

# **Healthy Weight Interventions for the Interpregnancy Period A Rapid Review**

Sarah Lamontagne, Public Health Nutritionist, Family Health  
Jane Carkner, Supervisor, Family Health  
Dawn Machado, Acting Manager, Family Health

*May 2018*

## Table of Contents

---

<b>Key Messages .....</b>	<b>1</b>
<b>Executive Summary .....</b>	<b>2</b>
<b>1 Issue.....</b>	<b>3</b>
<b>2 Context.....</b>	<b>4</b>
<b>3 Conceptual Framework.....</b>	<b>6</b>
<b>4 Literature Review Question.....</b>	<b>6</b>
<b>5 Literature Search.....</b>	<b>6</b>
<b>6 Relevance Assessment .....</b>	<b>7</b>
<b>7 Results of the Search.....</b>	<b>7</b>
<b>8 Critical Appraisal.....</b>	<b>8</b>
<b>9 Description of Included Studies .....</b>	<b>8</b>
<b>10 Synthesis of Findings .....</b>	<b>11</b>
<b>11 Applicability and Transferability.....</b>	<b>17</b>
<b>12 Recommendations .....</b>	<b>21</b>
<b>References.....</b>	<b>22</b>
<b>Appendices.....</b>	<b>23</b>
<b>Appendix A: Distribution of Maternal Pre-pregnancy Body Mass Index.....</b>	<b>24</b>
<b>Appendix B: Concept Model .....</b>	<b>25</b>
<b>Appendix C: Search Strategy.....</b>	<b>26</b>
<b>Appendix D: Literature Search Flowchart.....</b>	<b>27</b>
<b>Appendix E: Data Extraction Tables.....</b>	<b>29</b>
<b>Appendix F: Applicability and Transferability Worksheet.....</b>	<b>51</b>

## Key Messages

1. Over a third (35%) of women in Peel are overweight or obese entering pregnancy, increasing the health risks to both the mother and infant. Many women gain more weight than recommended in pregnancy and enter subsequent pregnancies at higher body weights, further increasing the associated health risks.
2. Lifestyle interventions for postpartum women are effective at modestly reducing body weight. Shorter interventions (i.e., three to six months), combined diet and physical activity interventions, and interventions that include self-monitoring result in the greatest weight loss in postpartum women.
3. Through partnerships and collaboration, Region of Peel - Public Health can create an environment that supports healthy weights postpartum by creating awareness of existing supportive and evidence-based resources, tools, and programming.
4. Region of Peel - Public Health should create awareness of the postpartum weight retention issue and the associated negative health outcomes, and advocate at the local, provincial, and federal levels for the development of postpartum weight management supports, resources or tools, and training for health professionals.

# **Executive Summary**

## **Research Question**

What interventions influence women during the interpregnancy period to achieve and maintain a healthy body weight?

## **Context**

In Peel, over a third (35%) of women are overweight or obese entering pregnancy, increasing the health risks to both the mother and the infant. Many women gain more weight than recommended in pregnancy and enter subsequent pregnancies at higher body weights, increasing the associated health risks. Region of Peel - Public Health aims for all pregnant women and women of childbearing age to achieve and maintain a healthy body weight. After birth, there is a window of opportunity to intervene with women to improve health prior to entering subsequent pregnancies.

## **Methods and results**

A search of published and grey literature identified 1091 articles. After assessing for relevance and critical appraisal, two systematic reviews and one guideline, all rated as strong, were included in this review.

## **Synthesis of Findings**

Lifestyle interventions for postpartum women are effective at modestly reducing body weight. Shorter interventions (i.e., three to six months), combined diet and physical activity interventions, and interventions that include self-monitoring, result in the

greatest weight loss in postpartum women. Healthcare professionals and community-based services should provide women in the postpartum period with informed support on weight management that is sensitive to the needs of the women.

## **Recommendations**

- 1) Partner and collaborate with community stakeholders to create an environment in Peel that supports healthy weights in the early postpartum period. The collaboration will include the sharing of the results of this rapid review in addition to creating awareness of existing healthy postpartum weight supports. These supports should include self-monitoring, family involvement, social connections, cultural sensitivity, and accommodation of life challenges to facilitate healthy lifestyles that support healthy weights postpartum (i.e., healthy eating and physical activity).
- 2) Leverage opportunities to use technology (e.g., Just in Time text messaging) to address weight management in the postpartum period at the population level.
- 3) Create awareness of the postpartum weight retention issue and the associated negative health outcomes, and advocate for the national (e.g., Society of Obstetricians and Gynaecologists of Canada, Health Canada, Canadian Society for Exercise Physiology), provincial (e.g., Ontario Ministry of Health and Long-Term Care, Ontario Dietitians in Public Health), and local (e.g., hospitals, community health centres, EarlyON Centres) development of postpartum weight management supports, resources or tools, and training for health professionals.
- 4) Review the literature on the impact of varying breastfeeding duration and intensity on maternal weight and health outcomes.

## 1) Issue

Women who retain excess weight postpartum and enter subsequent pregnancies overweight or obese are at a higher risk of adverse maternal and infant health outcomes. (1) These outcomes include higher rates of pregnancy-induced hypertension, gestational diabetes, preeclampsia, and caesarean delivery for the mother (2) and stillbirth and preterm birth for the infant (1). Postpartum<sup>1</sup> and interpregnancy<sup>2</sup> weight management is essential in the maintenance of a healthy weight status for women and to promote optimal health for themselves and their children.

Region of Peel - Public Health takes a population health approach to obesity prevention that focuses on creating supportive environments. However, there are no interventions that specifically address women's weight in the interpregnancy period. Community partners (i.e., hospitals, midwifery groups) have identified a need for evidence-based resources for women postpartum. After birth, there is a window of opportunity to intervene with women to improve health entering later pregnancies. The purpose of this paper is to review interventions in the interpregnancy period that can help mothers return to a healthy body weight following childbirth.

## 2) Context

As part of the Nurturing the Next Generation strategic priority, Region of Peel - Public Health aims for all pregnant women and women of childbearing age to achieve and maintain a healthy body weight. In Peel, the 2014 data for pre-pregnancy body mass index are reportable for a subpopulation of 51% of women in the Better Outcomes

---

<sup>1</sup> Postpartum: Of or occurring in the period shortly after childbirth. (1)

<sup>2</sup> Interpregnancy: The timing between a live birth and conception of a subsequent live birth. (3)

Registry and Network (BORN), a registry that collects, interprets, shares, and protects critical data about each birth in Ontario. (4) Of these women, almost half (49%) were classified as normal weight before pregnancy, but over a third (35%) were overweight or obese entering pregnancy. (4)

Weight gain above current recommended guidelines in successive pregnancies can have a cumulative adverse effect over the childbearing years. Data are not available on the weight of women in the interpregnancy period, however, as a proxy, a higher proportion of multiparous<sup>3</sup> women are overweight or obese (37%) compared to primiparous<sup>4</sup> women who are overweight or obese (31%)(Appendix A). (4) Furthermore, as a woman's pre-pregnancy weight (BMI) increases they are more likely to gain above the recommended weight range compared to gaining below or within recommended weight range. (4) The cycle of weight gain perpetuates as a woman then enters her next pregnancy at a higher weight and is at further risk of gaining over the recommended amount of weight throughout her pregnancy.

Following the birth of a child, women are faced with many new life challenges (e.g., lack of sleep, increased stress, changes in eating habits and activity) that can impede a return to their pre-pregnancy weight or any weight loss. (5) This cycle of weight gain can be challenging for many women to overcome. The findings of this rapid review will allow Region of Peel - Public Health to identify what interventions influence women to achieve and maintain a healthy body weight in the interpregnancy period to improve the health of mothers and their infants.

---

<sup>3</sup> multiparous: having experienced one or more previous childbirths

<sup>4</sup> primiparous: bearing a child for the first time

### 3) Conceptual Framework

A conceptual model (see Appendix B) was developed by Region of Peel - Public Health on weight before, during, and after pregnancy based on the Institute of Medicine guideline titled Weight Gain During Pregnancy.(1) This question focuses on the interpregnancy period that occurs between birth and the start of the next pregnancy.

### 4) Literature Review Question

What interventions influence women during the interpregnancy period to achieve and maintain a healthy body weight?

Population (P):	Women in the interpregnancy period
Intervention (I):	Population and individual based interventions
Comparison (C):	No comparison or usual care
Outcome (O):	Body weight

### 5) Literature Search

In April 2017, a librarian searched the published literature for synthesized evidence, including guidelines, systematic reviews, and meta-analyses in the following databases: MEDLINE Suite, CINAHL and SocINDEX. Grey literature was searched via: Health Canada, Dietitians of Canada (Practice-based Evidence in Nutrition), World Health Organization (WHO), National Institute of Health and Care Excellence (NICE), United States Centers for Disease Control, National Guideline Clearinghouse, Institute of

Medicine and National Research Council, Turning Research into Practice (TRIP), Open Grey, Google, and Google Scholar. All searches were limited to English language and the past five years. See Appendix C for the search strategy for published literature.

## **6) Relevance Assessment**

Relevance assessment was based on the following criteria:

- Inclusion criteria: women following pregnancy (postpartum), intervention during interpregnancy or interconception period, outcomes related to body weight or BMI, singleton or multiples in previous pregnancy, setting similar to Peel region
- Exclusion criteria: single studies

One reviewer screened all titles and abstracts for inclusion. A second reviewer was consulted for full text relevance screening. Where there were discrepancies a third reviewer was consulted.

## **7) Results of the Search**

A search of published and grey literature identified 1091 articles. After removal of duplicates, 674 articles remained. Screening of titles and abstracts removed 657 articles and left 17 articles for full relevance screening. A key informant provided one additional relevant systematic review published after the search was conducted. Two systematic reviews and one guideline were selected for critical appraisal. See Appendix D for the Literature Search Flowchart.

## 8) Critical Appraisal

Critical appraisal of the two systematic reviews and one guideline was completed independently by two reviewers and where there was disagreement, consensus was reached in consultation with a third. Both systematic reviews were rated strong using the Health Evidence Quality Assessment Tool and the guideline rated strong using the AGREE II appraisal tool. All three were included in this review.

## 9) Description of Included Studies

There were a total of 75 unique articles included in the systematic reviews and the guideline. The review by Lim et al. included all seven relevant studies from the NICE guideline. The NICE guideline was retained because it provided contextual recommendations focused on the design and delivery of interventions as well as considerations for the social determinants of health. Papers included studies that took place during the prenatal and postpartum periods, but information was retrieved only on the postpartum period. See Appendix E for Data Extraction Tables.

