

Maternal weight gain management during pregnancy: A scoping review

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ABSTRACT

Background: Unhealthy weight gain during pregnancy can result in adverse outcomes for both mother and baby. Globally, there are 6,400 neonatal and 800 maternal deaths every day. To reduce maternal and neonatal mortality rates, it is imperative to enhance the health condition by effectively regulating weight gain throughout pregnancy. **Objective:** This study aimed to identify scientific evidence on managing maternal weight gain during pregnancy. **Methods:** This scoping review used the five steps outlined by Arksey and O'Malley and adhered to the Prisma-ScR checklist. This study used the population, concept, and context (PCC) framework. The article searches used EBSCO, Science Direct, and PubMed databases. The inclusion criteria applied were original studies written in English published from 2018 to 2023, full-text articles, and articles that discussed maternal weight gain management during pregnancy. The exclusion criteria applied were review articles and articles with research data collected before 2013. The critical appraisal tools used were the Joanna Briggs Institute (JBI) and Mix Methods Appraisal Tools (MMAT). **Results:** Based on this review, the authors identified that behavioral change interventions were crucial as a foundation for more extensive interventions to achieve standard maternal weight gain during pregnancy. Several interventions for managing weight gain during pregnancy include setting weight gain goals, daily weighing, exercise, counseling on healthy lifestyle, multi-interventions, and a combination of technologies. **Conclusion:** Behavior modification and some interventions can enhance success in achieving the standard weight gain during pregnancy. Integrating weight management into routine antenatal care is essential for strengthening maternal and fetal health.

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1. Introduction

Maternal and newborn mortality represents a significant health issue. Globally, in 2021, there were 2.3 million infant deaths in the first month of life, which is approximately 6,400 neonatal deaths every day ([UNICEF, 2023](#)). In 2020, about 800 mothers died per day due to preventable causes related to pregnancy and childbirth ([WHO., 2023](#)). Maternal weight gain during pregnancy is an essential indicator for predicting maternal and infant mortality ([Dolatian et al., 2020](#)). Unhealthy weight gain has been associated with adverse outcomes for both mothers and babies, including small for gestational age (SGA), large for gestational age (LGA), low birth weight (LBW), macrosomia, cesarean delivery, gestational diabetes mellitus (GDM), gestational hypertension, and preeclampsia ([Voerman et al., 2019](#)).

During the postpartum period, there are consequences related to weight gain during pregnancy, namely weight retention in mothers who have gained excessive weight during pregnancy and suboptimal lactation performance in mothers who have gained weight either above or below the IOM standard (IOM., 2009; Martin et al., 2020; Pantha et al., 2020). The long-term impact of weight retention in mothers can lead to an increased risk of type 2 diabetes, cancer, cardiovascular disease, and mental health issues (Baran et al., 2020).

Maternal weight gain during pregnancy also has long-term effects on the development of the newborn baby. A mother experiencing below-average weight gain during pregnancy is a significant indicator contributing to the development of maternal factors that cause stunting (Santosa et al., 2022). On the other hand, excessive weight gain during pregnancy in mothers indicates long-term consequences such as overweight and obesity in childhood (Cunningham et al., 2020).

Maternal weight gain during pregnancy is a modifiable factor related to maternal and child health outcomes (Cliffer et al., 2023). Weight modification during pregnancy needs to be carried out to manage weight gain in mothers during pregnancy. To date, no review article on maternal weight gain has focused on identifying the management of maternal weight gain during pregnancy including behavioral modifications (Bayrampour et al., 2016; Nilsson et al., 2019; Shieh et al., 2018). Meanwhile, a wide range of interventions, including behavioral modifications, need to be discussed to provide greater insight into the specific characteristics of interventions most likely to lead to successful outcomes in achieving maternal weight gain standards during pregnancy. Consequently, this scoping review aims to identify scientific evidence about maternal weight gain management during pregnancy.

2. Method

The method employed in this study is a scoping review. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) Checklist is used as a reference for preparing this scoping review. The five stages of scoping review by Arksey and O'Malley were applied in this study (Arksey & O'Malley, 2005).

