



## **Effects of Relationship between Gestational Diabetes Mellitus and Children's Obesity**

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### **Authors' contributions**

*This work was carried out in collaboration among all authors. All authors read and approved the final manuscript.*

### **Article Information**

DOI: 10.9734/JPRI/2021/v33i39B32179

#### Editor(s):

(1) Dr. Vasudevan Mani, Qassim University, Saudi Arabia.

#### Reviewers:

(1) Imran Ali Khan Mohammed, King Saud University, Saudi Arabia.

(2) Premkumar Daivasikamani, AIMST University, Malaysia.

Complete Peer review History: <https://www.sdiarticle4.com/review-history/71072>

**Systematic Review Article**

**Received 25 May 2021**

**Accepted 29 July 2021**

**Published 31 July 2021**

### **ABSTRACT**

**Introduction:** Women who have a GDM diagnosis, on the other hand, are more likely to develop type 2 diabetes later in life. Many risk factors, such as obesity and obesity, were shown to be shared by GDM and type 2 diabetes, and GDM is believed to be the second most prevalent type of diabetes mellitus. Human risk tests are used to determine the proportion of GDM cases that may have been eliminated if all overweight or obese women had a GDM risk similar to that of average weight women. To better understand the possible effect of weight loss on GDM cases, we calculated the number of children with GDM and the proportion of GDM cases caused by obesity and obesity-related diseases.

**Aim:** Effects of relationship between gestational diabetes mellitus and children's obesity

**Materials and Methods:** The full texts of 32 publications were retrieved for those whose abstracts listed a connection between maternal gestational diabetes and childhood obesity. to the Observed Treatment in the Departments of Medicine and Respiratory, Datta Meghe Medical College and Shalinitai Meghe Hospital and Research Centre,

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**Conclusion:** While the association between diabetes and weight loss is reduced after the pre-pregnancy obesity adjustment, there is a positive relationship, according to this recent research study. Only two of the 12 previous studies of maternal obesity were found to be 12, and both showed that organizations were no longer purposeful after the correction. To better define and differentiate the roles of prenatal obesity and gestational diabetes, further research is needed to look at the functioning of common genes and / or shared substances, such as postpartum diet and physical activity. Regardless of genetics, animal studies have shown that maternal hyperglycemia and fatal hyperinsulinism can cause infertility in adolescence, lower glucose tolerance, hyperinsulinemia, and insulin resistance

*Keywords: Childhood obesity; gestational diabetes mellitus; prepregnancy obesity.*

## 1. INTRODUCTION

Carbohydrate resistance that leads to hyperglycemia through ingestion or early detection during pregnancy is known as gestational diabetes mellitus (GDM). Depending on the number of people tested and the test results used, GDM affects 1% to 14% of births [1]. It has been attributed to maternal, developmental, and foetal complications, such as baby macrosomia and birth defects, child hypoglycemia, caesarean section, and high medical costs. Although some women with GDM may experience chronic glycemia after giving birth, the majority of them will resume natural carbohydrate metabolism. Women who have a GDM diagnosis, on the other hand, are more likely to develop type 2 diabetes later in life. GDM and type 2 diabetes have several risk factors in common, including obesity and obesity, and GDM is believed to be the second most common type of diabetes mellitus [2].

Furthermore, analysis indicates that GDM development accelerated in the 1990s. This rise was unaffected by other risk factors including maternal and teenage age, and it coincided with an increase in obesity (69.3% increase from 1993-1994 to 2002-2003) and type 2 diabetes (increase in 48.8 percent from 1994 to 2002) [3] When the percentage of GDM caused by obesity rises, so does the percentage of GDM caused by obesity (BMI; defined as weight in kilogrammes divided by height in square meters) [4]. Obesity causes GDM, and the causes of obesity are unknown at this point. Human risk tests are used to determine the proportion of GDM cases that may have been eliminated if all overweight or obese women had a GDM risk similar to that of average weight women. We measure the number of GDM-affected births and the proportion of GDM attributed to obesity and obesity-related

diseases to help describe the possible effects of weight loss on GDM prevention [5].

