and the nutritional demands of pregnancy. They identified four gaps within prenatal care: 1) Prenatal care is not individualized, 2) Treating the whole patient and taking a client centered approach, 3) Educational opportunities earlier and later than currently provided, 4) More guidance on eating and weight gain. This reveals opportunities to optimize prenatal care to best support outcomes for both mom and baby for the future.
REFERENCES


## APPENDICES

### APPENDIX A: RESEARCH ETHICS BOARDS APPROVAL

### RESEARCH ETHICS BOARDS

_Certification of Ethical Acceptability of Research Involving Human Participants_

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<thead>
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<th>APPROVAL PERIOD:</th>
<th>November 2, 2015</th>
</tr>
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<tr>
<td>PRINCIPAL INVESTIGATOR:</td>
<td>Forbes, Laura (<a href="mailto:forbesl@uoguelph.ca">forbesl@uoguelph.ca</a>)</td>
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<tr>
<td>DEPARTMENT:</td>
<td>Family Relations &amp; Applied Nutrition</td>
</tr>
<tr>
<td>SPONSOR(S):</td>
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<tr>
<td>TITLE OF PROJECT:</td>
<td>Women’s Experiences with Gestational Weight Gain: A Qualitative Investigation of Canadian women’s thoughts, beliefs and current practices</td>
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The members of the University of Guelph Research Ethics Board have examined the protocol which describes the participation of the human participants in the above-named research project and considers the procedures, as described by the applicant, to conform to the University's ethical standards and the Tri-Council Policy Statement, 2nd Edition.

The REB requires that researchers:

- Adhere to the protocol as last reviewed and approved by the REB.
- Receive approval from the REB for any modifications before they can be implemented.
- Report any change in the source of funding.
- Report unexpected events or incidental findings to the REB as soon as possible with an indication of how these events affect, in the view of the Principal Investigator, the safety of the participants, and the continuation of the protocol.
- Are responsible for ascertaining and complying with all applicable legal and regulatory requirements with respect to consent and the protection of privacy of participants in the jurisdiction of the research project.

The Principal Investigator must:

- Ensure that the ethical guidelines and approvals of facilities or institutions involved in the research are obtained and filed with the REB prior to the initiation of any research protocols.
- Submit a Status Report to the REB upon completion of the project. If the research is a multi-year project, a status report must be submitted annually prior to the expiry date. Failure to submit an annual status report will lead to your study being suspended and potentially terminated.

The approval for this protocol terminates on the **EXPIRY DATE**, or the term of your appointment or employment at the University of Guelph whichever comes first.

Signature: 

Date: November 2, 2015

L. Kuczynski  
Chair, Research Ethics Board-General

Page 1 of 1
APPENDIX B: INFORMED CONSENT FORM

UNIVERSITY OF GUELPH

Women’s Experiences with Pregnancy Weight Gain; Canadian women’s thoughts, beliefs and current practices

You are invited to take part in a research project studying Women’s experiences with pregnancy weight gain. Diet and pregnancy weight gain are important for healthy pregnancies and for the long-term health of both mothers and babies. Prenatal care is changing in Canada and little is known about women’s experiences with pregnancy weight gain. Professor Laura Forbes and Michele Strom (MSc student) from the University of Guelph are conducting this research study to understand Canadian women’s experiences with their pregnancy weight gain to explore opportunities for future care.

Purpose of the Study

The purpose of the study is to gain an in-depth understanding of Canadian women’s thoughts, beliefs and current practices about diet and pregnancy weight gain. You are receiving this notice because you are a new mother, who has recently given birth within the last year.

What will I be asked to do?

You will be phoned at home or e-mailed by the MSc student who will ask some questions to make sure you are eligible to take part. If you are, you will be invited to schedule an interview at a location of your choosing where we will discuss your experiences with your pregnancy weight gain and eating habits. You will also be asked to fill out a short demographic survey. The interview will only take about 1 – 2 hours of your time, and will be audio recorded. That will be the end of your involvement in the study. The researcher may contact you by telephone or e-mail at a later date to confirm the accuracy of the information on the transcript.
What will we do with the interviews?

Audio data will be kept by the researcher in a secure location to use in the analysis and reporting of the research results. No direct identifying information (such as your name) will be connected to the audio recordings. Personal contact information including your full name, address and phone number will be kept confidential and separate from the audio data. There will be a master list connecting your interview name and your true identity, in case you want to remove your data or to clarify information from your interview. Only study personnel will have access to the study data.

An electronic copy of the transcripts in a CD will be stored securely in a locked filing cabinet in MINS B41 University of Guelph Department of Family Relations and Applied Human Nutrition for five years after research publication, at which time it will be destroyed. Thematic analysis (a qualitative method) will be the method to analyze this information.