2.1 Identifying the research question

The research question for this scoping review is "How is maternal weight gain during pregnancy managed?". The utilized framework is population, concept, and context (PCC). The PCC framework is recommended to establish clear and meaningful objectives and eligibility criteria for scoping reviews (Pollock et al., 2023). The implementation of PCC in this phase is as follows:

Table 1. PCC Framework

Population	Content	Context
Pregnant women	Maternal weight gain management	During pregnancy

2.2 Identifying relevant articles

Identifying the relevant articles used inclusion and exclusion criteria. The inclusion criteria applied were original studies written in English published from 2018 to 2023, full-text articles, and articles that discussed maternal weight gain management during pregnancy. The exclusion criteria applied were review articles and articles with research data collected before 2013.

The article searches in this scoping review used three databases e.i., PubMed, Science Direct, and EBSCO. The articles were identified using *keywords*, *truncation*, and *Boolean operators*.

Table 2. Keywords

Population	Content	Context
Pregnant women (pregnan* women OR pregnan* mother*AND)	Maternal weight gain management (maternal weight gain OR weight gain AND manag* OR treatment AND)	During pregnancy (pregnan* OR gestation* OR antenatal OR prenatal)

2.3 Article selection

The article selection in this scoping review was conducted using Mendeley. Based on the utilized database, a total of 1636 articles were obtained. There are 12 article duplicates, leaving 1624 remaining. After conducting title and abstract screening, 1608 irrelevant articles were found, leaving only 16. After reviewing the full text, 1 article were eliminated. One article was excluded because the research data collected before 2013. As a result, the 15 remaining articles used in the scoping review, and the search results were documented in the PRISMA flow diagram below:

