

Evidence on the Effectiveness of Counseling on Excess Weight Gain during Pregnancy

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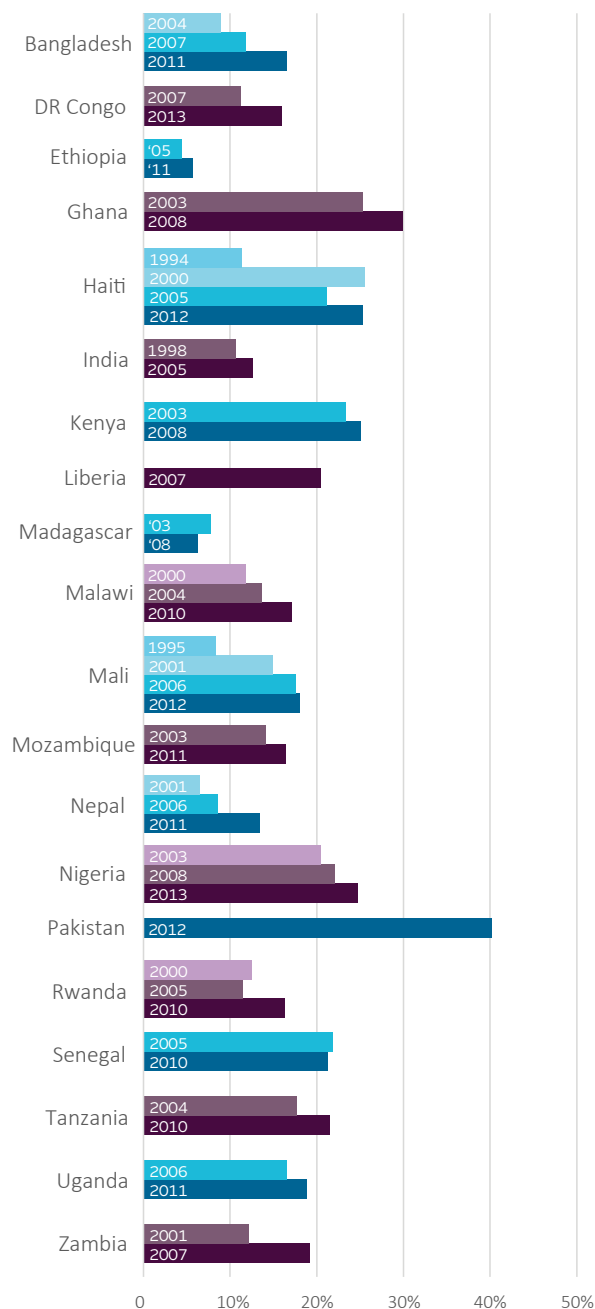
Overweight and obesity are considered to be among the most neglected global health problems despite being the sixth most important contributor to worldwide burden of disease.ⁱ While these conditions were once only a problem for developed nations, they have recently expanded to affect developing countries where their prevalence is on the rise.ⁱⁱ In U.S. Agency for International Development (USAID) maternal and child health priority countries, data from Demographic and Health Surveys from 1995–2014 show an increasing trend of overweight/obesity among women of reproductive age (see figure).

Overweight and obesity are especially problematic during pregnancy, when the effects of poor nutritional status extend beyond those of adverse maternal health outcomes to include a potential negative impact on the health of the fetus as well. In developed countries counseling has been a common approach to try to address the problem of excess weight gain during pregnancy. This brief summarizes the available evidence on the effectiveness of counseling on excess weight gain during pregnancy and provides recommendations that can be of practical use to antenatal care programs in developing countries.

Risks and Interventions Associated with Overweight and Obesity During Pregnancy

Excess weight gain during pregnancy increases the risk of hypertensive conditions, pre-eclampsia, gestational diabetes, thromboembolic events, and long-term obesity of the mother.ⁱⁱⁱ Furthermore, labor and birth complications may require labor induction and caesarian section for overweight and obese pregnant women, and overweight or obese pregnant women are at an increased risk of stillbirth or perinatal death.^{iv} Infants born from overweight or obese pregnant women are

Trends in Prevalence of Overweight/Obesity among Women of Reproductive Age in 20 Countries



Source: Demographic and Health Surveys

at greater risk of macrosomia, congenital anomaly, preterm birth, and may need admission to a neonatal intensive care unit. These infants are also at a greater risk of overweight and obesity later on in life.