Possible Risk or Discomfort to you if you participate in this study

There are no foreseeable risks or discomforts by participating in the interviews. Some women may find pregnancy weight gain to be a sensitive topic and could feel some embarrassment during the interviews. We encourage you to share only what you are comfortable talking about.

Possible Benefits if you take part in this study

This is an excellent opportunity to influence the future development of pregnancy counselling. This may improve the future health of mothers and infants.

Will I be paid?

You will be given a $50 presidents choice gift card as a thank-you for your participation. In order to obtain this gift card you will need to sign a receipt of proof of receiving the gift card for financial services. Your personal information will be provided to financial services. Financial services will not be able to connect you to your alias and study information.

If you choose to withdraw or not answer questions, you will not suffer any disadvantage.
If you choose to withdraw after participation in the interview, you will still be entitled to the entire amount of the gift card.

Confidentiality

Every effort will be made to ensure confidentiality of any identifying information that is obtained in connection with this study. You will not be identified by name in the interview. The transcripts will be kept confidential and only the researchers will have access to the transcripts. Confidentiality will be assured in the study, but not anonymity.

Participation Withdrawal

You can choose whether to be in this study or not. If you volunteer to be in this study, you may withdraw at any time without any consequences. You may also refuse to answer any questions you don’t want to and still remain in the study.

Rights of Research Participants

Your participation in this study is entirely voluntary. You may withdraw your consent at any time and discontinue participation without penalty. If you decide to withdraw from the study, you can request to have your data withdrawn. You will be informed in a timely manner about any new information that may affect your decision to participating in this study.

You are not waiving any legal claims, rights or remedies because of your participation in this research study. This study has been reviewed and received ethics clearance through the University of Guelph Research Ethics Board. If you have questions regarding your rights as a research participant, contact: Director, Research Ethics: (519) 824-4120, ext. 56606, e-mail: sauld@uoguelph.ca. You may receive a copy of the results by emailing Michele Strom at mstrom@uoguelph.ca.

Signature of Research Participant

I have read the information provided for the study ‘Women’s Experiences with Pregnancy weight gain; Canadian women’s thoughts, beliefs and current practices’ as described herein. My questions have been answered to my satisfaction, and I agree to participate in this study.
I have been given a copy of this form.

___________________________  __________________________  ___________
Name of Participant (please print)  Signature  Date

___________________________
E-mail address of participant (optional)

___________________________
Phone number of participant (optional)

___________________________  __________________________  ___________
Name of person obtaining consent (please print)  Signature  Date
Appendix C: Semi-structured Interview Guide and Protocol

Introduction:

Hi. My name is Michele Strom and I want to thank-you for attending this interview. Today, I would like to hear your stories and experiences of your pregnancy eating habits and your pregnancy weight gain.

The aim of this research is to learn about:

- What pregnancy experiences influenced your eating habits
- What eating behaviours you practiced in your pregnancy
- What helped you practice healthy eating habits, and the motivators and challenges to eating healthfully in your pregnancy
- Conversations you had about your pregnancy body changes in size, weight and eating behaviours with your health care providers, friends, family, and social circles
- Lastly, learn about resources you would have liked to have in your pregnancy

The overall goal of this research is to use the information learned to develop resources for pregnant women and support counselling for women to help them achieve a healthy experience with their pregnancy weight gain and eating in pregnancy.

Before starting with the interview, I will review the key points of the informed consent form. Take time to read it and please feel free to ask any questions. Also, after obtaining your consent I will ask you to fill out a short demographic questionnaire to have an idea of certain sociocultural factors that might provide a background to your stories. This questionnaire is optional and any information that you do not feel comfortable disclosing you can leave blank.

We will be taking an audio recording of the interview. All information collected will be anonymous, and will be stored on a safe laptop. In order to ensure your anonymity, we will ask you to come up with your own alias name. Also, please try not to leave the room unless necessary.

This timeline will be used as an aid to help you recall moments in your pregnancy, and help us understand when in your pregnancy your stories happened. Please mark on the timeline when the important events to you happened. Here is a list of options/ideas. You can mark some/none or write in some of your own experiences that were memorable to you.

Participant’s chosen name __________________
Individual

Thoughts/ Attitudes
Could you tell me a story when you were really thinking about your pregnancy weight gain?

• Can you tell me a story when you were really thinking about your eating in pregnancy?

→ Can you indicate on the timeline periods of your pregnancy where you thought about your pregnancy weight gain more or less?

→ What kind of thoughts around eating and weight gain were you thinking about in your pregnancy?

→ How did your changes in body size during pregnancy play a role in thinking about your baby?

→ Were there other changes to your body and body size besides weight gain that made you think of your eating in pregnancy? Or your health in pregnancy?

  • If so could you please share a story?