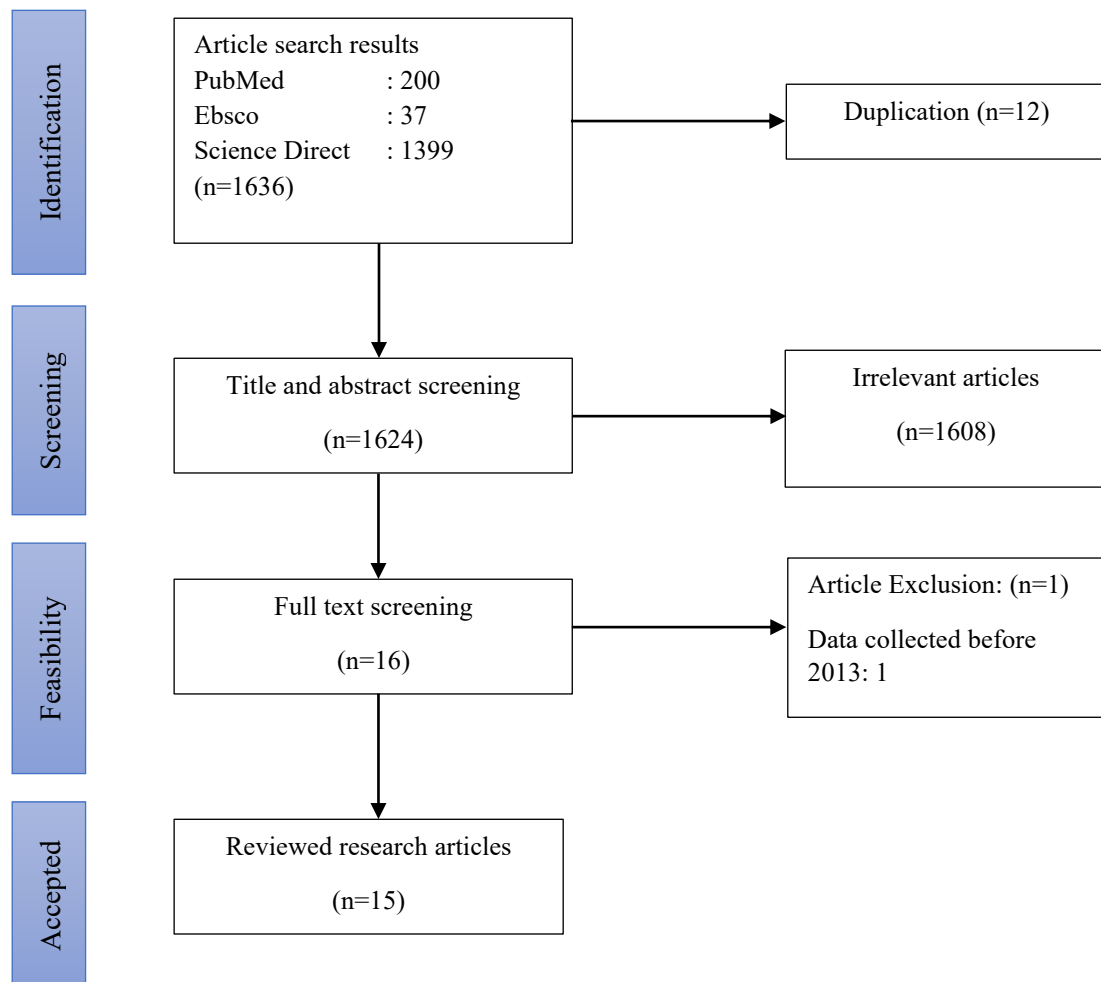


Fig. 1. PRISMA Flow Diagram

2.4 Data charting

The article data was consolidated using data charting based on the methodology developed by the Joanna Briggs Institute. Data mapping was accomplished by discussions with the second author. The results of the data charting were documented in Table 3 below:

Table 3. Data charting

No	Title/Author/Year/ Country	Objective	Design/ Participant/ sample size	Result
A1	The Behavioral Wellness in Pregnancy study: a randomized controlled trial of a multi-component intervention to promote appropriate weight gain (Buckingham-Schutt et al., 2019b)/ US (Buckingham-Schutt et al., 2019a)	To assess whether a multi-component behavioral intervention significantly enhances the proportion of women who comply with the Institute of Medicine's 2009 weight gain recommendations.	Design: Randomized controlled trial Participant: Pregnant women Sample size: 56	The proportion of women who met the weight gain guidelines set by the IOM was significantly higher in the multi-component intervention group.

A2	Effect of individualized weight management intervention on excessive gestational weight gain and perinatal outcomes: a randomized controlled trial (Xu et al., 2022)/China (Xu et al., 2022)	To evaluate the effect of individualized weight management interventions during the second and third trimesters in pregnant women with excessive weight gain by observing weight gain during pregnancy and perinatal outcomes.	Design: Randomized controlled trial Participant: Pregnant women with excessive weight gain Sample size: 293	Pregnant women in the intervention group had a lower weight gain compared to the control group with a statistically significant difference (P=0.002).
A3	A randomized controlled trial of daily weighing in pregnancy to control gestational weight gain (Arthur, Di Corleto, et al., 2020)/Australia (Arthur, Corleto, et al., 2020)	To determine whether daily weighing can be an effective way to limit weight gain during pregnancy.	Design: Randomized controlled trial Participant: Pregnant women Sample size: 396	Daily weight monitoring did not ameliorate gestational weight gain to statistical significance compared to standard care; however, there was a tendency for lower weight gain in the group assigned to daily weighing.
A4	The impact of setting a pregnancy weight gain goal on total weight gain (Bodnar et al., 2021)/US (Bodnar et al., 2021)	To describe the concordance between weight gain goals during pregnancy in the first trimester between individuals and providers as recommended by the Institute of Medicine (IOM). In addition, to determine the relationship between these goals and total weight gain during pregnancy.	Design: Prospective Cohort Participant: Pregnant women Sample size: 9.353	Women who had a goal of weight gain during pregnancy from a personal and provider perspective were 6%-14% more likely to have a goal in line with Institute of Medicine (IOM) recommendations.
A5	Be Healthy in Pregnancy (BHIP): A Randomized Controlled Trial of Nutrition and Exercise Intervention from Early Pregnancy to Achieve Recommended Gestational Weight Gain (Atkinson et al., 2022)/Canada (Atkinson et al., 2022)	To determine whether implementing a structured and monitored nutrition and exercise program in early pregnancy compared to usual prenatal care (control) increases the likelihood of achieving GWG as per IOM guidelines during pregnancy.	Design: Randomized controlled trial Participant: Pregnant women Sample size: 231	The intervention group was less likely to achieve the recommended weight gain but not significantly (OR = 1.51; 95% CI (0.81, 2.80)). Total weight gain was also lower in the intervention group (1.45 kg; 95% CI: (-11.9, 8.88)), but not significantly.
A6	Exercise during pregnancy has a preventative effect on excessive maternal weight gain and gestational diabetes. A randomized controlled trial (Barakat et al., 2019)/Spain (Barakat et al., 2019)	To analyze the effects of an exercise program during pregnancy on maternal weight gain and the prevalence of gestational diabetes.	Design: Randomized controlled trial Participant: Pregnant women Sample size: 594	This study showed that exercise during pregnancy can reduce the risk of excess weight gain in pregnant women.
A7	Does exercise during pregnancy impact on maternal weight gain and fetal cardiac function? A randomized controlled trial (Brik et al., 2019b)/Spain (Brik et al., 2019a)	To examine the association between physical exercise during pregnancy, maternal gestational weight gain, and fetal cardiac function.	Design: Randomized controlled trial Participant: Pregnant women Sample size: 120	There was no difference in maternal weight at pregnancy weeks 20, 28, 36, and 38, or in weight gain at week 38 between women who followed the exercise program and those who did not.
A8	Facilitators and barriers to behaviour change within a lifestyle program for women with obesity to prevent excess gestational weight gain: a mixed methods evaluation (Goldstein, Boyle, Lo, et al., 2021)/Australia (Goldstein, Boyle, Teede, et al., 2021)	To describe women's experiences and perspectives of participating in Healthy Pregnancy Services designed to optimize healthy lifestyles and support pregnancy weight gain recommendations for obese mothers.	Design: Mixed methods Participant: Pregnant women with obesity Sample size: Quantitative: 49 Qualitative: 14	Quantitative: Dietary changes are easier to make and maintain during pregnancy than exercise changes. Qualitative theme analysis results: support services enabling change; motivation to change behavior, social support, barriers to change (intrinsic, extrinsic and clinic-related), lifestyle and postnatal needs.

