Mini Review

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Prevention of risks of overweight and obesity in pregnant women

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Abstract: Overweight and obesity in pregnancy and prepregnancy are perinatal risks. Studies showed prevention of these risks with counseling about the risks and treatment strategies like lifestyle interventions as exercise on a daily basis, nutritional health and diet.

Keywords: BMI; obesity; overweight; perinatal risk; weight gain.

Introduction

In high income countries the accelerated body growth of the population has been an increasing health problem for decades now with 56% of women in England and 61% of women in the United States being overweight or obese [1].

The prevalence of overweight and obesity in German mothers is 45 and 15% respectively (2016) [2], while among Chinese adults 34% were overweight and 16% obese [3] and in India, about 21% of females over 20 were overweight and 4% were obese [4].

In high income countries, the average body weight increased gradually from one generation to the next generation.

Besides nutrition, another factor for the increase in body weight is the relative lack of the exercise. For example, 65% of the women in the age-group 18–44 years are exercising for 2.5 or less hours per week in Germany [5].

In addition to being overweight and obese, weight gain in pregnancy, whether too little or too much is an important factor for the perinatal risk. The mean weight gain in pregnancy increased in Germany between 1986 and 2006 from 13.0 to 15.1 kg in 2016 [6].

Impact of overweight/obesity in pregnancy

Obesity is correlated with adverse pregnancy outcome and adaptations in fetal development through metabolic programming and epigenetic inputs, often attributed to the increased prevalence of diabetes in obese women. Some adverse outcomes may be adipose tissue-related dysregulation of metabolic or vascular pathways.

Obese women were at increased risk of miscarriage (odds ratio 1.89, 95% 1.14–3.13) [7] and congenital malformations of the fetus [8].

Evidence-based data support an association between pregnancy maternal overweight, higher gestational weight gain, and higher birth weight [9]. Maternal prepregnancy obesity has a promoting effect on fetal growth in the third trimester [10].

In pregnancy, obese women have a higher risk to develop gestational diabetes in (around 8% vs. 2%) [11]. There is an association between obesity and hypertensive disorders during pregnancy. BMI is a risk factor for preeclampsia as well as other hypertensive disorders [12].

There are conflicting data on the association between obesity and premature births. Torioni et al. reported [13] in a systematic review examining the association between prepregnancy BMI and risk of preterm birth and found that obesity was not associated with an increased risk of spontaneous preterm birth <37 weeks, and in 2013 a population-based study from Sweden confirmed that overweight and obese women were at increased risk of medically indicated preterm deliveries at all gestational ages [14].

An increased risk for dizygotic twin gestation was reported among obese patients [15].

Obese women have a longer first as well as a second stage of labor [16, 17]. Labor induction is more common in obese women and failed induction, too. Macrosomia is

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more common in newborns of obese women and it is a risk factor for shoulder dystocia. Higher degrees of lacerations are increased in obese women, too.

Prepregnancy obesity is an independent risk factor for elective and emergency cesarean delivery. The increased cesarean delivery rate appears independent of obesity-related antenatal complications, maternal height, or macro somatic birth weight of the newborn [18]. Cesarean delivery in obese gravid is associated with emergency delivery, prolonged incision to delivery interval, longer operative times, increased blood loss, wound infection, endometritis, and thromboembolism [19]. Obese women have a higher risk of postpartum infection (episiotomy wound, cesarean section wound, laceration wound, and endometritis). The risk of venous thromboembolism–a major cause of maternal mortality-increases with increasing obesity [20].

In addition, there is an association between maternal overweight/obese and the fetal death, stillbirth, and neonatal death [21].

Antenatal care for overweight/ obese women

Data from studies showed prevention of excessive gestational weight gain of a lifestyle intervention program during pregnancy [22]. The important part of this lifestyle changes is moderate-intensity exercise on a daily basis [23] Weight loss during pregnancy of obese women was associated with a reduction in the cesarean delivery rate, macrosomia, large-for-gestational-age neonates, and reduced perinatal risk [24]. In this study and others the rate of low-birth-weight neonates after weight loss was not increased [25].