**a. Lim, S et al. (2015): Effective strategies for weight loss in postpartum women: a systematic review and meta-analysis. (6)**

The objective of this review was to determine the effectiveness of various lifestyle intervention components (intervention type and duration, use of self-monitoring, delivery medium) on weight loss among postpartum women. A total of 61 papers that represented 46 studies were included (33 randomized controlled trials (RCTs). Participants were recruited from clinics, hospitals, general practices, community centres or via public advertisements. The recruitment window for women following delivery

varied: within the first three months; within the first six months; and within the first 12 months. Interventions included combined diet and exercise (n=21), exercise only (n=22), or diet-only (n=1). Interventions required in-person participation except for two telephone-delivered studies (n=2). Intervention characteristics in the RCTs include: group interventions (n=5), used more than three support media (e.g., in-person, phone, internet, printed materials) (n=6), and home-based interventions (n=4). Nine studies included telephone or mobile phone contact, text messages, website or emails in addition to in-person support (n=9). The interventions were delivered by a range of health professionals – nurses, dietitians, exercise physiologists, diabetes educators, research assistants, trained counselors, health educators and fitness instructors. The duration ranged from 11 days to 36 months. Outcomes included body weight, BMI, total energy and fat intake, and physical activity levels.

**b. Lau, Y. et al. (2017): Electronic-based lifestyle interventions in overweight or obese perinatal women: a systematic review and meta-analysis. (7)**

The objective of this review was to assess the effectiveness of e-based lifestyle interventions in improving maternal and neonatal outcomes among perinatal overweight or obese women. A total of 17 articles were included in the review, including 14 RCTs; 5 trials were conducted during the postpartum period. The population included overweight women ( $BMI \geq 25 - 29 \text{ kg/m}^2$ ) or/and obese ( $BMI \geq 30 \text{ kg/m}^2$ ) women in the perinatal period (from pregnancy to 1 year postpartum). Women who gave birth to infants at various gestational ages were included. Interventions included at least one component of diet control, physical activity and weight management. These interventions were

delivered via website, internet, phone applications (Apps), text message (SMS), email, computer or video player or by combinations of these delivery formats with in-person and phone sessions. Women set behavioural goals, received lifestyle counselling or skill training, had regular self-monitoring and received reinforcement using feedback or a postcard. Outcomes were gestational weight gain, postnatal weight change, exercise or moderate to vigorous physical activities, and calorie intake.

**c. National Institute for Health and Care Excellence. (2010, reviewed 2017): Weight management before, during and after pregnancy. (8)**

This guideline addresses the prevention of overweight or obesity before, during and after pregnancy. The aim is to help all women who have a baby achieve and maintain a healthy weight by adopting a balanced diet and being physically active. The recommendations were developed based on a review of the evidence, economic modelling, expert advice, stakeholder comments, and fieldwork.

The systematic review that informed the portion of the guideline on weight management interventions after childbirth aimed to determine the effectiveness of weight management interventions targeted at women who have given birth within two years. (9) This review included seven studies, five of which were RCTs from the USA, one was a non-randomised study from the USA and one was a non-randomized study from Finland. The population was women who had given birth within two years, including those who were planning a subsequent pregnancy with no pre-existing medical complications relating to pregnancy or the postpartum period that may affect weight management. The types of interventions included dietary interventions and/or physical activity interventions for weight management after childbirth and any intervention after

childbirth that may impact weight management. Interventions included assessments, monitoring, and support/advice for postpartum weight management. Outcomes included were weight-related (i.e., changes in body weight using measures such as BMI, self-reported weight gain, professional weight measurement; postpartum weight retention; fat-free mass; body fat percentage), dietary, physical activity and support (i.e., changes in dietary intake, changes in levels of physical activity, energy expenditure, support and mentoring for women attempting to manage their weight postpartum), breastfeeding (i.e., energy expenditure through breastfeeding, milk volume uptake and duration of breastfeeding), and harms of interventions (i.e., harms associated with uptake of the intervention).

## **10) Synthesis of Findings**

**Lifestyle interventions for postpartum women are effective at modestly reducing body weight. (6,7,8,9)**

- **Combined diet and physical activity interventions result in the greatest weight loss in postpartum women when compared to diet or physical activity interventions alone. (6,9)**
  - **Dietary intervention alone at 12 weeks postpartum may help women lose more weight compared to usual care, based on limited evidence. (9)**
  - **Physical activity intervention alone at 30 weeks postpartum has an insignificant effect on weight loss outcomes compared to usual care, based on limited evidence. (9)**

- **Shorter interventions are more effective at achieving weight loss in postpartum women when compared to longer duration interventions. (6)**
- **Lifestyle interventions that include self-monitoring result in the greatest weight loss for postpartum women when compared to no self-monitoring. (6)**
- **Electronic-based interventions for obese and overweight postpartum women are effective. (7)**
- **No differences in postpartum weight loss outcomes have been identified based on an intervention being in an individual or group setting, home-based or centre-based, or based on the number of delivery medium utilised. (6,9)**
- **Health professionals in a variety of settings need to be skilled in advising on postpartum weight management strategies, be sensitive to the needs of the postpartum women, and be directly involved in postpartum weight management care. (8)**
- **Community-based services (i.e., public health, community recreation services, primary health care, and private local gym facilities) should provide opportunities for women to receive support in weight management postpartum. (8)**

## Lifestyle Intervention Effectiveness

All of the research reviewed found that lifestyle interventions in the postpartum period are effective at achieving weight loss in women. (6,7,8,9) Postpartum women who received a lifestyle intervention (e.g., diet and/or physical activity) had a significantly reduced body weight compared to control (mean difference  $-2.30$  kg, 95% CI  $-3.22$  to  $-1.39$ ). (6) Diet and physical activity together were significantly more effective for weight loss (mean difference  $-3.24$  kg, 95% CI  $-4.59$  to  $-1.90$ ) compared with physical activity alone (mean difference  $-1.63$  kg, 95% CI  $-2.16$  to  $-1.10$ ). (6) There is limited evidence that dietary intervention alone (aiming for 35% energy deficit) starting at 12 weeks postpartum may help women in all BMI categories start to lose more weight after childbirth compared to usual care. (9) There is limited evidence that a physical activity intervention alone at 30 weeks postpartum has an insignificant effect on weight loss outcomes. (9)

## Lifestyle Intervention Design

Advice provided about healthy eating and the importance of physical activity should use evidence-based behaviour-change techniques to motivate and support women to lose weight. (8) Advise women that a healthy diet and physical activity will benefit them and any future children by helping them achieve a healthier body weight. The mother should also be informed that her lifestyle changes can help her whole family to eat healthy and be active. (8)

Newer technology (internet, telephone or both) either as the main or additional support tool did not result in greater weight loss than those interventions that did not include newer technology. (6)

### Lifestyle Intervention Delivery

Women who have weight concerns after pregnancy should be encouraged by their health care providers and recreational staff to talk to a health professional such as a general practitioner, nurse, dietitian, health visitor or pharmacist for reputable information and advice on healthy eating and physical activity. (8) Health professionals should promote physical activities that can be done in daily life, such as walking, and give advice on recreational exercise that may begin immediately if pregnancy and delivery are uncomplicated. (8)

Interventions that included self-monitoring<sup>5</sup> (e.g., exercise logs, diaries, heart rate monitors or pedometers) resulted in significantly greater weight loss (mean difference - 4.61 kg, 95% CI -7.08 to -2.15) than those without (mean difference -1.34 kg, 95% CI -1.66 to -1.02). (6) There was a significant correlation between a higher number of self-monitoring records returned and greater weight loss. (9) Homework completion or telephone contact with research staff was not significantly correlated with weight loss. (9) Women who are supervised by a trained diet and exercise specialist may be more successful in their attempts to lose weight, than women who are only self-monitoring and this may be more helpful to those women who are obese. (8,9)

---

<sup>5</sup> self monitoring: includes methods of tracking oneself (e.g., food diaries, activity tracker)

Shorter intervention durations of six months or less (follow-up ranged from 12 days to one year) led to significantly greater weight loss (mean difference -3.11 kg, 95% CI -3.54 to -1.64) compared to intervention duration beyond six months (mean difference -1.01 kg, 95% CI -2.10 to 0.08). (6) This result was consistent with electronic-based lifestyle interventions significantly helping obese and overweight postnatal women to reduce their weight during the one to two months postpartum period compared to the control group (mean difference -3.60 kg, 95% CI -6.59 to -0.62). (7) There was no significant weight loss in the intervention group when compared to the control group in the six-month postpartum period or in the 12-month postpartum period in overweight and obese postpartum women. (7)

No differences in postpartum weight loss outcomes have been identified based on an intervention being in an individual or group setting, home-based or centre-based, or based on the number of delivery medium utilised. (6,9)

### Healthy Weights Management in Postpartum Care

A variety of health professionals (e.g., physicians, midwives, nurses, pharmacists, dietitians and public health nutritionists in all settings) and recreation staff should be involved in delivering weight management interventions to women in the postpartum period. (8)

Professional bodies and others responsible for setting competencies and developing continuing professional development programs for health professionals, healthcare assistants and support staff, and recreation staff should ensure they have the skills to advise on the health benefits of weight management and risks of being overweight or

obese before, during and after pregnancy, or after successive pregnancies. (8) Health professionals and recreation staff should have behaviour change knowledge, skills and competencies, and communication techniques needed to approach the subject of tailored weight management in a sensitive manner. (8) They should also have knowledge, skills and competencies in group facilitation, be aware of the needs of minority ethnic groups, and have knowledge of local services. (8)

The 6–8-week postnatal check is an opportunity to discuss weight and provide information from a reputable source. (8) Opportunities should also be provided for new mothers to request help with weight management at a later time (within six months).(8) This information should be clear, tailored, consistent, up-to-date, and timely advice about how to lose weight safely with a healthy diet, regular physical activity, and support from family. (8) For women with a BMI of 30 or more after childbirth, the increased risks that being obese poses to them and, if they become pregnant again, their unborn child, should be explained by a healthcare professional. (8)

Women should not resume high-impact activity too soon after giving birth. After complicated deliveries a health professional should be consulted before resuming pre-pregnancy levels of physical activity, usually after the first check-up at six weeks after giving birth. (8)

Furthermore, no evidence was found to suggest that breastfeeding results in different weight management outcomes in comparison to those who are not breastfeeding. (9)

## Community-based Services

Community-based services (i.e., public health, community recreation services, primary health care, and private local gym facilities) play a crucial role in the support of weight management in postpartum women. (8) Local recreation centres should offer women with babies and children the opportunity to take part in a range of physical or recreational activities (e.g., swimming, organised walks, cycling or dancing). (8) Consideration should be given to the affordability and convenience of the programming, such as the inclusion of children or child care services. (8) There should also be opportunities for postpartum women to join a collective weight management group. (8)

## **11) Applicability and Transferability**

The rapid review team met with Public Health Nurses, a Supervisor, a Canadian Institutes of Health Research fellow from Family Health, a prenatal educator, and a Public Health Dietitian and Manager from the Chronic Disease and Injury Prevention Division for a facilitated discussion. The purpose of the meeting was to discuss the applicability and transferability of the recommendations to our local context. The discussion was guided by the Applicability and Transferability Worksheet (Appendix F). A summary of the key discussion points follow.