A9	Empirical validation of the information-motivation-behavioral skills model of gestational weight management behavior: a framework for intervention (You et al., 2023) /China (You et al., 2023)	To investigate the variables and psychological processes that influence behaviour related to controlling weight during pregnancy. Additionally, a behavioural model based on the Information-Motivation-Behavior (IMB) skill model will be developed for intervention.	Design: Cross-sectional Participant: Pregnant women Sample size: 559	The IMB (Information-Motivation-Behavioral Skills) model effectively predicts weight management behavior during pregnancy (GWM).
A10	The effectiveness of healthy lifestyle interventions on weight gain in overweight pregnant women: A cluster-randomized controlled trial (Hajian et al., 2020b)/Iran (Hajian et al., 2020a)	To evaluate the impact of healthy lifestyle interventions on weight gain in overweight pregnant women.	Design: Randomized controlled trial Participant: Pregnant women with overweight Sample size: 559	Healthy living counseling interventions during pregnancy can lead to controlling weight gain, improving eating habits, and increasing physical activity in overweight pregnant women.
A11	Effectiveness of a Step Counter Smartband and Midwife Counseling Intervention on Gestational Weight Gain and Physical Activity in Pregnant Women With Obesity (Pas and Pes Study): Randomized Controlled Trial (Gonzalez-Plaza et al., 2022)/Spain (Gonzalez-Plaza et al., 2022)	To assess the efficacy of a complex digital health intervention, which includes a smart band and accompanying application along with midwifery counseling, on gestational weight gain and physical activity among obese pregnant women and to analyze its effects on maternal and perinatal outcomes.	Design: Randomized controlled trial Participant: Pregnant women with obesity Sample size: 50	Complex mobile-based health interventions are associated with adequate maternal weight gain.
A12	Effectiveness of a minimally processed food-based nutritional counselling intervention on weight gain in overweight pregnant women: a randomized controlled trial (Sartorelli, Crivellenti, Baroni, de Andrade Miranda, et al., 2023)/Brazil (Sartorelli, Crivellenti, Baroni, Miranda, et al., 2023)	To evaluate the effectiveness of a nutrition counseling intervention based on encouraging consumption of unprocessed and minimally processed foods, versus ultra-processed products, and physical activity practices to prevent excessive gestational weight gain in overweight pregnant women.	Design: Randomized controlled trial Participant: Pregnant women with overweight Sample size: 260	Overweight pregnant women who received minimally processed food nutrition counseling had a 44% lower chance of excess weight gain during pregnancy.
A13	Effects of a lifestyle intervention during pregnancy to prevent excessive gestational weight gain in routine care – the cluster randomised GeliS trial (Kunath et al., 2019)/Germany (Kunath et al., 2019)	To evaluate the effects of lifestyle interventions during pregnancy on the prevalence of excessive gestational weight gain, pregnancy and obstetric complications, and the long-term risk of maternal and infant obesity.	Design: Randomized controlled trial Participant: Pregnant women with excessive weight gain Sample size: 2286	In a routine prenatal care setting, lifestyle advice given by a trained healthcare provider was not successful in limiting weight gain during pregnancy.
A14	A telehealth lifestyle intervention to reduce excess gestational weight gain in pregnant women with overweight or obesity (GLOW): a randomised, parallel-group, controlled trial (Ferrara et al., 2020) /US (Ferrara et al., 2020)	To investigate whether a lifestyle intervention with telehealth reduces excess weight gain during pregnancy among overweight or obese women.	Design: Randomized controlled trial Participant: Pregnant women with overweight Sample size: 398	The use of telehealth as a lifestyle intervention may reduce excess weight gain during pregnancy among overweight or obese women.