In developed countries, guidelines and tools are available to help reduce and prevent excess weight gain during pregnancy to avert adverse maternal and child health outcomes. For example, the Institute of Medicine in the United States has established guidelines on healthy weight gain during pregnancy that are currently used in many developed countries.^{vi} These guidelines for weight gain are based on pre-pregnancy body mass index (BMI)¹ and are used in developed countries to inform weight gain counseling during antenatal care.

In developing countries, screening for overweight and obesity during pregnancy is more difficult because pre-pregnancy weight or weight within the first trimester is usually not available and BMI is not recommended as an indicator of nutritional status beyond early pregnancy because it fails to correct current BMI for weight gain during gestation. As a result, mid-upper arm circumference (MUAC), which provides cut-offs for underweight only, is often used instead to assess the nutritional status of pregnant women and overweight and obesity may therefore go unnoticed. Given the rising prevalence of overweight and obesity among women of reproductive age, this is increasingly problematic and has posed challenges for developing countries trying to develop weight gain guidance and tools for health care providers to use in antenatal care programming.

Strategies for weight gain management during pregnancy have been implemented in various developed and developing countries. Some of these strategies include encouraging women, often through counseling during antenatal care, to increase their physical activity and improve their diet practices. In an effort to compile the evidence on the effectiveness of counseling on weight gain management during pregnancy, the Food and Nutrition Technical Assistance III Project (FANTA) conducted a systematic literature review of studies carried out in developed and developing countries. More than 20 individual studies were identified from developed countries, as well as 10 systematic literature reviews (5 of which included meta-analysis)

and 1 meta-analysis article. However, there were no individual studies identified from a developing country (low-income) setting. The following summarizes the evidence from the systematic reviews and meta-analyses. All of the individual studies included in the systematic reviews and meta-analysis were carried out in a developed country context.

Evidence from Developed Countries

Ten systematic literature reviews on interventions to reduce excess weight gain during pregnancy provide evidence on the effectiveness of counseling in a developed country context (see bibliography). Each systematic review included between 6–10 individual studies. Six of the individual studies (see table on the following pages) were common across all ten reviews. Out of the ten review articles, eight reviewed only randomized controlled trials, one reviewed either randomized or non-randomized controlled trials, and one reviewed randomized controlled trials or qualitative individual studies.

Of the individual studies included in the systematic reviews, none provided physical activity and dietary counseling alone as an intervention. The counseling interventions provided included goal-setting relative to weight gain, weight maintenance, or weight loss, with accompanying monitoring of participants' progress toward achieving goals. The intensity, frequency, and timing of the interventions as well as the type (individual or group) and person delivering the counseling (e.g., public health nurses, dietitians, or physicians) varied across the studies and reviews, as did the counseling messages. The table of interventions in the bibliography shows the intensity, timing, country of implementation, type of intervention, and mode of delivery of counseling in the six individual studies that were included in all ten systematic reviews.

All of the individual studies included in the systematic review articles encouraged women to increase their physical activity and improve their diet practices in an effort to improve the lifestyle of the women. The information was delivered to the women through counseling and behavior change communication (BCC) materials such as brochures, newsletters, and automated postcards. In addition to counseling and provision of BCC materials, the intervention for some studies included provision of full-time membership to a fitness center, closed training classes, and/or personal coaching with a physiotherapist.

¹ For pre-pregnancy BMI, WHO cut-offs for BMI categories are: underweight: < 18.5 kg/m²; normal weight: 18.5–24.9 kg/m²; overweight: 25.0–29.9 kg/m²; obese: ≥ 30.0 kg/m².

