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REVIEW ARTICLE

Psychosocial risk factors for excessive gestational weight gain: A systematic review

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ABSTRACT

Background: Excessive weight gain during pregnancy can have adverse health outcomes for mother and infant throughout pregnancy. However, few studies have identified the psychosocial factors that contribute to women gaining excessive weight during pregnancy.
Aim: To review the existing literature that explores the impact of psychosocial risk factors (psychological distress, body image dissatisfaction, social support, self-efficacy and self-esteem) on excessive gestational weight gain.
Methods: A systematic review of peer-reviewed English articles using Academic Search Complete, Cumulative Index to Nursing and Allied Health Literature, MEDLINE Complete, PsycINFO, Informit, Web of Science, and Scopus was conducted. Quantitative studies that investigated psychosocial factors of excessive GWG, published between 2000 and 2014 were included. Studies investigating mothers with a low risk of mental health issues and normally-developing foetuses were eligible for inclusion. From the total of 474 articles located, 12 articles were identified as relevant and were subsequently reviewed in full.
Findings: Significant associations were found between depression, body image dissatisfaction, and social support with excessive gestational weight gain. No significant relationships were reported between anxiety, stress, self-efficacy, or self-esteem and excessive gestational weight gain.
Conclusion: The relationship between psychosocial factors and weight gain in pregnancy is complex; however depression, body dissatisfaction and social support appear to have a direct relationship with excessive gestational weight gain. Further research is needed to identify how screening for, and responding to, psychosocial risk factors for excessive gestational weight gain can be successfully incorporated into current antenatal care.

Pregnancy has been recognised as a factor in the development of obesity in women. Excessive weight gain during pregnancy increases the likelihood of negative health outcomes for both the mother and infant during gestation,[1] delivery[1,2] and post-birth.[1–7] Guidelines have been developed by the Institute of Medicine (IOM)[8] in the US to promote healthy weight gain during pregnancy. Australia has not yet developed its own set of guidelines, and so uses those set by the IOM.[9] The IOM recommends a total gestational weight gain (GWG) of 12.5–18 kg for underweight women (pregravid BMI < 18.5 kg/m^2), 11.5–16 kg for normal weight women (BMI = 18.5–24.9 kg/m^2), 7–11 kg for overweight women (BMI = 25.0–29.9 kg/m^2), and 5–9 kg for obese women (BMI ≥ 30.0 kg/m^2).[8] Excessive GWG is defined as gaining greater amounts of weight during pregnancy than is recommended by the IOM[8] guidelines based on pre-pregnancy BMI.[2,9] In order to prevent the adverse outcomes of excessive GWG, research has focused on the factors that influence increased weight gain during pregnancy. Biological, psychological and social risk factors have been identified[10]; however, psychosocial variables are accumulating more attention.[11–13] Recent systematic reviews have found that behavioural interventions aimed at food intake and physical activity were not clinically significant for preventing excessive GWG, and that psychosocial variables need to be researched.[11] Similarly, the IOM has noted a paucity of GWG interventions that targeted psychosocial factors.[8] Psychosocial variables can have a significant impact on weight regulation during pregnancy and are often readily assessed and modifiable.[14] As more than half of women gain too much weight during pregnancy,[2,6,7] it is important

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Box 1. Search terms

Gestational weight gain OR pregnancy weight gain
Pregnan* OR prenatal OR pre natal OR gestation*
Weight gain OR obes* OR overweight
Control OR belief OR confidence
Depression OR stress OR anxiety
Body image OR body dissatisfaction
Self esteem
Self efficacy Social support health* behaviour* OR health* lifestyle

to determine the risk factors for excessive GWG.[13,14] Few studies have looked at the relationship between psychosocial factors in pregnancy and excessive GWG, and those that have, found the relationships to be complex and multifaceted.[6,15,16] In developing their conceptual model, Hill et al.[2] aimed to describe the differing pathways in which psychosocial factors could contribute to GWG. The significant psychological risk factors of GWG as outlined in the model are the focus of this paper. Hence, the aim of this paper was to systematically review the existing literature that explores the impact of psychosocial risk factors (psychological distress, body image dissatisfaction, social support, self-efficacy and self-esteem) on excessive GWG. To our knowledge, no review to date has addressed this aim.