A15	A high-protein low-glycemic index diet attenuates gestational weight gain in pregnant women with obesity: the "An optimized programming of healthy children" (APPROACH) (Geiker et al., 2022b)/US (Geiker et al., 2022a)	To investigate the effects of a high protein and low glycemic index (HPLGI) diet on weight gain during pregnancy (GWG), infant weight at birth, and risk of pregnancy complications in obese pregnant women.	Design: Randomized controlled trial Participant: Pregnant women with obesity Sample size: 279	Obese pregnant women with high protein low glycemic index diet intervention 70% had weight gain according to IOM guidelines.
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Articles in the data charting were critically appraised using the Joanna Briggs Institute (JBI) Critical Appraisal Tools and Mix Methods Appraisal Tools (MMAT). During the critical appraisal stage, 14 articles were evaluated using the Joanna Briggs Institute (JBI) Critical Appraisal Tools, whereas 1 article was assessed using the Mix Methods Appraisal Tools (MMAT). Articles with grade A were found in articles A2, A3, A4, A6, A7, A8, A9, A11, A12, A13, A14, and A15. Meanwhile, articles with grade B were found in articles A1, A5, and A10.

3. Results and Discussion

Based on the screening results, 15 articles were used in this scoping review. The articles used in this study came from several countries, 4 from the United States, 2 from China, 1 from Iran, 2 from Australia, 1 from Canada, 3 from Spain, 1 from Germany, and 1 from Brazil. Based on the World Bank, it was categorized into 13 articles from developed countries and 2 articles from developing countries. Based on the research design used in 15 articles, 12 used a randomized controlled trial design, 1 used a mixed methods design, 1 used a cross-sectional design, and 1 used a prospective cohort design. Based on the critical appraisal results, 12 articles were obtained with quality A and 3 with quality B.

Table 4. Mapping themes

No	Theme	Sub-theme	Article
1	Establishment and maintenance of behaviors in managing maternal weight gain during pregnancy	Information	A9
		Motivation	A8, A9
		Behavioral skills	A9
		Behavior intervention framework	A1, A9
2	Interventions in Maternal Weight Gain Management During Pregnancy	Set a weight gain goal	A4
		Daily weighing	A3
		Exercise	A6, A7
		Nutrition program	A12, A15
		Lifestyle counseling	A13
		Multi-component intervention	A1, A2, A5, A10, A11
		Technology in intervention	A1, A11, A14

Based on the results of this review, two themes discuss about weight gain management during pregnancy:

3.1. Establishment and maintenance of behaviors in managing maternal weight gain during pregnancy

Strategies that focus on behavior change and maintenance are essential in maternal weight gain management during pregnancy. The stages of the health behavior change model usually contain a vital information practice component in the early stages because the information is the primary driver of behavior change (Greyson & Johnson, 2015). A study stated that information is the most critical factor affecting weight gain management during pregnancy. It showed that information can directly affect the behavior of managing maternal weight gain during pregnancy and indirectly affect behavioral skills (You et al., 2023).