Waiting with lifestyle changes until after pregnancy has been diagnosed is not the best way for overweight or obese women to improve pregnancy outcomes. Women need to be in good nutritional health and appropriate body weight preconceptionally, too [26].

Moreover, we need global actions to address obesity and risks for mother and child. The worldwide progress on obesity prevention is poor. There are only some behavior-change strategies in the world [27].

At the first prenatal visit, obese patients should be counseled about the risk of the increased complications to the mother and the pregnancy. Counseling should include recommended weight gain in pregnancy, lifestyle modifications such as exercise, diet, and nutrition, identification and treatment of medical or obstetric complications [28].

The appropriate weight gain in pregnancy directly affects pregnancy outcome as well as the future health of the woman and the infant. Generally speaking, the more you are overweight or obese the less your recommended weight gain in pregnancy.However, there is no uniform agreement as to what the optimal eight gain is in pregnancy for obese women. The risk for adverse maternal and infant outcomes varied by gestational weight gain and across the range of prepregnancy weights. In 2019 the LifeCycle Project-Maternal Obesity and Childhood Outcomes Study Group, the outcomes were grouped according to the three grades of obesity [29]:

- Obesity grade 1 (BMI 30–34.9), the optimal weight gain range was 2.0 to less than 6.0 kg.
- Obesity grade 2 (BMI 35–39.9), the optimal weight gain range was 0 to less than 4.0 kg.
- Obesity grade 3 (BMI >40.0) the optimal weight gain range was 0 to less than 6 kg.

These estimates of optimal gestational weight gain may inform prenatal counseling in obese women, optimally not only prior to pregnancy but also early in pregnancy. The grouping and the counseling are independent of age, parity or ethnic background. Pregnant women who are obese should be counseled extensively.

Obese pregnant women have been found that, despite their weight, they are nutritionally deficient in multiple vitamins and micronutrients, not only because of their habits but also because of their dietary intake as well. Some studies have shown that obese women have lower serum folate levels despite supplementation, whereas others have failed to show a difference.

Obese patients should be informed that exercise during pregnancy is recommended, which may improve certain pregnancy complications [30, 31]. Those who have never regularly exercised before should be told that pregnancy is a great time to start exercising. The physician should discuss which exercise is safe and how much to exercise. Starting with even a little as 5 min of exercise a day and adding 5 min each week may be good start. The eventual goal is to stay active for 30 min an most if not all days of the week. Walking is a good choice for those who are new to exercise. Swimming is another good exercise for pregnant women.

At the first prenatal visit the obese patient should informed about the higher risk of gestational diabetes and should, therefore, be screened by blood sugar for diabetes. If there is no evidence of preexisting diabetes, a glucose screening test such as 50 g glucose challenge test should be done earlier than the traditional 26–28 weeks of gestation.

There is moderate evidence that a combined diet and exercise may reduce the risks for gestational diabetes and cesarean delivery [32].

For the prevention of maternal death by pulmonary embolism, which is more common among women who deliver by cesarean section, each hospital should develop clear guidelines of preventing embolisem and thromboprophylaxis recommendations for pregnant women, not only after cesarean deliveries but also in risk patients after vaginal deliveries. This includes mobilization of the patient if possible, and in postpartum, it should include early mobilization.

Conclusions

Over the last decades, obesity has become a global problem. Due to significantly increased complications to the infant and the mother, obesity presents a challenge in pregnancy.

Preconception counseling, nutritional improvements, weight loss, and exercise can optimize pregnancy outcomes. During pregnancy, special attention must be paid to decrease risks both to mother and fetus. Developing a multidisciplinary approach to optimize perinatal outcomes may help to lower the risks of overweight and obese for mother and child.

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