According to the American Heart Association, 1 in 3 children (31.8%) and nearly 70% of adults in the United States (US) are either obese or overweight. Women of childbearing age (20–39 years old) are included in this obesity epidemic: 35.8% are obese and an additional 24% are overweight. These data are significant as pregnant women who are obese are at increased risk for gestational diabetes, hypertension, pre-eclampsia, postpartum weight retention, and labor and delivery complications. In addition, neonates born to women who are obese have an increased risk of congenital anomalies and neonatal death; they also have an increased risk of being overweight or obese during childhood.

Although a significant number of US women are overweight before gestation, studies have shown that more than 40% of mothers exceed recommended weight gain guidelines during pregnancy from the Institute of Medicine (IOM). Rates of obesity in childbearing women also vary by ethnicity and income, with a higher proportion of African American women and low-income women being overweight or obese.

In the US, approximately 50% of infants receive Special Supplemental Nutrition Program for Women, Infants, and Children (WIC) services. The majority of these infants’ mothers participate in WIC prenatally as well, illustrating the sizable population of low-income mothers in the US. According to the Centers for Disease Control and Prevention, more than 50% of low-income women are overweight or obese before pregnancy, and 48% exceed the weight gain recommended by the IOM.

Despite knowledge of adverse health outcomes, excessive gestational weight gain (GWG) has been a problem affecting almost 1 out of 2 women for the last 10 years. Public health programs have made great strides to ensure that low-income women have access to nutritional foods and nutrition education to promote healthy pregnancies. Current data, however, reveal that providing these resources may not be enough to ensure moderate healthy weight gain during pregnancy within the IOM guidelines. The aim of this qualitative literature review is to identify and describe the most common psychosocial barriers contributing to excessive GWG in low-income women.

Methods

Three databases were searched to obtain articles for this review: PubMed, CINAHL (Cumulative Index to Nursing and Allied Health Literature), and Web of Science. The MeSH (Medical Subject Headings) descriptors used for the initial search included pregnancy, poverty, attitudes, weight gain, obesity, postpartum period, and pregnancy nutrition. All 3 databases were searched using combinations of the keywords and related terms until saturation of the content was achieved.

Articles were reviewed and sorted according to MeSH categorization, study methodology (quantitative vs. qualitative study), location (US vs. non-US study), and study population (low-income status vs. other). Selected articles were reviewed further, and common themes contributing to excessive GWG in low-income women were identified.

In this review, only qualitative studies were included, as individual behaviors and perceptions can be difficult to quantify. Moreover, only studies performed in the US that involved pregnant or postpartum women of low socioeconomic status were included. Low socioeconomic, or low-income, status was determined according to each article’s study population. The majority of

Barriers and Beliefs Contributing to Excessive Gestational Weight Gain in Low-Income Women

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studies defined low-income as participants whose gross income fell below 185% of the US poverty income guidelines and/or those who participated in federally supported health insurance. Excessive GWG was defined according to IOM weight gain recommendations, which is determined by body mass index (BMI) (Table 1).16

Results
Eight qualitative articles met the search criteria (Table 2). From these, 5 recurring themes associated with excessive GWG in low-income women were identified: 1) perceptions and beliefs on weight gain; 2) diet and nutrition; 3) physical activity; 4) family, friends, and healthcare professionals; and 5) general health.

Perceptions and/or Beliefs on Weight Gain
Multiple studies have found a mother’s perception and/or belief on weight gain during pregnancy to impact her risk of excessive GWG.11,14,15,17,18 In 2012, a focus group study on pregnant, low-income African American women found that participants were not concerned with limiting their weight gain. In fact, most of the women believed significant weight gain to be necessary for a healthy baby. These mothers also believed postpartum weight retention to be normal.16

A second focus group study published in 2012 discovered comparable findings. Study participants—low-income pregnant women—expressed the belief that consumption of more calories was essential to a baby’s health. Moreover, the possibility that poor weight gain could result in poor fetal outcomes was a real concern; this perception and fear proved more prevalent than poor fetal outcomes stemming from excessive weight gain.18