### **Political Acceptability**

The current political climate supports interventions that aid mothers in achieving and maintaining healthy weights in the interpregnancy period as it aligns with the strategic plan for the Region of Peel – Public Health and the public health strategic priorities, Nurturing the Next Generation and Supportive Environments for Healthy Living. The

current supportive environment approach led by the Chronic Disease and Injury Prevention division focuses on the food and built environments and does not have a focus on body weight. However, the target population of women postpartum is a unique group where the discussion of weight is imperative for the health of the mother and child. It is perceived that mothers would be receptive to postpartum interventions that would assist them in practicing healthy lifestyles. These interventions will need to be sensitive to the needs of mothers and their families. Special attention will need to be given to approaching the subject of weight cautiously and sensitively to avoid any unintended consequences (e.g., adding additional mental stress for a mother).

### **Social Acceptability**

There is a window of opportunity to engage with mothers after birth as they may be more receptive to healthy weight supports at that time. Interventions should be tailored, be sensitive to the topic of weight, and engage family and friend supports. Messaging should include that not all weight loss is healthy and there are healthy ways of returning to and maintaining a healthy body weight. Further research will help to fulfil a need to learn more about mothers after pregnancy and what their preferences are for after pregnancy support with healthy weights. Attention to health equity and cultural sensitivity is necessary in intervention development.

### **Available Essential Resources**

Management indicated that it would be possible to redirect human resources to focus on healthy weights postpartum. An inventory of current resources (i.e., internal and external services and programs) could help with identifying what could be modified

(e.g., translated or enhanced) to better fulfil the needs of women in postpartum weight management. Continued collaboration with external partners (e.g., hospital staff, midwives) can improve the development of useful resources that meet the needs of the end users. As there is a rolling birth cohort of approximately 15 000 children each year in Peel, the health benefits to the mothers and children are worth the anticipated costs. Existing resources (e.g., grocery store dietitians, recreation centres, [UnlockFood.ca](http://UnlockFood.ca)), although limited, in the community can be partnered with to aid in meeting the needs of mothers in postpartum weight management and may also help to improve sustainability. It is important that a consistent message be provided from community partners. If awareness of the possible negative outcomes of excessive weight entering pregnancy is achieved, it is ethically essential to also provide and promote supportive resources for mothers postpartum.

### **Organizational Expertise and Capacity**

The recommendations align with the Nurturing the Next Generation strategic priority. There is overlap with some existing programs and there are opportunities to expand the symbiotic relationship with the Chronic Disease and Injury Prevention division. Advocacy can be done with external stakeholders (e.g., promoting the use of the Ontario Perinatal Record). A barrier was identified in regards to current organizational capacity specific to ongoing technology support and technology infrastructure.

### **Transferability**

The percentage of women who enter pregnancy at a higher weight than recommended and the negative health outcomes for mother and her infant are a concern in the region

of Peel. The concern that Region of Peel - Public Health has in regards to postpartum weight management in mothers is validated by external health care providers as confirmed at a reference group meeting attended by these providers. Region of Peel - Public Health will need to be familiar with the characteristics of the population of mothers in Peel. For example, become familiar with cultural practices following birth, access to technology, the mental health of mothers, and how the socioeconomic status of the mother and her family can affect her health practices related to healthy weights during and after pregnancy. Building capacity and offering a multi-pronged approach are key to being accessible to the entire target group.

A separate meeting was held to discuss proposed recommendations with the Associate Medical Officer of Health. At that meeting it was mentioned that the relationship of breastfeeding and postpartum weight retention wasn't fully investigated with the research pulled in this review. Therefore, a separate review of the literature on the impact of varying breastfeeding duration and intensity on maternal weight and health outcomes was recommended.

In summary, there was agreement that postpartum weight management is an important focus for Region of Peel - Public Health and that the target population and key stakeholders will be open to interventions in this area.

## 12) Recommendations

The following is recommended for Region of Peel - Public Health:

- 1) Partner and collaborate with community stakeholders to create an environment in Peel that supports healthy weights in the early postpartum period. The collaboration will include the sharing of the results of this rapid review with stakeholders in addition to creating awareness of existing healthy postpartum weight supports. These supports should include components of self-monitoring, family involvement, social connections, cultural sensitivity, and accommodation of life challenges to facilitate healthy lifestyles that support healthy weights postpartum (i.e., healthy eating and physical activity).
- 2) Leverage opportunities to use technology (e.g., Just in Time text messaging) to address weight management in the postpartum period at the population level.
- 3) Create awareness of the postpartum weight retention issue and the associated negative health outcomes, and advocate for the national (e.g., Society of Obstetricians and Gynaecologists of Canada, Health Canada, Canadian Society for Exercise Physiology), provincial (e.g., Ontario Ministry of Health and Long-Term Care, Ontario Dietitians in Public Health), and local (e.g., hospitals, community health centres, EarlyON Centres) development of postpartum weight management supports, resources or tools, and training for health professionals.
- 4) Review the literature on the impact of varying breastfeeding duration and intensity on maternal weight and health outcomes.

## References

---

- 1) Institute of Medicine (IOM) and National Research Council (NRC). Weight gain during pregnancy: Re-examining the guidelines. Washington, DC: The National Academies Press; 2009. Available from: <https://www.nap.edu/catalog/12584/weight-gain-during-pregnancy-reexamining-the-guidelines>
- 2) Bodnar 2007. In Institute of Medicine (IOM) and National Research Council (NRC). Weight gain during pregnancy: Re-examining the guidelines. Washington, DC: the national Academies Press; 2009. Available from: <https://www.nap.edu/catalog/12584/weight-gain-during-pregnancy-reexamining-the-guidelines>
- 3) Centers for Disease Control. National vital statistics reports: Interpregnancy intervals in the United States: Data from the birth certificate and the national survey of family growth; 2015. Available from: [https://www.cdc.gov/nchs/data/nvsr/nvsr64/nvsr64\\_03.pdf](https://www.cdc.gov/nchs/data/nvsr/nvsr64/nvsr64_03.pdf)
- 4) Public Health Unit Analytic Reporting Tool (Cube), BORN Information System (BIS), BORN Ontario. Information accessed on July 6, 2016.
- 5) Choi J, Fukuoka Y, Lee JH. The effects of physical activity plus diet interventions on body weight in overweight or obese women who are pregnant or in postpartum: A systematic review and meta analysis of randomized controlled trials. *Prev Med* 2013; 56 (6): 351-364. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3670949/>
- 6) Lim S, O'Reilly S, Behrens H, Skinner T, Ellis I, Dunbar JA. Effective strategies for weight loss in post-partum women: a systematic review and meta-analysis. *Obesity reviews*. 2015;16:972-987.
- 7) Lau Y, Klainin-Yobas P, Htun TP, Wong SN, Tan KL et al. Electronic-based lifestyle interventions in overweight or obese perinatal women: a systematic review and meta-analysis. *Obesity reviews*. 2017 Sep;18(9):1071-1087. Epub 2017 May 22.
- 8) National Institute for Health and Care Excellence. Public health guideline: Weight management before, during and after pregnancy. 2010; updated 2014; reviewed 2017. Available from: <https://www.nice.org.uk/guidance/ph27>
- 9) Messina J, Johnson M, Campbell F, Everson Hock E, Guillaume L et al. Systematic review of weight management before, during and after pregnancy. University of Sheffield – School of Health and Related Research. Available from: <https://www.nice.org.uk/guidance/ph27/evidence/weight-management-after-childbirth-evidence-review-pdf-67423069>

## **Appendices**

**Appendix A: Distribution of Maternal Pre-pregnancy Body Mass Index**

**Appendix B: Concept Model**

**Appendix C: Search Strategy**

**Appendix D: Literature Search Flowchart**

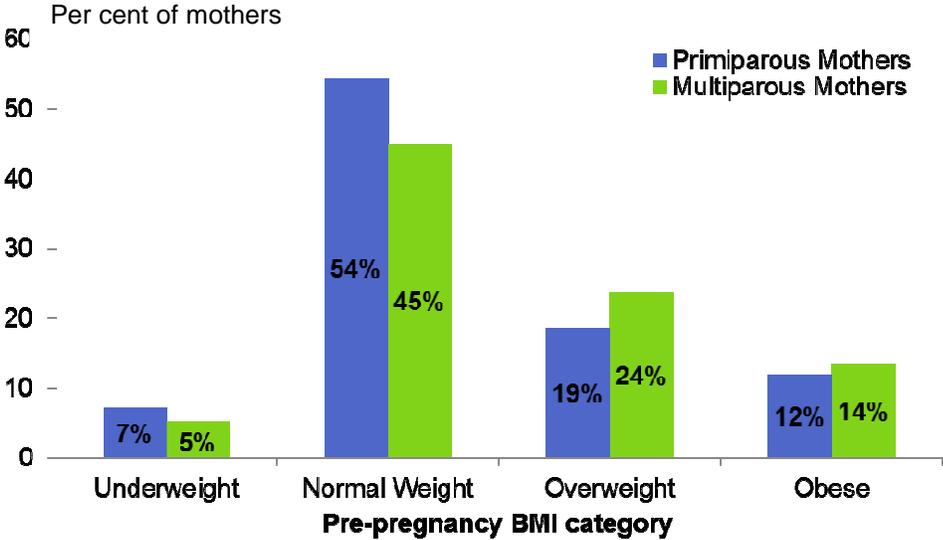
**Appendix E: Data Extraction Tables**

**Appendix F: Applicability & Transferability Worksheet**

# Appendix A: Distribution of Maternal Pre-pregnancy Body Mass Index

## Mass Index

**Figure 1 - Distribution of Maternal Pre-pregnancy Body Mass Index (BMI) by Parity, Peel, 2014**



**Notes:** In this region, we are able to report on 51% of women who have a pre-pregnancy BMI or gestational weight gain recorded in the BORN Information System for 2014.