Childhood obesity has been related to the prevalence of diabetes mellitus (T2DM) in children and teenagers over the past 20 years. Obesity was 14 percent in children and 12 percent in teens in 1994, as determined by a BMI of > 85th percentile age, with new figures indicating that obesity is on the rise. Obesity was accompanied by a rise in T2DM among teens, which went from 5% in 1982 to 45 percent (depending on location) in 1999. There are several risk factors for T2DM in both children and adults, in addition to obesity. Adults are at risk for metabolic syndrome (MS), also known as X syndrome. It was first published in the 1950s and places people at risk for diabetes and heart disease. MS signs include obesity, insulin resistance, glucose intolerance, elevated blood pressure, and general dyslipidemia [6].

### 1.1 AIM

Effects of relation between gestational diabetes mellitus and childhood obesity

## 2. MATERIALS AND METHODS

Use the following search terms to view data from January 2020 to February 2021: (Pregn) AND (GDM OR PREGNANCY DIABETES OR DIABETES OR DIABETES) AND (Obesity or obesity or BMI or body weight index or weight gain or preference or ) AND (child OR adolescence \* OR infertility OR long-term or fetal system) AND (infant OR adolescent \* \* or infertility OR fetal or fetus We have 323 papers available for this study, which has been revised 127 summaries The link between gestational diabetes and childhood love, complete 32-page articles were taken to the Observed Treatment in

the Dept. of Medicine and Dept. of Paediatric, Datta Meghe Medical College and Shalinitai Meghe Hospital and Research Centre,

### **3. RESULTS AND DISCUSSION**

#### **3.1 Epidemiologic Studies of Gestational Diabetes Mellitus and Childhood Adiposity**

Six of the seven cohort studies conducted between January 2011 and February 2012 distinguished between pre-existing diabetes (so-called "pre-existing diabetes" after this) and gestational diabetes, and all but looked at maternal obesity function before birth [7]

With inconsistent ratings ranging from 1.2 to 2.8, gestational diabetes was linked to a child's high preference. In four of the six trials, however, maternal obesity often reduces the relationship between diabetes and infant mortality. Since maternal obesity counts, there have been [8] key mathematical and numerical links converted from 1.6 to 2.3. Maternal glucose during breastfeeding was directly related to childhood inclinations, regardless of how the baby ate and his lifestyle, according to one study that did not look at maternal obesity [9]

Maternal glucose activity during pregnancy was also investigated, and it was found that embryonic fetal glucose levels at a higher level were linked to the development of obesity and obesity in three-year-olds, regardless of maternal BMI prior to pregnancy. In addition, Lawlor et al. [10].

There was no indication that the relationship between maternal diabetes and BMI offspring differed according to maternal BMI in the first trimester. The study did however, however, that a small number of obese mothers were. As a result, maternal obesity can be far more harmful to teen development than diabetes mellitus.

#### **3.2 The Role of Prepregnancy BMI**

In contrast, gestational diabetes affects 4-6 percent of pregnant women. Obesity in the mother is a significant factor in the risk of gestational diabetes during pregnancy; obese or overweight women are four or eight times more likely to have gestational diabetes than women of average weight [11].