In 2013, Reyes et al interviewed 21 low-income pregnant women with the aim of understanding factors that influenced their diet. Although this study was primarily focused on diet and nutrition, conversations revealed that some women were actually scared that they may starve their babies if they did not consume enough food. As expected, this perception often resulted in persistent snacking, large portions, and overconsumption.14

Table 1
Gestational weight gain recommendations from the Institute of Medicine.16

<table>
<thead>
<tr>
<th>Pregnancy Weight Category</th>
<th>Body Mass Index (kg/m²)</th>
<th>Recommended Range of Weight Gain (lbs)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Underweight</td>
<td>&lt;18.5</td>
<td>28–40</td>
</tr>
<tr>
<td>Normal weight</td>
<td>18.5–24.9</td>
<td>25–35</td>
</tr>
<tr>
<td>Overweight</td>
<td>25.0–29.9</td>
<td>15–25</td>
</tr>
<tr>
<td>Obese</td>
<td>≥30.0</td>
<td>11–20</td>
</tr>
</tbody>
</table>

Diet and Nutrition
A balanced diet, paired with consistent physical activity, is considered by many to be the answer to a healthy life. Likewise, Reyes et al found that low-income pregnant women also believe consumption of fruits and vegetables to be good for their baby’s health, as well as their own. However, the mothers readily admitted that they are still more likely to eat foods high in fat and sugar because it is more convenient, costs less, and tastes better.14

Paul et al and Groth et al showed similar results.11,18 Participants in Groth’s study described having good intentions, but then explained that 1) eating out is simply a way of life and that 2) their cravings for dense high-fat and palatable foods were just too strong.18 Unlike the majority of the studies, Paul et al included low-income and high-income focus groups. In Paul et al, all participants, regardless of income, agreed that eating fruits and vegetables would be good for the baby. The low-income women, however, believed that certain fruits and vegetables would cause heartburn, that eating would help them feel better when stressed, that they were eating for 2, that weight did not equal health, and that it was not possible to control their cravings, binges, or weight gain.
The low-income participants also reported a preference for fast food and/or foods high in fat.\textsuperscript{11}  

**Physical Activity**  
Comprehension of what constitutes physical activity, as well as the role it can play in an individual’s overall health, is valuable. Several studies, however, suggest that knowledge and education surrounding physical activity in this population may be lacking.\textsuperscript{11,14,18}

In Paul et al, the low-income focus groups described any amount of walking as exercise; they also believed daily living to be a form of physical activity. When it came to performing physical activity during pregnancy, they said they could not exercise when tired, uncomfortable, or busy. In contrast, the high-income group of pregnant women described physical activity as structured and recreational. They also believed that exercise would make them feel better during pregnancy, would help control their weight gain, and that they could modify their physical activity to remain active throughout their pregnancy.\textsuperscript{11}

Groth et al also reported on physical activity, finding that participants reported a decreased level of physical activity since pregnancy. Most participants described feeling fatigued with little desire or motivation to exercise.\textsuperscript{18}

**Family, Friends, and Healthcare Professionals**  
External influences, such as parents, friends, spouses, coworkers, and/or children, often play a role in the decisions people make and on the environments in which they live. Multiple studies reported that participants were strongly encouraged, if not pressured, by friends and parents to consume more food while pregnant; the popular expression “you’re eating for 2 now” was common.\textsuperscript{11,16,19}

Paul et al\textsuperscript{11} and Anderson et al\textsuperscript{19} found that a notable proportion of study participants live in multigenerational homes, with the mother or mother-in-law being in charge of grocery shopping and meal preparation. This fact resulted in participants being reliant on others and feeling as if they had little to no control over what food was prepared and served.