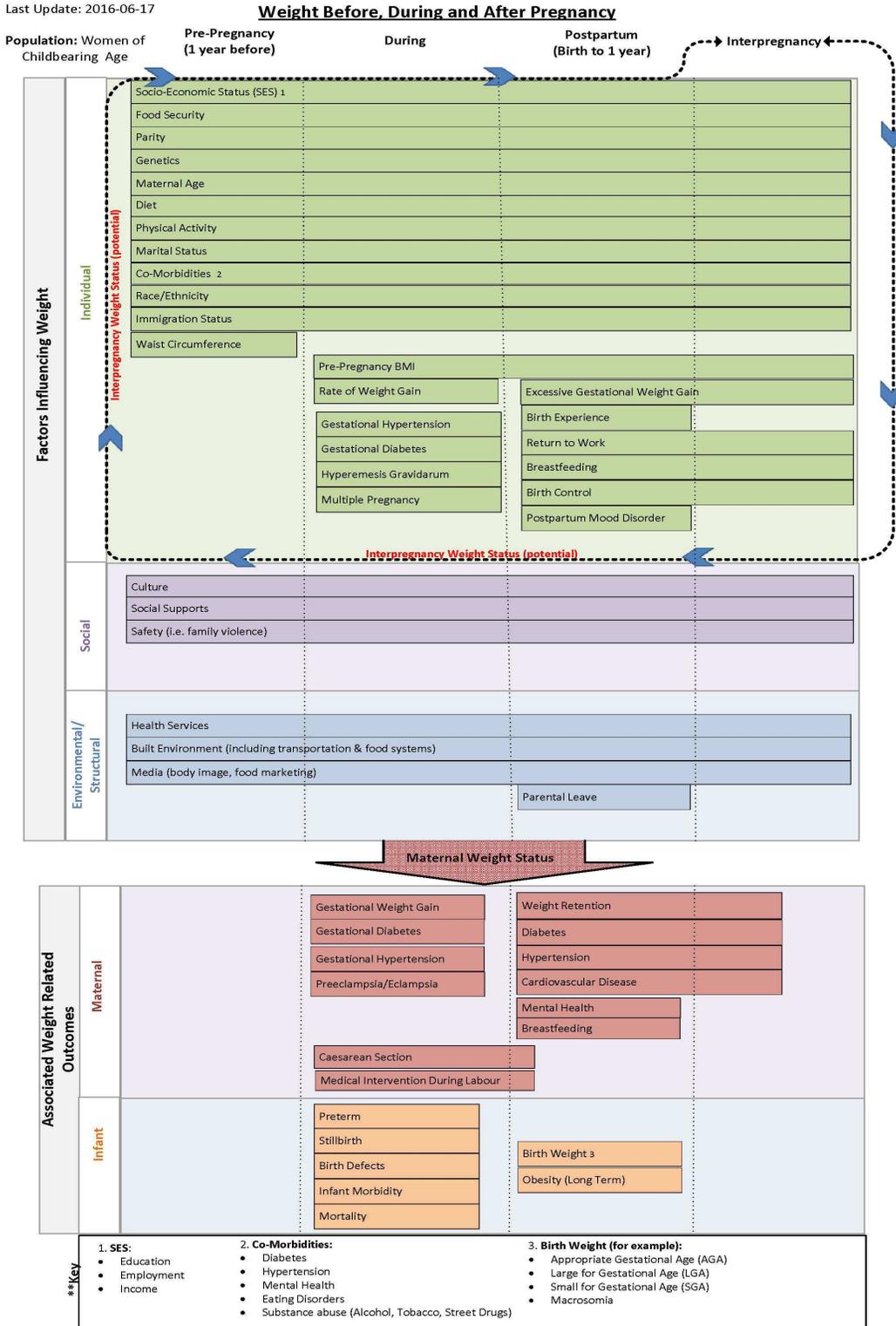
Caution should be taken when interpreting data in the figure above. Maternal BMI Category was missing for 10.9% of records in Peel in 2014.

The per cent of mothers under each BMI category may have been rounded.

**Source:** Public Health Unit Analytic Reporting Tool (Cube), BORN Information System (BIS), BORN Ontario. Information accessed on July 6, 2016.

# Appendix B: Concept Model

Last Update: 2016-06-17



## Appendix C: Search Strategy

463 articles from MEDLINE, MEDLINE In-Process, Cochrane Database of Systematic Reviews, Global Health, Health Star. The searches were limited to 5 years and were deduped prior to exporting.

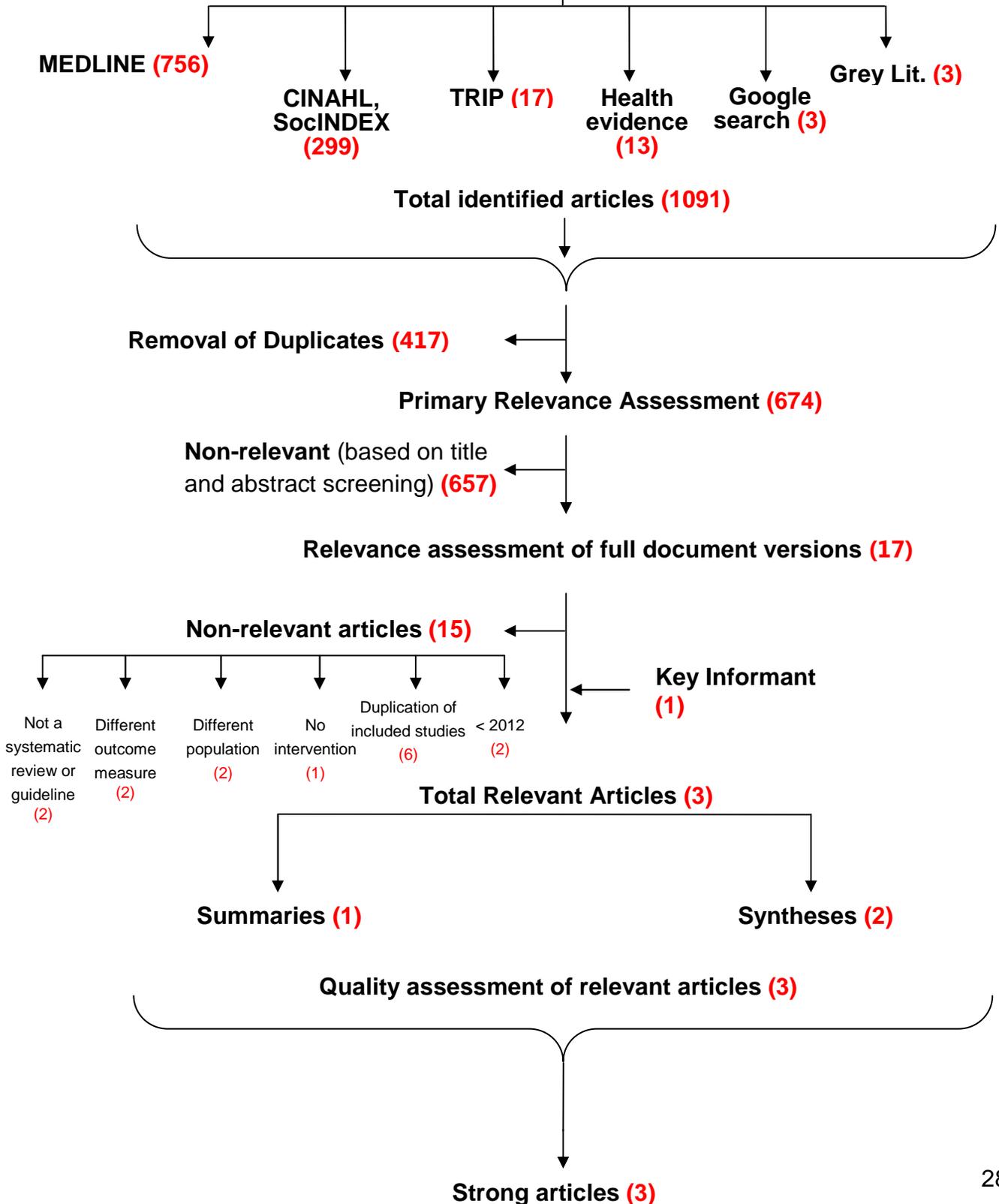
1	► "interpreg".ti,ab.	832
2	► "interconception".ti,ab.	148
3	► exp Pregnancy/	1331201
4	► "preg".ti,ab.	778828
5	► exp Birth Intervals/	2967
6	► exp Postpartum Period/	75404
7	► exp Parturition/	33315
8	► exp Parity/	44183
9	► "childbirth".ti,ab.	30980
10	► "post-delivery".ti,ab.	1856
11	► exp Postnatal Care/	8986
12	► exp Perinatal Care/	15796
13	► exp Obesity/	408298
14	► exp Weight Gain/	53550
15	► exp Body Weight/	704553
16	► exp Body Mass Index/	258705
17	► exp Overweight/	351225
18	► "healthy weight".ti,ab.	5662
19	► "weight".ti,ab.	1479105
20	► "intervention".ti,ab.	1658428
21	► "strateg".ti,ab.	1607774
22	► "guideline".ti,ab.	538902
23	► "program".ti,ab.	1563264
24	► exp Health Promotion/	168882
25	► exp Maternal Welfare/	13345
26	► 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12	1551627
27	► 13 or 14 or 15 or 16 or 17 or 18 or 19	1981550
28	► 20 or 21 or 22 or 23 or 24 or 25	4705653
29	► 26 and 27 and 28	27409
30	► ("review" or "meta-analys" or "guideline" or "synth").ti.	1442911
31	► 29 and 30	1776
32	► limit 31 to english language [Limit not valid in CDSR; records were retained]	1683
33	► limit 32 to yr="2012-Current"	904
34	[d] remove duplicates from 33	463

299 articles were retrieved from CINAHL and SocINDEX, duplicates were automatically removed by Refworks to 293.

S19	 S14 AND S15 AND S16 AND S17	Limiters - Published Date: 20120101-20171231 Search modes - Boolean/Phrase	<a href="#">View Results (299)</a>
S18	 S14 AND S15 AND S16 AND S17	Search modes - Boolean/Phrase	<a href="#">View Results (684)</a>
S17	 S12 OR S13	Search modes - Boolean/Phrase	<a href="#">View Results (829,513)</a>
S16	 S7 OR S8 OR S9 OR S10 OR S11	Search modes - Boolean/Phrase	<a href="#">View Results (166,276)</a>
S15	 S1 OR S2 OR S3 OR S4 OR S5 OR S6	Search modes - Boolean/Phrase	<a href="#">View Results (71,390)</a>
S14	 TI ( review* OR meta-analys* OR guideline* OR synth* ) OR AB ( review* OR meta-analys* OR guideline* OR synth* )	Search modes - Boolean/Phrase	<a href="#">View Results (927,105)</a>
S13	 DE "HEALTH promotion"	Search modes - Boolean/Phrase	<a href="#">View Results (39,291)</a>
S12	 TI ( intervention* OR strateg* OR guideline* OR program* ) OR AB ( intervention* OR strateg* OR guideline* OR program* )	Search modes - Boolean/Phrase	<a href="#">View Results (804,681)</a>
S11	 DE "Body mass index"	Search modes - Boolean/Phrase	<a href="#">View Results (40,333)</a>
S10	 TI ( "body mass index" or BMI ) OR AB ( "body mass index" or BMI )	Search modes - Boolean/Phrase	<a href="#">View Results (30,816)</a>
S9	 TI weight* OR weight*	Search modes - Boolean/Phrase	<a href="#">View Results (132,982)</a>
S8	 TI "healthy weight" OR AB "healthy weight"	Search modes - Boolean/Phrase	<a href="#">View Results (727)</a>
S7	 DE "BODY weight" OR DE "OVERWEIGHT persons"	Search modes - Boolean/Phrase	<a href="#">View Results (14,492)</a>
S6	 TI "post delivery" OR AB "post delivery"	Search modes - Boolean/Phrase	<a href="#">View Results (165)</a>
S5	 TI preg* OR AB preg*	Search modes - Boolean/Phrase	<a href="#">View Results (70,526)</a>
S4	 TI interconception OR AB interconception	Search modes - Boolean/Phrase	<a href="#">View Results (40)</a>
S3	 TI interpreg* OR AB interpreg*	Search modes - Boolean/Phrase	<a href="#">View Results (168)</a>
S2	 DE "BIRTH intervals"	Search modes - Boolean/Phrase	<a href="#">View Results (669)</a>
S1	 DE "PARITY (Obstetrics)" OR DE "PREGNANT women"	Search modes - Boolean/Phrase	<a href="#">View Results (1,627)</a>

# Appendix D: Literature Search Flowchart

What interventions influence women during the interpregnancy period to achieve and maintain a healthy body weight?