→ What influenced you to think more/ less?

  • When?

  • Did this thinking change?

Experiences

With these markers could you please mark on the timeline where pregnancy symptoms such as cravings had the biggest influences on your pregnancy weight gain? (Do the same and follow with the next two prompts for perceptions of your body image, and changes in mood and stress)

→ If you looked at your body at this point, how did you feel about it?

→ Were there any other pregnancy symptoms?

  • Pregnancy symptoms, for example cravings

  • Perceptions of your body image
• Changes in mood, stress, etc.

→ It sounds like _______ was a big part of your pregnancy, can you tell me more about that?
→ How did those influences make you feel or think?
  • What did they make you do?

→ It sounds like _______ was a big part of your pregnancy, can you tell me more about that?
  → Did you change your thinking because of this
  → Did you change your behaviours because of this

**Can point to different parts of the timeline to ask for different stories**

→ What had the biggest influence on your pregnancy body and pregnancy weight gain?
  • Could you share a story on how this influenced your pregnancy weight gain?

**Behaviours**

Looking at your pregnancy timeline, could you share some stories about what your daily eating habits looked like in pregnancy?

→ Could you share some of the daily eating habits that helped you manage your health in pregnancy?

→ What helped you practice these?

→ What motivated you to practice these eating habits?

→ What got in the way of practicing these healthy eating behaviours?

→ Was there a time period where you practiced healthy behaviours more/ less?
  • Why did this change?
  • Did you have any strategies in place to practice health behaviours more?
  • Can you point out on the timeline when this occurred

→ If someone who just found out they were pregnant came to you for advice around this topic,
what would you suggest to them?

- What advice would you give them to help them do it?
- What do you think would get in the way of that advice?

**Interpersonal**

I see on your timeline you told your friends and family around _____ time. Who was involved with your pregnancy?

→ Did you find that they were supportive of your pregnancy weight gain and changing body?

→ Who was most supportive and least supportive?

- Did you talk to
  → family
  → friends
  → partner
  → stranger
  → healthy care professional

- Did this change across your pregnancy?

→ What kind of conversations did your pregnant and non-pregnant friends have about your pregnancy?

  - What did the conversation look like
  - Did you ever talk about pregnancy weight gain?
  - Did you ever talk about eating in pregnancy?

→ Did you receive unsolicited advice regarding this topic?

  - Were there people to talk to more or less because of the advice they gave?

→ Did your interactions with people influence your experiences with your pregnancy weight gain?

→ How?

  - Did it change your ideas/ perceptions?
  - Did it influence behaviours?
Did your cultural background influence your experiences with pregnancy body changes?

- Were there any cultural norms or expectations related to pregnancy body changes? If so, could you provide some examples?

- Did these norms influence your behaviours that may affect pregnancy body change experiences?

Looking back at your first prenatal visit on the timeline, have you ever talked about pregnancy body change with a doctor or nurse or dietitian?

- Was this discussed at any of the prenatal visits?

- If you have—what “worked” for you in those discussions?

- What didn’t work?

- What resources did you get?

- What resources would you want/ need?

- Why would you want those resources?

- If you could pick one person you would enjoy talking to about pregnancy weight gain and eating who would it be?

- Why?

A lot of researchers and health practitioners are interested in this topic. What do you think they all need to know to help your experiences with this topic?

- If you could give them one message for pregnant women what would it be around this topic?

- What would your dream resource include?

Is there anything else you would like to add on this topic/ is there anything else I should of asked but didn’t?

Grand tour questions

- Mini tour questions if the answer was not given from the grand tour

- Extra probing questions
APPENDIX D: DEMOGRAPHIC QUESTIONNAIRE

Demographic questionnaire for semi-structured interview

1) Age (years): _____

2) Date of delivery _____________ (DD/MMM/YYYY)

3) Marital Status
   □ Single (includes separated, divorced and widowed)
   □ Married or Common law

4) Household Income Group
   □ Lowest ($0 - $38,999)
   □ Lower- middle ($39,000 - $61,999)
   □ Middle ($62,000 - $88,999)
   □ Upper- middle ($89,000 - $124,999)
   □ Upper ($125,000 +)

5) Highest level of education completed
   □ Less than high school
   □ High school graduate
   □ Post secondary diploma
   □ University Graduate

6) Self-declared ethnicity
   □ Aboriginal origin (origins in the First Nations, Indian, Inuit or Metis people)
   □ African or Caribbean origin (origin in any of the original peoples of Africa)
   □ East Asian origin (origins of far East Asia)
   □ European origin (origins in Europe and Western Russia including Anglo Canadians)
   □ French Canadian
   □ Hispanic origin (origins in central and South America)
   □ Jewish (Ashkenazi or Sephardi)
   □ Middle Easter origin (origins in the Arab states of the Middle East)
□ Pacific Islands origin (origins in the Pacific Islands [ex. Samoa, Hawaii, etc.])
□ Multi-ethnic (Two or more)
  • Please specify __________
□ Unknown
□ Other ____________
My experiences with my changing pregnant body
APPENDIX F: PREGNANCY MOMENTS

Please mark the important pregnancy moments that influenced your experiences with your pregnancy weight gain on the “My experiences with my changing pregnant body” timeline. You can mark some, all, or add your own experiences that you think were important.