Aside from communication, motivation is also recognized as a significant precursor of self-regulatory behaviors, including health habits, and it indirectly impacts behavioral abilities. According to a study, motivation to manage weight gain impacts on pregnant women's ability to maintain a

balanced diet and engage in sufficient physical activity during pregnancy. One of the participants in a previous research interview expressed the following:

“All of these (changes) were up to me and it was up to me to make them work. I could gorge down a whole pack of doughnuts if I wanted to but it was about controlling it. So, I would be the one that would hold myself back if I slipped.” (participant 4)

This exemplifies intrinsic individual motivation when moms feel a sense of duty to exercise self-control in their food consumption (Goldstein, Boyle, Teede, et al., 2021). Aside from personal drive, societal incentives, such as inspiration from one's spouse and family, also influence behavior in weight management during pregnancy (Goldstein, Boyle, Lo, et al., 2021; You et al., 2023).

Behavioral skills are crucial in facilitating the successful development of health behaviors (Luo et al., 2020). Behavioral skills refer to an individual's practical capacity to execute different behaviors that are pertinent to accomplishing objectives (Maula et al., 2021). A study found a correlation between behavioral skills and health behavior in managing maternal weight gain during pregnancy (You et al., 2023). Consistent with prior studies, it has been found that behavioral skills are strongly linked to weight management behavior during pregnancy (Ge et al., 2022).

Behavioral intervention frameworks have demonstrated efficacy in achieving key intervention goals. A study reported that the Information-Motivation-Behavioral Skills (IMB) Model effectively predicted weight management behavior during pregnancy (You et al., 2023). This finding aligns with previous research indicating that a multi-component, behaviorally based intervention designed within the Self-Determination Theory (SDT) framework and employing a behavior change counseling approach significantly increased the proportion of women who adhered to current gestational weight gain guidelines. The Self-Determination Theory (SDT) framework effectively explores human motivation and the factors that promote or inhibit health-related behaviors (Buckingham-Schutt et al., 2019b).

3.2. Interventions for weight gain management during pregnancy

Women who had weight gain goals during pregnancy, both from a personal perspective and as advised by their healthcare providers, were 6% to 14% more likely to align their goals with the Institute of Medicine (IOM) recommendations (Bodnar et al., 2021). Previous research has suggested that women whose healthcare providers recommended weight gain by IOM guidelines were more likely to establish appropriate weight gain goals than those whose healthcare providers recommended weight gain that deviated from the guidelines or provided no clear weight gain recommendations (Criss et al., 2016). However, having goals aligned with IOM recommendations is not associated with actual weight gain during pregnancy. Therefore, collaboration with additional interventions is necessary to achieve weight gain by IOM standards (Bodnar et al., 2021).

A study indicated that daily weight monitoring as an independent intervention potentially decreases excessive weight gain during pregnancy. However, the difference in this outcome between the intervention and control groups did not approach statistical significance (Arthur, Di Corleto, et al., 2020). Previous research has indicated that weighing body weight as a standalone intervention is ineffective in reducing weight gain during pregnancy (Fealy et al., 2017). However, it has a role as part of a more significant intervention involving diet modification and exercise.

Participating in physical activity during pregnancy can prevent excessive weight gain (Ruchat et al., 2018). Consistent with other studies, it has been found that engaging in physical activity during pregnancy can reduce the risk of excessive maternal weight gain (Barakat et al., 2019). In contrast, other studies state that exercising during pregnancy is not associated with a decrease in maternal weight gain during pregnancy (Brik et al., 2019b). According to the JBI critical appraisal tools, both articles have an A quality rating. The difference between the two interventions is in the implementation system of the interventions. In the first research article, the exercise program was conducted three times per week (55-60 minutes each session) from weeks 8-10 of pregnancy (immediately after the first prenatal ultrasound) until the end of the third trimester (weeks 38-39) (Barakat et al., 2019). According to the second research article, the exercise program consists of three 60-minute weekly sessions during pregnancy (weeks 9-38) (Brik et al., 2019b). The explanation shows

that providing more frequent sports interventions three times a week is more effective than giving exercise interventions once a week. However, a study also states that exercising during pregnancy increases the risk of inadequate weight gain (Ruchat et al., 2018). Therefore, during exercise activities while pregnant, monitoring is necessary to make adjustments to achieve the ideal weight gain.