## Appendix E: Data Extraction Tables

Items Reviewed	Review – Effective strategies for weight loss in postpartum women: a systematic review and meta-analysis
<b>General Information and Quality Rating</b>	
Author(s) and Date	Lim S, O'Reilly H, Behrens H, Skinner T, Ellis I, Dunbar A (November 2015)
Country	Australia Individual studies were conducted in primarily developed countries: Australia (n=6); USA (n = 24); Taiwan (n=4); Canada (n=3); and Austria, Finland, Greece, Netherlands, Sweden, Japan and UK (n=1 for each country). Two studies were conducted in developing countries (China and Thailand).
Quality Rating	Health Evidence Quality Assessment Tool – Review Articles: Overall rating: 8 (Strong), by two reviewers and reviewed with a knowledge broker, recommended for use
Objectives of the Review	To determine the effect of various lifestyle intervention components (intervention type and duration, use of self-monitoring, delivery format, and delivery medium) on weight loss in postpartum women using a systematic review and meta-analysis.
<b>Details of Review</b>	
Primary Studies Included	61 articles included in the systematic review and 43 of those included in the meta-analysis
Types of Studies Included	Intervention studies [six were single-arm interventions, seven were non-randomized controlled trials, and 33 were randomized controlled trials (RCTs)]
Search Period	Database inception to July 18, 2014
Databases Searched	Embase, Ovid MEDLINE, CINAHL, PsycINFO, PubMed, Cochrane Central Register of Controlled Trials and Cochrane Pregnancy and Childbirth Group Trials Register
Inclusion/Exclusion Criteria	Included: Intervention studies involving modification of diet or physical activity or both for women in their first year postpartum were included. Excluded: Allergen avoidance studies, acute studies (e.g., post-exercise breast milk composition) and supplement trials (e.g., high protein supplements, fish oil, margarine, zinc) were excluded. Reviews, conference abstracts, letters, commentaries and case study reports were also excluded. Interventions commencing during pregnancy were excluded except for those that included a postpartum group who could be independently assessed, which is consistent

	<p>with our study aims.</p> <p>* There were no limitations placed on length of intervention, maternal age, BMI or parity.</p>
Quality Appraisal	<p>Studies were assessed for quality according to the Cochrane Collaboration Tool for assessing Risk of Bias (i.e., sequence generation, allocation concealment, blinding of participants, outcome assessments, completeness of outcome data, selective outcome reporting and other potential sources of bias).</p>
<b>Details of Studies Included in Review</b>	
Population	<ul style="list-style-type: none"> <li>• Participants were recruited from clinics, hospitals, general practices, community centres or via public advertisements.</li> <li>• The age of the participants ranged from 24 to 36 years.</li> <li>• The recruitment window for women following delivery varied: within the first 3 months (n=28); within the first 6 months (n=50); and within the first 12 months (n=13).</li> <li>• A minority of studies used selected postnatal populations – exclusive breastfeeding (n=7), a history of gestational diabetes (n=4) and type 2 diabetes (n=1).</li> </ul>
Interventions	<ul style="list-style-type: none"> <li>• Focus of intervention: <ul style="list-style-type: none"> <li>▪ Combined diet and exercise (n=21)</li> <li>▪ Exercise only (n=22)</li> <li>▪ Diet only (n=1)</li> </ul> </li> <li>• All interventions required in-person participation except for two telephone delivered studies</li> <li>• A range of health professionals delivered the interventions – nurses, dietitians, exercise physiologists, diabetes educators, research assistants, trained counsellors, health educators, research assistants, trained counsellors, health educators, and fitness instructors</li> <li>• Type of intervention in RCTs (n=33): <ul style="list-style-type: none"> <li>▪ five were group interventions</li> <li>▪ six used more than three support media (e.g., in-person, phone, internet, printed materials) and four were home-based interventions</li> <li>▪ nine included telephone or mobile phone contact, text messages, website or emails in addition to in-person support</li> </ul> </li> </ul>

Outcomes	BMI, Weight, Energy intake, Fat intake, Physical activity				
Relevant Findings					
Main results	<ul style="list-style-type: none"> <li>• 9 of the 22 studies reporting body weight had a significant decrease and 7/16 reported a significant decrease in body mass index (BMI) in the lifestyle intervention group compared to the control group.</li> <li>• The meta-analyses of RCTs showed that lifestyle interventions in postpartum women resulted in a significantly reduced body weight (mean difference -2.30 kg [95% CI: -3.22 to -1.39], P&lt;0.001). There was a significant heterogeneity (<math>I^2 = 84\%</math>).</li> <li>• A sensitivity analysis was performed to exclude studies in which the control group received an exercise or dietary intervention and this analysis resulted in greater effect size (body weight: -2.59 kg, 95% CI: -3.51 to -1.64, P&lt;0.001). The identified studies were excluded from the subsequent subgroup analyses: <ul style="list-style-type: none"> <li>▪ Effect of diet and physical activity on body weight in postpartum women: mean difference -3.24 kg [95 % CI: -4.59 to -1.90] compared to the control group</li> <li>▪ Effect of physical activity on body weight in postpartum women: mean difference -1.63 kg [95% CI: -2.16 to -1.10] compared to the control group</li> </ul> </li> </ul> <p>Table 1 – Subgroup analyses of lifestyle interventions in postpartum women on body weight*</p>				
	Analysis	Studies	Participants	Mean difference, kg (95% CI), P-value	P-value for subgroup differences
	Intervention duration				
	▪ 6 months or less	14	1356	-3.11 (-3.54, -1.64), p<0.001	0.01
	▪ More than 6 months	3	602	-1.01 (-2.10, 0.08), P=0.01	
	Intervention setting				0.33
	▪ Individual	11	489	-2.06(-2.83, -1.29), P<0.001	
	▪ Group	5	803	-3.86 (-7.37, -0.35), P<0.001	
	Intervention location				0.08
	▪ Home-based	4	398	-3.04 (-4.48, -1.60), P<0.001	
	▪ Centre-based	13	958	-1.59 (-2.32, -0.87), P< 0.001	
	Use of technology as support				0.19
	▪ In-person only	8	392	-3.66 (-5.97, -1.36), P = 0.002	

	<ul style="list-style-type: none"> <li>▪ Phone support</li> <li>▪ Phone and web support</li> </ul>	6 3	828 136	-1.31 (-2.62, -0.00), P= 0.05 -2.36(-3.78, -0.94), P=0.001	
	Different medium for support				
	<ul style="list-style-type: none"> <li>▪ Less than 3 medium</li> <li>▪ 3 or more medium</li> </ul>	11 6	131 1225	-3.44 (-5.43, -1.45), P<0.001 -1.57 (-2.41, -0.73), P<0.001	0.09
<p>* Random effects model used. CI, confidence interval</p> <p>Duration:</p> <ul style="list-style-type: none"> <li>• A shorter duration intervention of 6 months or less had significantly greater weight loss compared to intervention duration beyond 6 months. However this appears to be largely due to the result of one study which reported a mean difference of -12.8 kg between groups. Once this study was removed, there was no longer a significant difference.</li> </ul> <p>Individual or Group Format:</p> <ul style="list-style-type: none"> <li>• Format did not differ significantly in its weight loss effects. However the removal of a significant outlier altered this picture to make individual interventions significantly more effective than group ones for weight loss.</li> </ul> <p>Venue or Medium:</p> <ul style="list-style-type: none"> <li>• Home-based interventions are as effective as conventional ones.</li> <li>• Using newer technology (internet, telephone or both) either as the main or adjunct support mechanism did not result in greater weight loss.</li> </ul> <p>Self-monitoring:</p> <ul style="list-style-type: none"> <li>• Lifestyle interventions that include self-monitoring resulted in significantly greater weight loss (-4.61 kg, 95% CI -7.08 to -2.15) than those without (-1.34 kg, 95% CI -1.66 to -1.02) (P =0.01 for subgroup differences).</li> </ul>					
Summary	<ul style="list-style-type: none"> <li>• Combined diet and exercise interventions, interventions that include self-monitoring, and interventions lasting 6 months or less resulted in significantly greater weight loss than their comparative groups (i.e., physical activity only interventions,</li> </ul>				

	<p>interventions without self-monitoring and interventions longer than 6 months in duration).</p> <ul style="list-style-type: none"> <li>• Individual or group setting, home-based or centre-based intervention, the number of technology-based media used to provide support, and delivery medium had no significant effect on the amount of weight loss in postpartum women.</li> <li>• Pooled weight loss from all lifestyle interventions was modest at 2.3 kg (follow up duration ranged from 11 days to 36 months from baseline).</li> <li>• Combination of diet and exercise resulted in twice as much weight loss as that achieved through exercise alone.</li> <li>• Lifestyle interventions that include self-monitoring resulted in weight loss three times greater than those without. Self-monitoring reported on in this review was facilitated by the use of exercise logs, diaries, heart rate monitors or pedometers.</li> <li>• Newer technology such as phone apps can increase self-monitoring and should be further explored in postpartum women in the future.</li> </ul>
--	---

**Comments and Limitations:**

- The presence of significant heterogeneity in over half of the analyses should be noted as this may reflect the diversity of interventions and varying levels of participant adherence.
- Insufficient information existed from the included studies to systematically consider the effect of staff qualifications and treatment intensity in weight loss.
- There was a lack of process outcome reporting (such as recruitment rate, acceptability and adherence levels) which may play a role in determining the effectiveness of intervention in real-life settings.
- The impact of many barriers in achieving weight loss postpartum was not summarized in the single studies included; addressing barriers to healthy lifestyle choices could be beneficial for future study.
- Authors noted that technology-based interventions may improve other outcomes such as recruitment and retention which were not captured in the summary of single studies.