1) When you first found out you were pregnant
2) When was your first prenatal checkup
3) 1st U/S dating
4) First bought maternity clothes
5) When you told family and friends you were pregnant
6) Standard mid pregnancy U/S
7) Find out baby's sex
8) Hear baby's heartbeat
9) First baby kick
10) Belly starting to show
11) Did you have a baby shower or a baby party? When was this?
12) Childbirth classes
13) Start preparing for the baby: buying baby items, car seat, painting the nursery
14) Last day of work
15) Packing the hospital bag
16) Delivery
17) ____________________
18) ____________________
19) ____________________
20) ____________________
APPENDIX G: TRANSCRIPTION INSTRUCTIONS

Transcription Instructions

1. Transcribe literally; do not summarize or transcribe phonetically.
2. Any names mentioned must be anonymized. If they mention husband's name, write "my husband" instead of "Ralph".
3. Contractions and short forms are transcribed exactly as they are spoken, e.g. 'can't' instead of 'cannot' or 'stats' instead of 'statistics'. Discontinuations of words or sentences as well as stutters are omitted; word doublings are only transcribed if they are used for emphasis ("This is very, very important to me.").
4. Symbols and abbreviations such as percent and meter etc. are spelled out.
5. Half sentences are recorded and indicated by a slash / . Discontinuations are marked by /: "I was worry/ concerned." Word doublings are always transcribed.
6. Punctuation is smoothed in favour of legibility. Thus short drops of voice or ambiguous intonations are preferably indicated by periods rather than commas. Units of meaning have to remain intact.
7. Pauses are indicated by suspension marks in parentheses (…).
8. Affirmative utterances by the interviewer, like "uh-huh, yes, right" etc. are not transcribed.
9. Words with a special emphasis are CAPITALIZED.
10. Numbers are transcribed as follows: a. Zero to twelve are spelled out, larger numbers are transcribed as numerals. b. Numbers that make short words are also spelled out, especially round numbers: twenty, hundred, three thousand. c. Decimals and equations are always written in numerals. Thus: "4 + 5 = 9" and "3.5".
11. Every contribution by a speaker receives its own paragraph. In between speakers there is a blank line. Short interjections also get their own paragraph. Time stamps are inserted at the end of a paragraph.
12. Emotional non-verbal utterances of all parties involved that support or elucidate statements (laughter, sighs) are transcribed in brackets.
13. Incomprehensible words are indicated as follows (inc.). For unintelligible passages indicate the reason: (inc., cell phone ringing) or (inc., microphone rustling). If you assume a certain word but are not sure, put the word in brackets with a question mark, e.g. (Xylomentalazine?). Generally, all inaudible or incomprehensible passages are marked with a time stamp if there isn’t one within a minute.
14. The interviewer is marked by "I:", the interviewed person by "P:" (for participant).
15. Name the file according to the audio file name. E.g. interview_04022011.rtf or interview_smith.rtf.
APPENDIX H: TRANSCRIPTION AGREEMENT

UNIVERSITY
of GUELPH

Women’s Experiences with Pregnancy Weight Gain; Canadian women’s thoughts, beliefs and current practices

Researcher(s) = Dr. Laura Forbes, Dr. Ruth Neustifter, Michele Strom

I, ______________________ the transcriber have been hired to transcribe semi-structured interview audio recordings for the above project. I agree to:

1. Keep all the research information shared with me confidential by not discussing or sharing the research information in any form or format (e.g., disks, tapes, transcripts) with anyone other than the Researcher(s).

2. Not work with the research information in a physical area/location that may compromise the participants’ confidentiality.

3. Not make copies of the research information in any form or format unless requested to do so by the Researchers.

4. Keep all research information in any form or format (e.g., disks, tapes, transcripts) secure while it is in my possession.

5. Return all research information in any form or format (e.g., disks, tapes, transcripts) to the Researcher(s) when I have completed the research tasks.

6. After consulting with the Researcher(s), erase or destroy all research information in any form or format regarding this research project that is not returnable to the Researcher(s) (e.g., information stored on computer hard drive).

Transcriber’s name __________________________________________________________

Transcriber’s signature _____________________________________________________

Transcriber’s Name of Business and Title (if applicable) _______________________

Date _____________________________________________________________________