Summary of Individual Study Interventions

Study	Type of Intervention	Country	Type of Delivery	Timing of Counseling
Asbee, S.M.; et al. 2009. "Preventing Excessive Weight Gain during Pregnancy through Dietary and Lifestyle Counseling: A Randomized Controlled Trial." <i>Obstetrics & Gynecology</i> . Vol. 113(2 Part 1), p. 305–312.	<ul style="list-style-type: none"> • Dietary: Recommendations for a diet with caloric intake as follows: 40% carbohydrate, 30% protein, and 30% from lipids. • Physical activity: Participants instructed to engage in moderate-intensity exercise at least three times per week and preferably five times per week. • Other: Participants received information on appropriate weight gain during pregnancy using the Institute of Medicine guidelines. 	United States	Individual counseling	First visit: 6–16 weeks of gestation
Guelinckx, I.; et al. 2010. "Effect of Lifestyle Intervention on Dietary Habits, Physical Activity, and Gestational Weight Gain in Obese Pregnant Women: A Randomized Controlled Trial." <i>American Journal of Clinical Nutrition</i> . Vol. 91(2), p. 373–80.	<ul style="list-style-type: none"> • Dietary: Recommendations on balanced, healthy diet based on official national dietary recommendations. • Physical activity: Instructed to engage in some form of physical activity. 	Belgium	Passive group: brochures Active group: brochures and group counseling sessions (maximum of 5 women)	3–5 group sessions at 15, 20, and 32 weeks of gestation
Kinnunen, T.I.; et al. 2007. "Preventing Excessive Weight Gain during pregnancy - A Controlled Trial in Primary Health Care." <i>European Journal of Clinical Nutrition</i> . Vol. 61(7), p. 884–91.	<ul style="list-style-type: none"> • Dietary: Energy intake and expenditure targets and detailed personal plan for changes in diet agreed upon by the participant and the counselor. • Physical activity: Participants instructed to exercise. • Other: Group exercises led by physiotherapist and monthly thematic meetings on physical activity. 	Finland	Individual counseling Group counseling	8–12, 16–18, 22–24, 32–34, and 36–37 weeks of gestation
Phelan, S.; et al. 2011. "Randomized Trial of a Behavioral Intervention to Prevent Excessive Gestational Weight Gain: The Fit for Delivery Study." <i>American Journal of Clinical Nutrition</i> . Vol. 93(4), p. 772–779.	<ul style="list-style-type: none"> • Dietary: Caloric intake goal developed, with emphasis on decreasing high fat foods. Structured meal plan provided. • Physical activity: Participants instructed to engage in 30 minutes of walking most of the week • Other: Adherence to daily self-monitoring of eating, exercise, and weight promoted by provision of body weight scales, food records, and pedometers. <p>Automated postcards that prompted healthy eating and exercise habits mailed weekly.</p>	United States	Individual counseling Automated postcards	First visit: 10–16 weeks of gestation 3–4 supportive phone calls

Study	Type of Intervention	Country	Type of Delivery	Timing of Counseling
Polley, B.A.; Wing, R.R.; and Sims, C.J. 2002. "Randomized controlled trial to prevent excessive weight gain in pregnant women." <i>International Journal of Obesity</i> . Vol. 26(11), p. 1494–1502.	<ul style="list-style-type: none"> • Dietary: Emphasis on decreasing intake of high fat foods and substituting with healthier alternatives. Structured meal plan developed based on calorie goals. • Physical activity: Participants instructed to increase walking and have a more active lifestyle. • Other: Newsletters prompting healthy eating and exercise habits mailed biweekly. <p>Personalized graphs of weight changes during routine antenatal care visits.</p>	United States	Individual counseling Newsletters	First visit: Before 20 weeks of gestation
Vinter, C.A.; et al. 2011. "The LiP (Lifestyle in Pregnancy) Study: A randomized controlled trial of lifestyle intervention in 360 obese pregnant women." <i>Diabetes Care</i> . Vol. 34(12), p. 2502–2507.	<ul style="list-style-type: none"> • Dietary: Dietary guidance based on official Danish recommendations. • Physical activity: Participants instructed to be moderately physically active 30–60 minutes daily. • Other: Pedometer to motivate and improve daily activity. <p>Free full time membership in a fitness center for 6 months with closed training classes with physiotherapist for 1 hour each week and personal coaching.</p>	Denmark	Individual counseling	At 15, 20, 28, and 35 weeks of gestation

One review (Campbell et al. 2011) included qualitative analysis associated with counseling in which three individual studies out of the five reviewed tailored delivery of advice/counseling by being patient and considerate of women’s weight status and their environment. Analysis showed that there was a significant effect on the outcome of the three individual studies in which pregnant women’s perceived needs were incorporated in counseling as compared to the other two individual studies that did not incorporate pregnant women’s perceived needs.