1. Method

1.1. Search strategy

The review was conducted in line with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement.[17] Studies were identified by searching the electronic databases: Academic Search Complete, Cumulative Index to Nursing and Allied Health Literature Complete, MEDLINE Complete, PsycINFO, Informit, Web of Science, and Scopus (see Appendix 1). Additional articles were obtained through citation tracking of similar research. The search was conducted in April 2014, using the search terms outlined in Box 1.

1.2. Inclusion and exclusion criteria

Articles were included in this review if they were published in English between January 2000 and August 2014 to ensure the most contemporary research was reviewed. Only singleton pregnancies with normally-developing foetuses (i.e., no diagnosis of physical or mental health complications) were included. Women with gestational diabetes or adolescent mothers were excluded, as these groups of women represent a limited subset of the pregnant population that was not the focus of this review. Qualitative papers were excluded to allow for the comparison of quantitative results across studies.

1.3. Selection process

The flow diagram in Fig. 1 displays the process for selecting the studies of this review ($n = 474$). The titles and abstracts were screened by one author (EH), and 371 papers that did not meet eligibility criteria were excluded (see Appendix 2). The full texts of 45 articles were read, and a further 33 excluded due to ineligibility, leaving 12 papers appropriate for this review.

1.4. Data abstraction

The relevant information from the studies has been collated into five tables to allow comparison of findings between studies. All authors reviewed the summary of each study. Tables 2–6 summarise studies that examine the associations between excessive GWG and psychosocial distress (Table 2), body image dissatisfaction (Table 3), social support (Table 4), self-efficacy to change or maintain a healthy lifestyle during pregnancy (Table 5), and self-esteem (Table 6). The tables include information on the country of study, design, sample characteristics (mean age, BMI, ethnic groups, parity), objectives, methodology, and findings of each study.

1.5. Summary of included studies

The review includes 12 studies that investigated associations between psychosocial factors and excessive GWG. Four studies examined depression, stress, and anxiety,[5,13,18,19] six studies focused on body image dissatisfaction,[6,20–23] one study investigated social support,[10] two studies examined self-efficacy to change or maintain healthy behaviours during pregnancy,[23,24] and two studies investigated the relationship between self-esteem and excessive GWG.[13,24] All studies included pregnant women from approximately 15 weeks until >36 weeks' gestation. Eight studies were longitudinal,[5,6,10,13,15,18,19,22] two were cross-sectional[21,24] and two were randomised trials.[20,23] The studies were conducted with Australian, Canadian, Iranian, or American samples. Body Mass Index (BMI; kg/m^2) was calculated using the mothers' height and retrospective self-reported pre-pregnancy weight in 7 studies,[5,6,15,18–20,24] using pregnancy weight at less than 11 weeks gestation in one study,[10] and using weight at 20 weeks gestation in 4 studies.[13,20,21,23] Total GWG was measured in all studies by subtracting pre-pregnancy or early pregnancy weight from the last reported prenatal weight. The weeks' gestation at which women were measured for final prenatal weight differed between studies, ranging from 27 to 37 weeks. Total GWG was compared in all studies to IOM[8,25] recommended GWG guidelines, allowing weight gain to be classified as inadequate, adequate, or excessive. Psychosocial risk factors differed between studies, as did the measurement tools used, and have been outlined below.

1.6. Quality assessment

An assessment of study quality was made using the *Strengthening the Reporting of Observational studies in Epidemiology* (STROBE) Statement.[26] The SROBE statement outlines the necessary information that should be included in observational research to ensure transparency when reporting the study's design, participant characteristics, statistical analysis, results, and limitations or bias. Each of the studies reviewed were evaluated against the STROBE criteria to reveal an indication of the study's overall quality (see Table 1). Overall, a strength of the studies was their ability to provide detailed rationale, objectives and conclusions of the research, as well as thorough descriptions of the measurement tools used. However, the studies in general, underreported on attrition statistics, and the analyses used on the data. None of the studies reviewed gave an indication that any sensitivity analysis was undertaken to assess the robustness of results, which may lessen the studies' quality.