Items Reviewed	Review – Electronic-based lifestyle interventions in overweight or obese perinatal women: a systematic review and meta-analysis		
<b>General Information and Quality Rating</b>			
Author(s) and Date	Lau Y, Klainin-Yoba P, Htun TP, Wong SN, Tan KL, Ho-Lim ST, Chi C, Tsai C, Ong KW, Shorey S, Tam WSW (2017)		
Country	Singapore Individual studies were conducted in primarily developed countries: United States (n = 9); Australia (n=2); Sweden (n=1); United Kingdom (n=1); and Canada (n=1).		
Quality Rating	Health Evidence Quality Assessment Tool – Review Articles: Overall rating: 10 (Strong), by two reviewers and reviewed with a knowledge broker, recommended for use		
Objectives of the Review	The purpose of this review is to synthesize the best evidence to assess the effectiveness of e-based lifestyle interventions in improving maternal and neonatal outcomes among perinatal overweight or obese women.		
<b>Details of Review</b>			
Primary Studies Included	14 RCTs		
Types of Studies Included	Thirteen trials were published in 16 articles, one trial was an unpublished thesis and three trials were pilot studies. The research was conducted between 2006 and 2016. The greatest number of publications (n=6) occurred in 2014.		
Search Period	Inception up to July 13, 2016.		
Databases Searched	CINAHL, Cochrane Library, EMBASE, ProQuest Dissertations and Theses, PsycINFO, PubMed and Scopus <ul style="list-style-type: none"> <li>• searched for ongoing trials in the clinical trial registries</li> <li>• hand search of the reference lists</li> </ul>		
Inclusion/Exclusion Criteria	Criteria	Inclusion	Exclusion
	Population	Overweight (BMI $\geq$ 25 kg/m <sup>2</sup> ) or/and obese (BMI $\geq$ 30 kg/m <sup>2</sup> ) women in the perinatal period (starting from pregnancy to 1 year postpartum).	Pregnant women with comorbidities
	Intervention	E-based lifestyle intervention comprised at least one component of diet control, physical activities and weight management that were delivered by	

		means of website, Internet, Apps, SMS, email, computer or video player and combinations of these delivery formats.	
	Comparison	Minimal intervention or usual care	Other lifestyle interventions
	Primary outcomes	<ul style="list-style-type: none"> <li>- Gestational weight gain</li> <li>- Postnatal weight change</li> <li>- Exercise or moderate to vigorous physical activities</li> <li>- Calorie intake</li> </ul>	
	Secondary outcomes	<p>Other activity-related outcomes:</p> <ul style="list-style-type: none"> <li>- Exercise</li> </ul> <p>Other diet-related outcome:</p> <ul style="list-style-type: none"> <li>- Fruit and vegetable</li> <li>- Saturated fat</li> </ul> <p>Obstetric complications:</p> <ul style="list-style-type: none"> <li>- Antenatal depression</li> <li>- Caesarean delivery</li> <li>- Gestational diabetes mellitus</li> <li>- Preeclampsia /</li> </ul> <p>Pregnancy Induced Hypertension (PIH)</p> <p>Neonatal outcomes:</p> <ul style="list-style-type: none"> <li>- Birth weight</li> <li>- Gestational age at birth</li> <li>- Macrosomia</li> </ul>	
	Types of design	Any types of RCT	Non-experimental study, qualitative, reviews and ongoing studies
	Years of publication	No limit	
	Publication type	<ul style="list-style-type: none"> <li>- Published primary research titles</li> <li>- Unpublished theses</li> </ul>	<ul style="list-style-type: none"> <li>- Conference proceedings</li> <li>- Abstract only</li> <li>- Book chapters review</li> <li>- Letters</li> </ul>

			- Editorials
	Language	English	
Quality Appraisal	<ul style="list-style-type: none"> <li>Two investigators independently assessed the quality of trials and used items for selection bias, treatments, outcome measures, statistical methods, and loss to follow-up using methods from the United States Preventative Services Task Force and the University of York Centre for Reviews and Dissemination. The quantity, quality, and consistency of the results, the directness of the measures used for each outcome; the precision of the results and the magnitude of effects were graded based on the GRADE working group criteria.</li> </ul>		
<b>Details of Studies Included in Review</b>			
Population	<ul style="list-style-type: none"> <li>Postnatal women (8-12 weeks), antenatal women (12 -15 weeks), postnatal low-income (2 weeks – 12 months), antenatal women (13.5 weeks)</li> <li>Setting: Research clinics in Gothenburg, Sweden, Tertiary hospitals in Melbourne, Victoria, Australia, Outpatient clinics in Philadelphia, USA, Obstetric clinics in Providence, Rhode Island, USA</li> </ul>		
Interventions	<ul style="list-style-type: none"> <li>Short message service (SMS) +software +in-person +booklet +device/lifestyle for effective weight loss during lactation, SMS +in-person +postcards +device/Help-her intervention, Website +SMS +Facebook +phone +device/healthy4Baby, Automated postcards via internet +phone +in-person +device/Fit for delivery intervention</li> </ul>		
Outcomes	<ul style="list-style-type: none"> <li>Calorie and saturated fat intake, steps/day, weight change, gestational weight gain, steps/day, neonatal weight, neonatal gestational age, fruit/vegetable, macrosomia, Caesarean, pregnancy-induced hypertension, maternal hypertension, gestational diabetes, depression</li> </ul>		
<b>Relevant Findings</b>			
Main results	<ul style="list-style-type: none"> <li>Subgroup analyses in regards to the duration of interventions suggested a more significant weight loss in the intervention group than in the control group post-intervention (<math>z = 2.37</math>, <math>P = 0.02</math>), with a mean difference of <math>-3.60</math> kg (95% CI: <math>-6.59</math> to <math>-0.62</math>) during the one- to two- month postpartum period in the three RCTs. Substantial heterogeneities (<math>I^2 = 84\%</math> and <math>I^2 = 79\%</math>) were observed, and the random-effect model was used. However, the subgroup analyses revealed no significant weight loss in the intervention group when compared to the control group in the six-month postpartum period (<math>z = 1.05</math>, <math>P = 0.29</math>) or in the 12-month</li> </ul>		

postpartum follow-up ( $z = 1.26, P = 0.21$ ).

**Summary:**

- E-based lifestyle interventions for postnatal weight loss from 1 to 2 months postpartum are effective
- Results from three trials suggest that e-based lifestyle intervention significantly helped obese and overweight postnatal women to reduce their weight from 1 to 2 months postpartum.
- The three eligible trials included physical activity, diet and weight management components in their design, and all perinatal women set behavioural goals, received lifestyle counselling or skill training, conducted regular self-monitoring and received reinforcement using a feedback or postcard. These strategies should be considered in the design of future interventions to reduce postnatal weight. The high heterogeneity of the three trials might be related to the different recruitment times, which ranged from 12 weeks of gestation to 12 months postpartum, as well as the different combinations of delivery formats.
- Meta-analyses revealed no significant differences in weight change between 6 and 12 months postpartum in the intervention compared with the control groups. Postnatal women may be overwhelmed by exhaustion when caring for their newborns at home. Another possible explanation is that postnatal women have low intervention engagement because they expect to return to full-time work after 6 months. Therefore, strategies to maximize the sustainability of postnatal weight management must be strengthened and should indicate a desire for social support in postnatal weight management. The roles of the family, environment and community support in sustaining postnatal weight management have been reported to be major facilitators of healthy lifestyles among postnatal women. Undoubtedly, one challenge in determining an optimal period is the initiation of an e-based lifestyle intervention during the postpartum period. Nevertheless, this review showed that currently, an insufficient number of trials have directly compared earlier and later postnatal periods. Therefore, future work should address the timing of intervention delivery.

**Comments and Limitations:**

- Studies published in English were selected, which may have resulted in some publication bias. The majority of the studies were conducted among white perinatal women in developed countries, for which the results might not be extrapolated to other ethnic groups in developing regions.
- The small sample size in nine of 14 trials from 18 to 66 is another limitation that may reflect the difficulty related to recruiting obese and overweight perinatal women.
- The wide variations in intervention content, delivery and assessments did not allow for a meaningful pooling of results. In addition, few trials used anthropometric outcomes with objective measures. Therefore, the validity of the outcomes might be questionable.
- The duration of the intervention was less than three months in eight eligible trials, and an insufficient spread was present in the timing to evaluate the strength of the interventions.

Items Reviewed	Guideline – Weight management before, during and after pregnancy
<b>General Information and Quality Rating</b>	
Author(s) and Date	National Institute for Health and Care Excellence (2010, reviewed 2017)
Country	United Kingdom (systematic review – USA (n=6), Finland (n=1))
Quality Rating	AGREE II - Overall rating: Strong, by two reviewers and reviewed with a knowledge broker, recommended for use
Objectives of the Guideline	<p>This guideline covers how to assess and monitor body weight and how to prevent someone from becoming overweight or obese before, during and after pregnancy. The aim is to help all women who have a baby to achieve and maintain a healthy weight by adopting a balanced diet and being physically active.</p> <p>This guideline does not cover women who are underweight (women who have a body mass index [BMI] less than 18.5kg/m<sup>2</sup>) or food safety advice.</p>
Intended Audience	<ul style="list-style-type: none"> <li>• National Health Service and other commissioners and managers</li> <li>• Health professionals including those working in antenatal and postnatal services</li> <li>• People working in children’s centres</li> <li>• Women before, during and after pregnancy, their partners and families and other members of the public</li> </ul>
Overall Relevant Recommendations	<p>Only the recommendations relevant to postpartum weight management were extracted.</p> <p><b>Recommendation 3 Supporting women after childbirth</b></p> <p>Whose health will benefit? Women who have had a baby in recent months.</p> <p>Who should take action?</p> <ul style="list-style-type: none"> <li>• General Practitioners, health visitors, midwives, practice nurses, pharmacists and other health professionals working in weight management.</li> <li>• Managers and health professionals in children's centres.</li> <li>• Dietitians and public health nutritionists working in NHS and non-NHS settings.</li> </ul> <p>What action should they take?</p> <ul style="list-style-type: none"> <li>• Use the 6–8-week postnatal check as an opportunity to discuss the woman's weight.</li> </ul>

	<p>Ask those who are overweight, obese or who have concerns about their weight if they would like any further advice and support now – or later. If they say they would like help later, they should be asked whether they would like to make an appointment within the next 6 months for advice and support.</p> <ul style="list-style-type: none"><li>• During the 6–8-week postnatal check, or during the follow-up appointment within the next 6 months, provide clear, tailored, consistent, up-to-date and timely advice about how to lose weight safely after childbirth. Ensure women have a realistic expectation of the time it will take to lose weight gained during pregnancy. Discuss the benefits of a healthy diet and regular physical activity, acknowledging the woman's role within the family and how she can be supported by her partner and wider family. Advice on healthy eating and physical activity should be tailored to her circumstances. For example, it should take into account the demands of caring for a baby and any other children, how tired she is and any health problems she may have (such as pelvic floor muscle weakness or backache).</li><li>• Health professionals should advise women, their partners and family to seek information and advice from a reputable source. Women who want support to lose weight should be given details of appropriate community-based services.</li><li>• Midwives and other health professionals should encourage women to breastfeed. They should reassure them that a healthy diet and regular, moderate-intensity physical activity and gradual weight loss will not adversely affect the ability to breastfeed or the quantity or quality of breast milk.</li><li>• Health professionals should give advice on recreational exercise from the Royal College of Obstetrics and Gynaecology. In summary, this states that:<ul style="list-style-type: none"><li>○ If pregnancy and delivery are uncomplicated, a mild exercise programme consisting of walking, pelvic floor exercises and stretching may begin immediately. But women should not resume high-impact activity too soon after giving birth.</li><li>○ After complicated deliveries, or lower segment caesareans, a medical care-giver should be consulted before resuming pre-pregnancy levels of physical activity, usually after the first check-up at 6–8 weeks after giving birth.</li></ul></li><li>• Health professionals should also emphasise the importance of participating in physical activities, such as walking, which can be built into daily life.</li></ul>
--	--

*Summary of new evidence from 6-year surveillance (2017)(10)*

No references relating to this topic were provided by the topic experts.