Out of the ten systematic reviews, nine reported significant adherence to weight gain recommendations in the intervention group(s) as compared to the control group for normal weight, overweight, and obese women.² However, one review (Dodd et al. 2008), which only included interventions for overweight and obese pregnant women, did not report significant adherence to weight gain

recommendations among the intervention group(s) as compared to the control group. Although the majority of the reviews suggested a positive effect from counseling on excess weight gain during pregnancy, given the design of the interventions used across the studies, the effects of counseling alone could not be isolated from the BCC materials and personal training/coaching classes given by the physiotherapist. Furthermore, all of the systematic reviews stated that there was not enough evidence to recommend counseling alone or counseling combined with other interventions as a way for preventing excessive weight gain during pregnancy, due to the significant methodological limitations of the studies reviewed and the small observed effect sizes. The general recommendation across the ten systematic review articles was for more high-quality randomized controlled trials with adequate sample sizes to be carried out to evaluate the effectiveness of counseling interventions for preventing excess weight gain during pregnancy.

In all of the individual studies included in the systematic reviews, some health professionals reported feeling uncomfortable addressing issues of weight management in pregnancy particularly with

² The control group in all the individual studies included in the systematic reviews and meta-analyses received standard antenatal care information and medications. In one individual study educational materials were provided without counseling, in addition to the standard antenatal care information.

women who were overweight or obese. Additionally, the interventions implemented in the studies did not address social factors that contribute to poor weight management, such as easy access to energy-dense foods and an unhealthy environment.

Six meta-analyses provide evidence on the effectiveness of counseling in a developed country context (five of which were included as part of the systematic reviews discussed above). Across the meta-analyses, the findings show that counseling interventions to increase physical activity and improve dietary practices, usually combined with

personal physical activity training classes and personal coaching, appear to improve adherence to weight gain recommendations during pregnancy.

In summary, both the systematic reviews and meta-analyses acknowledged that improving dietary practices and increasing physical activity of pregnant women through counseling contributes to adherence to weight gain recommendations. However, a combination of counseling, BCC materials, personal physical activity training classes, and personal coaching seems to be more effective.

Programmatic Recommendations

While there is limited developing country evidence on the effectiveness of counseling on excess weight gain during pregnancy, evidence is available from developed countries from which lessons can be learned. Based on the available evidence, it is clear that counseling can contribute to effective weight management during pregnancy. The following recommendations may help in delivering effective counseling on weight management as part of antenatal care programming in developing countries.

- Encourage pregnant women to attend an antenatal care visit as early as the first trimester in order to allow weight gain during pregnancy to be monitored appropriately.
- Ensure appropriate training and refresher trainings for health providers involved in antenatal care to improve their counseling skills and knowledge on the importance of weight gain management during pregnancy and the importance of eating a balanced diet instead of energy-dense or empty calorie foods.
- Ensure that the delivery of counseling messages on weight management by health professionals is consistent, accurate, and culturally sensitive.

- Encourage pregnant women to do some form of physical activity, as a combination of physical activity and counseling may help to achieve significant improvement in weight management.

In order for counseling on excess weight gain to be effective in antenatal care programming in developing countries, the following additional measures are recommended.

- Foster an awareness among adolescents and women of reproductive age of the risks associated with excess weight gain during pregnancy.
- Measure BMI pre-pregnancy or in the first trimester, if possible.
- Develop country specific guidelines on recommended weight gain based on pre-pregnancy BMI to help monitor and manage weight gain during pregnancy.
- Develop tools to help identify excess weight gain during pregnancy.
- Develop job aids such as counseling cards, flyers, and posters to help providers strengthen their counseling approach and skills.

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