In addition to having multiple focus groups of low-income pregnant women, Anderson et al also had 1 focus group of obstetrics and gynecology (OB/GYN) healthcare providers. These participants reported feeling uncomfortable with counseling patients on GWG. Reasons for these feelings included time constraints, other appointment priorities, and a lack of training.\textsuperscript{19}

**General Health**  
In 2013, Wright et al evaluated 101 low-income postpartum women, the majority of whom were African American (66%) or Hispanic (22%).\textsuperscript{20} More than half (58%) were overweight or obese before gestation, and 49% gained an excessive amount of weight while pregnant. Survey data from this study showed that women with a greater sense of self-efficacy and internal locus of control were associated with less GWG; presence of perinatal depression, however, was associated with excessive GWG.\textsuperscript{20}

Allison et al sought to identify contributors of excessive GWG in low-income, overweight African American pregnant women by evaluating their sleep, mood, and eating patterns over 10 weeks (gestational age: 14–24 weeks).\textsuperscript{10} Study participants reported an average of 7.1 hours of sleep per night and a mean of 4.3 awakenings per week. Approximately 18% of women reported some level of depression. Of note, women with better sleep were less likely to feel depressed. In terms of disordered eating and eating patterns, 32% of women reported eating one-quarter of their daily caloric intake after dinner. Allison et al reported that 58% of their study population experienced excessive GWG. Although many variables were analyzed, only 1 variable was found to be predictive of excessive GWG in these women—eating due to cravings.\textsuperscript{10}

**Discussion**  
One recurring theme throughout the literature is lack of awareness surrounding appropriate GWG. Although disconcerting, these findings are not novel. Stotland et al found that only 1 in 3 women will receive weight gain advice from a prenatal care provider.\textsuperscript{21} Possible explanations for why women do not receive GWG goals from their OB/GYN providers include lack of awareness, familiarity, and/or agreement with IOM guidelines.\textsuperscript{21}

As previously described, Anderson et al found that some OB/GYNs felt inadequately trained to counsel patients about GWG.\textsuperscript{19} They also reported having limited time for appropriate education and needing to prioritize more pressing issues. The focus group of OB/GYNs also expressed the need for improved communication between nutritionists/dietitians and the physician team so that the physician can reinforce the dietitian’s recommendations. Last, some OB/GYNs were
hesitant to make recommendations regarding healthy eating and physical activity because they did not know whether their patients could adopt these behaviors.19

Studies have shown counseling and education of GWG guidelines to be associated with improved GWG outcomes.21-24 However, both Reyes et al and Herring et al showed study participants to have some nutrition knowledge, as they knew they should be consuming healthy foods (eg, fruits and vegetables).14,15 This knowledge, however, was not enough to combat unhealthy choices or excessive GWG.

In 2013, Mehta-Lee et al reported that pregnant women from urban populations are less likely to engage in lifestyle modifications when they do not understand their appropriate GWG goal and its importance.20 This study suggests that there may be a significant difference between having an awareness that fruit and vegetables are good for you and having a more complete understanding of the risks and benefits associated with healthy, or unhealthy, eating while pregnant.

Based on the results from 4 focus groups, Herring et al recommended 3 tips for counseling low-income women during pregnancy: 1) explain additional caloric requirements needed in each trimester; 2) discuss internal and external hunger cues; and 3) communicate weight goals early in pregnancy to prevent excessive GWG rather than reacting to excessive GWG after it has already occurred.15 In addition, a recent study by Wang et al reported peer-facilitated group classes on exercise, cooking, personal finance, child development, and stress management to be educational and desirable; group classes in which personal stories and guest experts presented were also welcomed.26

**Conclusion**

The current rate of low-income pregnant women in the US who are overweight or obese is alarming. However, the lack of awareness surrounding the numerous associated risk factors, for both mother and child, is even more disconcerting. New educational materials for low-income women of child-bearing age are needed. These materials should focus on combatting the specific barriers to healthy weight gain described in this paper (eg, misperceptions, cravings, nutrition, exercise, etc.). Additional conversations between patients and healthcare practitioners are also needed. More specifically, dietitians or physicians should make every effort to explain the reasoning (health risks and benefits) behind their lifestyle recommendations.

**References**