Recommendation 3 suggests health professionals talk about the woman's weight at the 6-8 week post-natal check up. They should discuss ways of losing weight taking into account family circumstances, tiredness, pelvic floor issues and back problems. They should also discuss breastfeeding, community based services and give advice from a reputable source, and physical activity – using the Royal College of Obstetrics and Gynaecology source.

**Recommendation 4 Women with a BMI of 30 or more after childbirth**

Whose health will benefit?

Women who had a pre-pregnancy BMI of 30 or more.

Women with a BMI of 30 or more who have had a baby within recent months.

Who should take action?

- GPs, health visitors, practice nurses, pharmacists and other health professionals working in weight management.
- Managers and health professionals in children's centres.
- Dietitians and public health nutritionists working in NHS and non-NHS settings.

What action should they take?

- Explain the increased risks that being obese poses to them and, if they become pregnant again, their unborn child. Encourage them to lose weight.
- Offer a structured weight-loss programme. If more appropriate, offer a referral to a dietitian or an appropriately trained health professional. They will provide a personalised assessment, advice about diet and physical activity and advice on behaviour change strategies such as goal setting. Women who are not yet ready to lose weight should be provided with information about where they can get support when they are ready.
- Use evidence-based behaviour change techniques to motivate and support women to lose weight.

- Encourage breastfeeding and advise women that losing weight by eating healthily and taking regular exercise will not affect the quantity or quality of their milk[6].

### **Recommendation 5 Community-based services**

Whose health will benefit?

All women before, during and after pregnancy.

Who should take action?

- NHS and other commissioners and managers.
- Managers of local authority leisure and community services including swimming pools and parks.
- Managers and health professionals in slimming and weight management clubs.
- Managers and health professionals in children's centres.
- NHS health trainers and health and fitness advisers working in local authority leisure services and voluntary, community and commercial organisations.

What action should they take?

- Local authority leisure and community services should offer women with babies and children the opportunity to take part in a range of physical or recreational activities. This could include swimming, organised walks, cycling or dancing. Activities need to be affordable and available at times that are suitable for women with older children as well as those with babies. Where possible, affordable childcare (for example, a crèche – “preschool”) should be provided and provision made for women who wish to breastfeed.
- NHS and other commissioners and managers, local authority leisure services and slimming clubs should work together to offer women who wish to lose weight after childbirth the opportunity to join a weight management group or slimming club. Health professionals should continue to monitor, support and care for women with a BMI of 30 or more who join weight management groups and slimming clubs.
- Weight management groups and slimming clubs should adhere to the principles outlined at the beginning of this section. This includes giving advice about healthy eating and the importance of physical activity and using evidence-based behaviour-

	<p>change techniques to motivate and support women to lose weight.</p> <ul style="list-style-type: none"> <li>• NHS health trainers and non-NHS health and fitness advisers should advise women that a healthy diet and being physically active will benefit both them and their unborn child during pregnancy. They should also explain that it will help them to achieve a healthy weight after giving birth – and could encourage the whole family to eat healthily and be physically active.</li> <li>• NHS health trainers and non-NHS health and fitness advisers should encourage those who have weight concerns before, during or after pregnancy to talk to a health professional such as a GP, practice nurse, dietitian, health visitor or pharmacist. They should also advise women, their partners and family to seek information and advice on healthy eating and physical activity from a reputable source.</li> <li>• NHS health trainers and non-NHS health and fitness advisers should offer specific dietary advice in preparation for pregnancy, including the need to take daily folic acid supplements.</li> </ul> <p><b>Recommendation 6 Professional skills</b></p> <p>Whose health will benefit? All women before, during and after pregnancy, particularly those with a BMI of 30 or more.</p> <p>Who should take action?</p> <ul style="list-style-type: none"> <li>• Professional bodies and others responsible for setting competencies and developing continuing professional development programmes for health professionals, healthcare assistants and support staff.</li> <li>• Training boards and organisations responsible for training health and fitness advisers and NHS health trainers.</li> </ul> <p>What action should they take?</p> <ul style="list-style-type: none"> <li>• Ensure health professionals, healthcare assistants and support workers have the skills to advise on the health benefits of weight management and risks of being overweight or obese before, during and after pregnancy, or after successive pregnancies.</li> <li>• Ensure they can advise women on their nutritional needs before, during and after</li> </ul>
--	---

	<p>pregnancy and can explain why it is important to have a balanced diet and to be moderately physically active.</p> <ul style="list-style-type: none"> <li>• Ensure they have behaviour change knowledge, skills and competencies. This includes being able to help people to identify how their behaviour is affecting their health, draw up an action plan, make the changes and maintain them.</li> <li>• Ensure they have the communication techniques needed to broach the subject of weight management in a sensitive manner. They should be able to give women practical advice on how to improve their diet and become more physically active. They should be able to tailor this advice to individual needs and know when to refer them for specialist care and support.</li> <li>• Ensure they have the knowledge and skills to help dispel common myths. This includes myths about what to eat and what not to eat during pregnancy and about weight loss in relation to breastfeeding.</li> <li>• Ensure they have knowledge, skills and competencies in group facilitation, are aware of the needs of minority ethnic groups and have knowledge of local services.</li> <li>• Ensure their training is regularly monitored and updated.</li> </ul>
<p><b>Details of Review [Details provided on systematic review that informed the weight management after birth portion of the NICE guideline – Messina et al. (2010). Systematic review of weight management interventions after childbirth. The University of Sheffield – School of Health and Related Research.]</b></p>	
<p>Purpose of Review</p>	<p>To systematically review the evidence for the effectiveness of weight management interventions targeted at women who have given birth within 2 years.</p>
<p>Primary Studies Included</p>	<p>7 research articles (5 RCTs, 2 non-randomized studies)</p>
<p>Types of Studies Included</p>	<ul style="list-style-type: none"> <li>• Randomized controlled trials examining weight management interventions for postpartum women</li> <li>• Non-randomized studies examining weight management interventions for postpartum women</li> <li>• Observational studies were screened for interventions during the postpartum; however, no studies met the inclusion criteria</li> <li>• Qualitative studies have been excluded from this review as they were outside of the scope for this project</li> </ul>
<p>Search Period</p>	<p>1990-2008 (note guideline was reviewed in 2017 and no new evidence was retrieved)</p>

Databases Searched	ASSIA via CSA British Nursing Index via OVID SP CINAHL via EBSCO Cochrane Central Register of Controlled Trials via Cochrane Library (Wiley) Cochrane Database of Systematic Reviews via Cochrane Library (Wiley) Database of Abstracts of Reviews of Effects via Cochrane Library (Wiley) Econlit via OVID SP EMBASE via OVID SP Health Technology Assessment Database via Cochrane Library (Wiley) Maternity and Infant Care via OVID SP MEDLINE via OVID SP NHS EED via Cochrane Library (Wiley) PsycINFO via OVID SP Science Citation Index via Web of Knowledge Social science Citation Index via Web of Knowledge
Inclusion/Exclusion Criteria	Inclusion criteria: <ul style="list-style-type: none"> <li>• Women, (with a BMI greater than 18.5 kg/m<sup>2</sup>) up to at least 2 years following the birth of their baby, both those who are breastfeeding and those who are not breastfeeding</li> <li>• Women, (with a BMI greater than 18.5 kg/m<sup>2</sup>), up to at least two years following the birth of their baby who are planning a subsequent pregnancy.</li> <li>• With a particular focus on women from vulnerable groups such as women who had been diagnosed with gestational diabetes and those with a higher pre-pregnancy BMI (&gt;25 kg/m<sup>2</sup>) who are at risk of excess weight retention following pregnancy.</li> </ul> Exclusion criteria: <ul style="list-style-type: none"> <li>• Women who have been diagnosed with or who are receiving clinical treatment for an existing condition such as type I or type II diabetes or clinically diagnosed with postnatal depression.</li> <li>• Women who are underweight (BMI &lt;18.5 kg/m<sup>2</sup>) after childbirth.</li> <li>• Women who have never been pregnant or given birth</li> <li>• Women more than 2 years after childbirth</li> <li>• Interventions targeted at pregnant women, not women who have given birth in the last two years</li> </ul>

	<ul style="list-style-type: none"> <li>• Clinical interventions (such as surgery or drug treatment for obesity).</li> <li>• Complementary therapies, treatments or practices (for example, hypnotherapy or acupuncture).</li> <li>• Non-English papers</li> <li>• Evidence not originating in economically developed countries (as categorized by membership of the Organization for Economic Co-operation and Development)</li> </ul>
Quality Appraisal	<ul style="list-style-type: none"> <li>• One reviewer assessed the quality of the RCTs and nonrandomized studies using a methodology checklist (National Institute for Health and Clinical Excellence, 2008) assessing population bias, method of allocation, outcomes, analyses, and internal and external validity. Another reviewer checked the quality assessments and any discrepancies were discussed and resolved.</li> </ul>
<b>Details of Studies Included in Review</b>	
Population	<ul style="list-style-type: none"> <li>• Women who have given birth within two years, women who have given birth within two years and planning a subsequent pregnancy with no pre-existing medical complications relating to pregnancy or the postpartum period that may affect weight management. No studies identified sub-groups by weight status: normal, overweight or obese</li> </ul>
Interventions (Note: thorough details of interventions provided in review in appendix table)	<ul style="list-style-type: none"> <li>• Dietary interventions and/or physical activity interventions for weight management after childbirth and any intervention after childbirth that may impact on weight management have been included. Interventions focussed on assessments, monitoring, and support/advice for postpartum weight management</li> </ul>
Outcomes	<ul style="list-style-type: none"> <li>• Weight-related outcomes: <ul style="list-style-type: none"> <li>○ Changes in body weight using measures such as BMI, self reported weight gain, professional weight measurement</li> <li>○ Postpartum weight retention fat-free mass</li> <li>○ Body fat percentage</li> </ul> </li> <li>• Dietary, physical activity, and support outcomes: <ul style="list-style-type: none"> <li>○ Changes in dietary intake</li> <li>○ Changes in levels of physical activity</li> <li>○ Energy expenditure</li> <li>○ Support and mentoring for women attempting to manage their weight postpartum</li> </ul> </li> </ul>

