The Effects of Gestational Diabetes Mellitus

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Introduction

Gestational diabetes mellitus (GDM) is defined as a degree of glucose intolerance recognized during pregnancy. Lack of blood glucose control during pregnancy is directly related to adverse pregnancy outcomes. Women experiencing GDM will be seen by a variety of medical professionals; however, this is the most common pregnancy complication that requires services of a registered dietitian nutritionist (RDN). . The RDN has three main goals when helping women manage their GDM: promote optimal development and growth of the baby throughout pregnancy, regulate blood glucose levels and return them to normal, and to prevent excessive weight gain of obese women throughout pregnancy. The most successful methods are those implemented using medical nutrition therapy (MNT) techniques. The intent of this literature review is to investigate the effects of GDM on mothers during and after pregnancy and the postpartum effects on children who are born to mothers with GDM.

Education and Management

A clinical trial published in 2006 compared two methods of educating and managing GDM, usual care methods and specific nutrition therapy guidelines, and how these methods affect perinatal and pregnancy outcomes. There was a much higher incidence of preterm deliveries, more than two times higher, in the usual care group than in the nutrition therapy group.

A study conducted in 2001 evaluated the effects of macronutrient and energy intake on fetal birthweight. The results showed infant birthweight to positively correlate with gestational age and negatively correlate with carbohydrate intake, which shows the macronutrient composition of the diet in women with GDM affects the outcome of the pregnancy.

Intervention and Prevention

A study conducted in 2017 examined whether high-intensity breastfeeding has preventative effects against developing impaired glucose tolerance and improving insulin resistance through first-year postpartum of a GDM pregnancy. High-intensity breastfeeding was defined as the condition in which infants were fed by breastfeeding alone or roughly 80% or more of the volume at 6-8 weeks and 6 months postpartum. The results showed that at least 6 months of high-intensity breastfeeding showed a protective effect against the development of abnormal glucose tolerance during the first year (up to 14 months) postpartum period, independent of prepregnancy obesity and weight changes both during pregnancy and postpartum.

Effects on Early Childhood

A study published in 2016 searched for whether GDM influences attention when using event-related potentials (ERPs), assessing whether or not maternal blood glucose levels can predict cognitive functioning of infants, and if GDM is associated with behavioral cognition. When compared to the controls, the GDM children showed significantly more neuronal activity towards standard stimuli, which reflects failure to know the repeated sound and could represent weaker adaptive brain functioning and memory.

A study published in 2011 focused on whether intrauterine exposure to GDM can predict childhood growth patterns without associating with infant birthweight. The results suggest that on average, children of mothers with GDM were 70% more likely to be overweight after adjustment for maternal BMI, pregnancy weight gain, family income, race and birthweight and the correlation among multiple assessments of body weight from the same child over time.

Long-Term Effects

A study published in 2013 sought to compare the association between GDM and subsequent maternal cardiovascular morbidity, otherwise known as hospitalizations due to cardiovascular reason. When taking into account maternal age and ethnicity, the women with GDM experienced a higher risk of all events termed as cardiovascular morbidity. As a result, this study determined GDM to be an independent risk factor for long-term cardiovascular morbidity and cardiovascular-related hospitalizations.

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Conclusion

This review has presented current research on GDM and the effect it has on mothers during and after pregnancy and the postpartum effects on the children born to these mothers. However, the research on the effects to children seems to be lacking as far as determining whether or not GDM truly has an effect. Further research would allow a clearer understanding of how children born to mothers with GDM are affected throughout childhood and in adulthood. The prevalence of obesity in society along with the increasing number of women with GDM allows many opportunities to conduct further studies.

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