

Weight Implications on Pregnancy Outcomes





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Problem Statement

There has been a dramatic increase in obesity in industrialized nations over recent years, more specifically a rate of 53% of obese women of childbearing age4. "Even moderate overweight has a significant deleterious effect on the outcome of pregnancy, and obesity leads to major maternal and fetal complications“5. The significant weight increase evidenced in modern culture requires insight into potential complications for the short and long term pregnancy outcomes.

Research Question:

What are the implications of a BMI >25 on maternal and fetal well-being?

Methods:

Select authors have conducted quantitative, retrospective cohort studies by requesting participants to complete a questionnaire during pregnancy providing information on variables of social determinants of health with a control study of woman with a BMI>25 and excluding mothers without a recorded BMI in antenatal records and mothers with pre-existing diabetes.







Key Findings:

Implications for Fetal Well-being

Woman who maintain an overweight or obese body type throughout their pregnancy are at an increased risk for several fetal complications including preterm birth, congenital anomalies, stillbirth, fetal macrosomia, cesarean delivery, and neonatal death[8].It is evident that the self-body maintenance undertaken by the mother has implications that transcend beyond herself. The effects of maternal obesity extend to the fetus, with several large population-based analyses demonstrating independent risks of occurrence of fetal neural tube defects, cardiac malformations, and orofacial clefts[10]. Additionally, obesity also increased the risk for hydrocephaly, anal atresia, hypospadias, cystic kidney, pes equinovarus, omphalocele, and diaphragmatic hernia[10]. In utero, the fetus risks hyperinsulinemia (with neonatal hypoglycemia), cardiomyopathy (or ventricular hypertrophy), macrosomia, and stillbirth. Additionally there are risks for malformation of major organ systems in the offspring of diabetics, notably among those with presentational diabetes or gestational diabetes with fasting hyperglycemia or evidence of poor glycemic control[10]. Fetal anomalies are a leading cause of infant mortality and intrauterine fetal demise is more prevalent among obese women[8,10]. For the young children who survive a birth experience from an obese mother, they are at risk for long-term implications such as childhood obesity and type 2 diabetes mellitus[8]. Mother's experiencing a state of obesity while carrying a child in utero are propagating potential for severe newborn health complications.

Implications for Maternal Health

Being overweight or obese during pregnancy puts mother and child at risk. When looking at the causative factors of these complications, pre-pregnancy BMI is a significant one "for obese women, pre-pregnancy BMI is more consistently associated with increased risk of preeclampsia, caesarean section, gestational diabetes, and LGA delivery"9. During the course of the pregnancy, obesity attracts the onset of signs and symptoms of other complications such as gestational diabetes mellitus (GDM). It was found that "obese women with normal glucose tolerance have higher daytime and nocturnal glucose profiles compared with normal weight women"3. The overall effects of obesity on the woman's body systems during pregnancy in addition to the development of GDM, has a summative effect for the development of further complications. This is particularly true on the cardiovascular system, and the development of preeclampsia as "obesity in addition to GDM was associated with a greater risk of preeclampsia than either factor alone"3. For example, a research study revealed that of those who developed preeclampsia, 20.1% had both GDM and obesity vs. 3.5% with no GDM and no obesity3. Women who were perceived as overweight and having GDM are at the highest risk for developing hypertension and cardiovascular disease6. During the birthing process, obesity and GDM take a toll on the methods of delivery and hospital stay. GDM and obesity significantly increase a woman's chance of labor induction and/ or Caesarian section. One longitudinal study asserted that "Labour induction rates were also highest among women with GDM who were overweight (58.4%), similar among women with GDM only (42.1%) and women who were overweight only (43%), and lowest among women without GDM who were not over-weight (28.5%)" similarly, GDM and obesity increased the chance of Caesarian section "Caesarian section rates were highest among women with GDM who were overweight (47.4%), followed by women who were overweight only (36%), women with GDM only (33.2%), and lowest among women with no GDM who were not overweight (23.4%)"6. Furthermore, a woman who is obese and has an overall larger BMI is at risk for the development of postpartum hemorrhage; "The risk of postpartum haemorrhage rose with increasing BMI, and was about 30% more frequent in women with a moderately raised BMI and about 70% more frequent for women with very raised BMI compared with women of normal BMI"[11].

Implications for Health Care

The prevalence of obesity is becoming a rising concern in developing countries, correlating to pregravid overweight as one of the most common risks of pregnancy[5]. One study shows the financial impact on the healthcare system is more costly for women with BMI greater than 257. It was concluded that females that were overweight showed higher rates of overall healthcare services used[7]. Other studies concluded that women in the overweight category cost the healthcare system five times more than women of normal weight[5]. One study "found a 23% and 39% increase in total health service costs for overweight and obese women…equated to an extra £698 [equivalent to $1304.39 CND] for overweight and £1172 [equivalent to $2190.17 CND] for obese women compared with costs accrued by women with normal BMI"[7]. The study also indicated that if it was to apply the findings of the extra costs for the births in 2012 in the United Kingdom the total extra cost would be £144 818 105 [equivalent to $270 628 732.85 CND][7]. With concurrent findings of how above average weight is an increasing concern with global health, governments need to encourage healthcare providers to push the importance of a normal BMI to women of conceiving age to lessen the costs on the healthcare system.

Recommendations

Education and interventions regarding weight loss for obese women is integral in the preconception period as maternal complications generally relate to pregravid weight[2]. Obese women should be advised about the complications associated with obesity prior to pregnancy such as reproductive dysfunction as well as the future risks to both mother and fetus[1]. Women should be encouraged to participate in regular physical activity during pregnancy as well as provided with nutritional counseling to guide the adequate and proper weight gain that should happen during pregnancy[4]. Creation of programs and/or policies that address obesity in women of childbearing age could potentially help to reduce obesity in pregnancy with an ultimate goal of women losing weight and achieving a normal BMI prior to conception[2]. Additional research on the long term consequences to the offspring of obese mothers as well as what is a safe amount of weight loss for obese women during pregnancy is essential for addressing the problem from a preventative perspective, as opposed to treatment[2].

Conclusion

There is a multitude of evidence that shows that obesity has a strong negative influence on not only the maternal mother's health but on the fetus' health as well. Obese pregnant women are at a greater risk for preeclampsia, gestational diabetes and caesarean section which leads to more severe consequences of extended hospital stays, a significant financial burden on the health care system, and at times even mortality. The fetus may also suffer health implications such as neural tube defects, macrosomia, hydrocephaly, and countless others. All these implications can have a lifelong impact on the mother, child, and family. By researching further at the long term consequences of obesity we can open more opportunities to fully understand and intervene appropriately to obesity in pregnancy. At present, as a health care community, we can continue to educate women in the preconception period and provide nutritional guidance during pregnancy to help support positive health outcomes to maternal mother and fetus.

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