	<ul style="list-style-type: none"> <li>• Breastfeeding outcomes: <ul style="list-style-type: none"> <li>○ Energy expenditure through breastfeeding</li> <li>○ Milk volume</li> <li>○ Uptake and duration of breastfeeding</li> </ul> </li> <li>• Access to services and harms of interventions: <ul style="list-style-type: none"> <li>○ Harms associated with uptake of the intervention</li> <li>○ Access and use of services related to weight management</li> </ul> </li> </ul>
<b>Relevant Findings of Review</b>	
Main Results	<p><b>Evidence Statements (note: only evidence statements relevant to this research review question are included below):</b></p> <p>The detailed findings of the reviewed studies have been summarised according to each research question.</p> <p><b>What are the most effective dietary interventions for weight management after childbirth?</b></p> <p><b>Evidence statement 1</b>  There is limited evidence from one US based RCT (McCrary et al., 1999 [+]) that dietary intervention alone (aiming for 35% energy deficit) at 12 weeks postpartum may help women across the BMI spectrum start to lose more weight after childbirth compared to usual care. However, the short length of this intervention (11 days) makes it difficult to draw conclusions on the effectiveness of the study. Four day weighed food records suggested that calorie intake was not lower in the intervention compared to the control arm of the trial. The setting of this study (US) makes it somewhat relevant to the UK.</p> <p><b>What are the most effective physical activity interventions for weight management after childbirth?</b></p> <p><b>Evidence statement 2</b>  There is weak evidence from one USA (Hawaii) based non-randomized study (Albright et</p>

al., 2009 [-]) that a physical activity intervention alone (focusing on counselling and support to improve self efficacy and self monitoring) from 30 weeks postpartum may help women be more active after pregnancy. Although women in the intervention group were significantly more active after the 8 to 9 week programme than the control group, observed changes in BMI were not significant. The average BMI of participants in this study was in the healthy range at enrolment. The setting of this study limits its applicability to the UK. Systematic review of weight management interventions after childbirth 11

**What are the most effective combined dietary and/or physical activity interventions for weight management after childbirth? What are the most effective interventions that may influence weight management after childbirth?**

**Evidence statement 3**

Four out of 5 US based RCTs addressing diet and physical activity postpartum found a significant reduction in total weight among women across the BMI spectrum in the intervention group compared to control (Leermakers et al. 1998 [+]; Lovelady et al., 2006 [+]; McCrory et al., 1999 [+]; O'Toole et al., 2003 [-]). Only one US based RCT found that total weight was not significantly lower in the intervention group compared to control (Dewey et al. 1994 [+]). Results did not appear to vary based on the start dates of intervention or the length of follow up.

**What interventions are effective in avoiding incremental weight gain over successive pregnancies?**

**Evidence statement 9**

No evidence was identified which specifically assessed incremental weight gain over successive pregnancies.

**What interventions are effective for weight management in women who are breast feeding?**

**Evidence statement 10**

The results of one poor quality trial (O'Toole (2003) [-]) suggests that the effectiveness of a

weight management intervention does not significantly differ between women who are breastfeeding and those who are not. While women were known to be breastfeeding to some extent in all other included studies bar 2 (not reported by Albright et al 2009 [-]; breastfeeding women excluded from Leermakers et al. 1998 [+]), they did not specifically investigate this issue.

**Evidence statement 14**

None of the identified studies reported that there were any adverse effects of measuring or monitoring as part of the intervention.

**What external factors influence the effectiveness of the intervention (such as content, delivery, setting, who is delivering the intervention, intensity, duration and target setting)?**

**Evidence statement 15**

Due to the variability between included studies, it remains unclear whether the delivery, content, setting, intensity and duration of interventions influenced effectiveness.

**Evidence statement 16**

The results of one poor quality RCT (O'Toole et al. 2003 [-]) suggests that that women who are supervised by a trained diet and exercise specialist may be more successful in their attempts to lose weight, decrease their calorie intake and increase their physical activity level than women who are self supervised.

**Evidence statement 17**

It remains unclear whether providing women with support and mentoring influences the effectiveness of a weight management intervention postpartum. Of the included studies, 2 trials (Leermakers et al (1998 [+]) and Lovelady et al. (2006 [+])) and one non-randomized study (Kinnunen et al., 2007 [-]) provided support and mentoring, in addition to components on diet and physical activity.

**Evidence statement 18**

It remains unclear whether the length of intervention influences effectiveness. Both longer

and shorter trials reported some positive results in terms of weight management outcomes. Included studies were 20 weeks in length on average, but varied from 11 days (McCrary et al. 1999 [+]) up to one year (O'Toole et al. 2003 [-]).

**What internal factors influence the effectiveness, acceptability and feasibility of the intervention (such as participants age, socio-economic status, ethnicity, medical history, physical activity, breastfeeding status, attempts at weight management, weight or BMI at onset of pregnancy, number of previous pregnancies and/or children ?**

**Evidence statement 19**

There is insufficient evidence to assess the influence of factors such as socioeconomic status and ethnicity on the effectiveness of interventions. One non-randomized study provided limited data in the analysis of subgroups: A USA Hawaiian based non-randomized study by Albright et al. (2009) [- ], found increases in physical activity by ethnic group, infant age, and parity were not significant and declines in perceived barriers to intervention and physical activity were not significant across ethnic groups or parity.

**Summary:**

Results from the systematic review that informed the guideline related to the postpartum period:

**RCT Weight Outcomes**

- Three of five studies found statistically significant differences in total weight between the lifestyle intervention and the control groups in the postpartum period
- None of the 2 non-randomized studies found any significant changes in weight measures at follow up.
- Overall, evidence is mixed on the effectiveness for weight management interventions on weight loss in all study designs
- External factors relating to intervention delivery, setting, context, and intensity were well covered in all studies
- It was difficult to determine if intervention delivery, setting, context, and intensity had a direct impact on effectiveness since trials did not report on this type of data.
- More evidence was available on the impact of context and intensity of interventions on effectiveness of studies on weight management: One RCT found that the diet plus exercise group saw more of an effect on weight management when compared to the control and diet alone arms
- Additionally, the structured group (individualized diet and exercise program) was significantly more successful in their weight management attempts when compared to those who followed a more self-directed approach to

weight management

**Comments and Limitations:**

- Comparisons across studies were challenging due to differences in interventions, including the length of intervention and follow up strategies.
- The locations of the studies included are primarily USA and one took place in Finland. It can be challenging to apply postpartum studies completed in the USA to Canada due to differences in maternity leave duration (currently 6 months versus 1 year).

## Appendix F: Applicability and Transferability Worksheet

### Starting a New Program Applicability and Transferability Worksheet

Factors	Questions	Notes
<b>Applicability (feasibility)</b>		
Political acceptability or leverage	<ul style="list-style-type: none"> <li>• Will the intervention be allowed or supported in current political climate?</li> <li>• What will the public relations impact be for local government?</li> <li>• Will this program enhance the stature of the organization?               <ul style="list-style-type: none"> <li>○ <i>For example, are there reasons to do the program that relate to increasing the profile and/or creative a positive image of public health?</i></li> </ul> </li> <li>• Will the public and target groups accept and support the intervention in its current format?</li> </ul>	
Social acceptability	<ul style="list-style-type: none"> <li>• Will the target population find the intervention socially acceptable? Is it ethical?               <ul style="list-style-type: none"> <li>○ <i>Consider how the program would be perceived by the population.</i></li> <li>○ <i>Consider the language and tone of the key messages.</i></li> <li>○ <i>Consider any assumptions you might have made about the population. Are they supported by the literature?</i></li> <li>○ <i>Consider the impact of your program and key messages on non-target groups.</i></li> </ul> </li> </ul>	

<p>Available essential resources (personnel and financial)</p>	<ul style="list-style-type: none"> <li>• Who/what is available/essential for the local implementation?</li> <li>• Are they adequately trained? If not, is training available and affordable?</li> <li>• What is needed to tailor the intervention locally?</li> <li>• What are the full costs? <ul style="list-style-type: none"> <li>○ <i>Consider: in-kind staffing, supplies, systems, space requirements for staff, training, and technology/administrative supports.</i></li> </ul> </li> <li>• Are the incremental health benefits worth the costs of the intervention? <ul style="list-style-type: none"> <li>○ <i>Consider any available cost-benefit analyses that could help gauge the health benefits of the intervention.</i></li> <li>○ <i>Consider the cost of the program relative to the number of people that benefit/receive the intervention.</i></li> </ul> </li> </ul>	
<p>Organizational expertise and capacity</p>	<ul style="list-style-type: none"> <li>• Is the intervention to be offered in line with Region of Peel - Public Health's 10-Year Strategic Plan (i.e., 2009-2019, 'Staying Ahead of the Curve')?</li> <li>• Does the intervention conform to existing legislation or regulations (either local or provincial)?</li> <li>• Does the intervention overlap with existing programs or is it symbiotic (i.e., both internally and externally)?</li> <li>• Does the intervention lend itself to cross-departmental/divisional collaboration?</li> <li>• Any organizational barriers/structural issues or approval processes to be addressed?</li> <li>• Is the organization motivated (learning organization)? <ul style="list-style-type: none"> <li>○ <i>Consider organizational capacity/readiness and internal supports for staff learning.</i></li> </ul> </li> </ul>	

<b>Transferability (generalizability)</b>		
Magnitude of health issue in local setting	<ul style="list-style-type: none"> <li>• What is the baseline prevalence of the health issue locally?</li> <li>• What is the difference in prevalence of the health issue (risk status) between study and local settings?               <ul style="list-style-type: none"> <li>○ <i>Consider the Comprehensive Health Status Report, and related epidemiological reports.</i></li> </ul> </li> </ul>	
Magnitude of the “reach” and cost effectiveness of the intervention above	<ul style="list-style-type: none"> <li>• Will the intervention appropriately reach the priority population(s)?               <ul style="list-style-type: none"> <li>○ What will be the coverage of the priority population(s)?</li> </ul> </li> </ul>	
Target population characteristics	<ul style="list-style-type: none"> <li>• Are they comparable to the study population?</li> <li>• Will any difference in characteristics (e.g., ethnicity, socio-demographic variables, number of persons affected) impact intervention effectiveness locally?               <ul style="list-style-type: none"> <li>○ <i>Consider if there are any important differences between the studies and the population in Peel (i.e., consider demographic, behavioural and other contextual factors).</i></li> </ul> </li> </ul>	
<b>Proposed Direction (after considering the above factors):</b>		

Form Completed by: \_\_\_\_\_

**Worksheet adapted from:** Buffet C., Ciliska D., and Thomas H. National Collaborating Centre for Methods and Tools. November 2007. *Can I Use this Evidence in my Program Decision? - Assessing Applicability and Transferability of Evidence.*