Since maternal obesity is always a precursor to gestational diabetes, it is difficult to distinguish between the effects of maternal obesity and gestational diabetes on the fetus. Because of this, gestational diabetes can serve as a link between obesity in mothers and children. Catalanano et al. [12] for example, recently published a report. The incidence of gestational diabetes and birth defects can be significantly reduced if obesity and obesity in women of childbearing age are reduced. In a new report looking at the number of cases of gestational diabetes due to maternal obesity and obesity, researchers found that if all women in Florida with a BMI of at least 25 kg / m<sup>2</sup> had a pregnancy-related diabetes in women with a normal BMI (18.9-24.9 kg / m<sup>2</sup>), 41.1 percent of gestational diabetes cases can be avoided. Because of this, good prenatal care is essential in treating postpartum obesity and obesity [13] Obesity is now recognized as a major risk factor for serious side effects of birth and as a reason for early counseling. Women should gain enough weight during pregnancy, according to their BMI group, in addition to starting a healthy weight. Obese women who carry a lot of weight during pregnancy have a higher chance of having obese babies, which can lead to higher BMI in their next pregnancy. Because of this, programs that emphasize proper weight gain and postpartum weight loss can have a positive impact on subsequent BMI of pregnancy. Meta-analyzes of pregnancy weight gain programs have shown that methods that encourage exercise and include nutritional treatment treatments are effective in reducing pregnancy weight gain, especially when combined with weight monitoring. There are a variety of government-based interventions aimed at preventing childhood obesity, such as exercise, access to nutritional choices, breastfeeding levels, and the promotion of healthy eating habits. However, as approximately 32% of women of childbearing age are obese with the initial number of healthy pregnancies, effective intervention models should be developed to eliminate obesity at the population level [14].

#### **3.3 Treatment of Gestational Diabetes Mellitus**

It may be difficult to find a set of measures that can accurately assess whether care for gestational diabetes decreases the risk of pregnancy or obesity in the womb. Women with gestational diabetes are urged to regulate normal

glycemic conditions by controlling their blood sugar levels and changing their diet or taking insulin, which may further decrease the impact of hyperglycemia on future sexual appetite. The children of women with untreated diabetes have a two to four times higher risk of prenatal macrosomia and other physical complications than non-diabetic women's offspring. Furthermore, no variations were seen between the children of mothers who had gestational diabetes and those who had diabetes mothers. Furthermore, the same researchers discovered that obese and overweight people with poorly regulated gestational diabetes had slightly higher rates of cumulative symptoms of metabolic diseases, macrosomia, and LGA than women in all weight-bearing periods of diabetes-controlled pregnancy, regardless of treatment. As a result, insulin treatment and effective glycemic management will help obese women with gestational diabetes mellitus prevent the negative effects on their baby [15].

#### 4.MECHANISMS

Increased levels of maternal leptin have also been linked to reproductive appetite and metabolic homeostasis. Leptin is an essential metabolic homeostasis regulator. It's a hormone produced by adipose tissue in quantities linked to body fat storage. Hyperleptinemia may reduce the sensitivity of leptin to the development of foetal tissues, especially the hypothalamus, throughout pregnancy. Irreversible increases in leptin exposure may have long-term impacts on energy metabolism in the offspring, perpetuating the obesity cycle [16-17].

Fetal hyperinsulinemia may result from maternal insulin resistance and possible hyperglycemia, leading to rapid foetal development, macrosomia, and increased adiposity. Despite the fact that blood sugar levels are well regulated, new evidence indicates that maternal hypertriglyceridemia caused by insulin resistance can result in larger babies and mood swings [18-21].

#### 5. CONCLUSION

While the association between diabetes and weight loss is reduced after the pre-pregnancy obesity adjustment, there is a positive relationship, according to this recent research study. Only two of the 12 previous studies of maternal obesity were found to be 12, and both

showed that organizations were no longer purposeful after the correction. To better define and differentiate the roles of prenatal obesity and gestational diabetes, further research is needed to look at the functioning of common genes and / or shared substances, such as postpartum diet and physical activity. Regardless of genetics, animal studies have shown that maternal pregnancy and fatal hyperinsulinism can cause infertility in adolescence, lower glucose tolerance, hyperinsulinemia, and insulin resistance. Since maternal obesity is more common than gestational diabetes mellitus and is more closely related to fertility obesity, effective pre-pregnancy obesity measures should be investigated as they may have a greater impact on public health on childhood obesity and obesity than interventions targeted at women with gestational diabetes mellitus.

#### CONSENT

It is not applicable.

#### ETHICAL APPROVAL

It is not applicable.

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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*The peer review history for this paper can be accessed here:*  
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