Nutrition programs are also a factor in managing weight gain during pregnancy. A study of overweight pregnant women who received minimally processed food nutrition counseling had a 44% lower likelihood of excess weight gain during pregnancy (Sartorelli, Crivellenti, Baroni, de Andrade Miranda, et al., 2023). In a previous study on a nutrition program conducted in obese pregnant women with a high-protein low-glycemic index diet intervention, 70% of mothers with a high-protein low-glycemic index diet experienced weight gain according to IOM guidelines (Geiker et al., 2022b). Both studies show the role of nutrition programs in managing maternal weight gain during pregnancy. Thus, strengthening and developing nutrition programs for pregnant women is necessary.

A study conducted on routine prenatal care, lifestyle counseling on diet, physical activity, and monitoring of weight gain during pregnancy provided by a trained healthcare provider was unsuccessful in limiting maternal weight gain during pregnancy in women with excess weight gain during pregnancy. However, the study reported a shortcoming that was predicted to lead to these results: the process evaluation of this sample showed discrepancies in the delivery of counseling sessions. Not all counselors addressed all planned components, especially in providing individualized feedback on dietary and physical activity habits. This suggests the need for increased consistency in the implementation of the intervention to ensure its effectiveness (Kunath et al., 2019).

To achieve optimal results, it is essential to implement a multi-component intervention to manage maternal weight gain during pregnancy. A study showed that intervention groups that combined a structured nutrition and exercise program were likelier to achieve the IOM-recommended weight gain (Atkinson et al., 2022). This is in line with previous studies with nutrition counselling intervention programs and physical activity training during pregnancy in pregnant women who were overweight and showed lower weight gain results compared to the comparison group in the study (Hajian et al., 2020b). Another study with a multi-component intervention consisting of counselling and a fitness tracker including diet software (Fitbit Flex Activity Monitor; Fitbit Inc) showed that this multi-component behavioural intervention improved adherence to the 2009 Institute of Medicine weight gain guidelines (Buckingham-Schutt et al., 2019b). Another study conducted on pregnant women with obesity using the Step Counter Smartband intervention and midwife counselling also showed an association with adequate weight gain during pregnancy (Gonzalez-Plaza et al., 2022). A study on pregnant women demonstrated that implementing a personalized weight management intervention, which included counselling, ongoing communication regarding diet and exercise, psychological assessment, and cognitive interventions, resulted in significantly lower weight gain than the control group (Xu et al., 2022).

Using technology can enhance the effectiveness of health care. *Telehealth* is a technology that eliminates the geographical obstacle to accessing comprehensive health treatments. It is highly effective in delivering health interventions (Molloy et al., 2016). According to a study, integrating telehealth as a lifestyle intervention can effectively decrease the excessive weight gained during pregnancy in overweight or obese women. This intervention setting in telehealth aims to change behaviours related to weight management, healthy eating, physical activity and stress management (Ferrara et al., 2020). Aside from telehealth, alternative technologies can aid in managing weight gain during pregnancy. A study employed a wearable fitness tracker, specifically the Fitbit Flex Activity Monitor by Fitbit Inc., which includes diet software. Participants can use this device to track their daily step count and record their food intake on the fitness tracker's website (Buckingham-Schutt et al., 2019b). Smartband step counters have also been used in other studies; in this particular research, the Smartband was linked to the free Mi Fit software for iOS and Android devices. Participants in the intervention group received coaching from midwives on setting weight and step goals by turning on alarms and receiving goal notifications using the Mi Fit app. When goals were reached, the smart band would deliver rewards or vibrate if there was a prolonged period of inactivity (Gonzalez-Plaza et al., 2022).

4. Conclusion

Maternal weight gain during pregnancy is manageable, and the strategy to manage it is to implement appropriate interventions. In providing interventions, behavior modification interventions are essential as a foundation for implementing other interventions to achieve maximum results in achieving the standard maternal weight gain during pregnancy. In this scoping review, several interventions were identified for managing weight gain during pregnancy, i.e., determining the weight gain goal, daily weighing, exercise, healthy lifestyle counseling, personal weight management, multi-component interventions, and a combination of technologies. The types of interventions provided to pregnant women and the frequency and duration of each intervention should be adjusted to the needs of each pregnant woman to ensure standardized weight gain. Implementing weight gain management during pregnancy in antenatal care is needed to strengthen maternal and neonatal health. Implementation requires a strong evidence base, so further research on the effectiveness of each intervention is needed. Furthermore, research on the cost-effectiveness of integrating the management of maternal weight gain during pregnancy in different health facilities is also necessary to ensure the most efficient implementation.

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