

A REVIEW ON RISK FACTORS OF GESTATIONAL DIABETES MELLITUS

¹Layba Khan, ²Dr. Renu Mogra

¹Research scholar, ²Professor

Department of Food Science and Nutrition, College of Community and Applied Sciences, MPUAT
Udaipur, Rajasthan, India.

Abstract: In gestational diabetes mellitus (GDM), a hormone released by the placenta that prevents the body from efficiently using insulin. As opposed to be taken in by the cells, glucose accumulates in the blood. Obesity before and during pregnancy, intake of high dietary fat and low carbohydrate diet during pregnancy and age are some common causes of gestational diabetes mellitus. This review's purpose is to find research in the literature that verifies the introduction of these aspects as risk factors for gestational diabetes mellitus for preventive diagnosis. In addition to study each risk factor individually, keywords were used with the understanding of gestational diabetes mellitus. High correlations between gestational diabetes mellitus and maternal histories of low birth weight, growth retardation, and poor levels of physical activity have been identified in the majority of research. Results were inconsistent due to low socioeconomic status, pregnancy-related smoking, multiple pregnancies, inclusion in minority groups, and significant weight gain.

Keywords: Diabetes Mellitus, Gestational Diabetes, and Risk Factors

Introduction: It is a form of high blood sugar affecting pregnant women. The efficient use of insulin by the body is impaired in gestational diabetes mellitus (GDM) by a hormone released by the placenta. Glucose accumulates in the circulation rather than being taken up by the cells. Contrary to type 1 diabetes, gestational diabetes is not brought on by a deficiency in insulin, but rather by other hormones produced throughout pregnancy that may reduce the effectiveness of insulin, a condition known as insulin resistance. After birth, gestational diabetes symptoms normally go away. Those who experience gestational diabetes have an increased chance of subsequently getting type 2 diabetes. There are typically no symptoms. For diagnosis, a blood sugar test is performed during pregnancy. Epidemiological research has indicated a number of risk factors for acquiring GDM. The majority of these risk factors are directly linked to either pancreatic beta cells' capacity to produce insulin or insulin sensitivity. GDM is one of the most significant clinical outcomes of pregnancy due to maternal obesity and nutritional deficiencies. It has been discovered that obesity prior to pregnancy is one of the major risk factors. The risk of GDM is also increased by PCOS (Polycystic ovary syndrome), which has metabolic and hormonal imbalance. Extra pregnancy weight gain, maternal age, and previous pregnancies with GDM. Increased gestational weight gain and the risk of GDM are related, according to the other researchers' findings.

Independent of pre-pregnancy BMI, higher dietary fat and lower carbohydrate intakes during pregnancy seem to be linked to a higher risk for GDM. The risk of GDM may be increased by various hereditary factors. The pathophysiology of insulin resistance is associated with certain variations in a number of critical genes, including the prolactin and melatonin receptors. The pathogenesis of GDM may be significantly influenced by the dysregulation of the metabolism of several adipokines.

Risk factors

Risk factors for gestational diabetes include:

- Overweight or obesity
- Physically inactive
- Prediabetes
- Prior gestational diabetes during a previous pregnancy
- Polycystic ovary syndrome (PCOS)
- Family history
- Previously gave birth to a new born who was overweight and weighed more than 9 pounds (4.1 kilograms)

Discussion

Reviews pertaining to the current issue were investigated and provided in the headings listed below.

Obesity and Family history as a risk factor of Gestational diabetes

In their investigation, Graves *et al.* (2015) concluded that High prenatal body mass index (BM), height, usage of antidepressants, a weight gain of more than 40 pounds during pregnancy, and high blood sugar were linked to LGA birth, but not necessarily baby weight/length ratio. Pregnancy weight increase and BMI interacted additively to influence the development of gestational diabetes. Seshiah *et al.* (2008) found out that the prevalence of GDM differed throughout the urban, semiurban, and rural sections of this community-based investigation. It was discovered that family history of diabetes, age under 25, and BMI under 25 were risk factors for GDM.

In a research study of Zargar *et al.* (2004) Two thousand pregnant Kashmiri women were examined to determine the prevalence of gestational diabetes mellitus (GDM) and to evaluate the influence of various demographic factors on pregnancy. Women who lived in urban areas, had given birth to three or more children, had a history of abortion(s) or GDM during prior pregnancies, had given birth to a macro-somic infant, or had a family history of diabetes mellitus were shown to be more likely to develop GDM. GDM

was more common in women who were obese, had high blood pressure, experienced osmotic symptoms, had proteinuria, or had hydramnios.

The occurrence of GDM was determined to be 11.1% in the present research. Aging, pre-pregnancy weight, family history, prior history of pregnancy issues, literacy level, and physical activity may all have an impact on the prevalence of GDM. (Tummala *et al.* 2019)

McIntyre *et al.* (2019) concluded in their investigation that major GDM risk factors include mother's overweight and obesity, later reproductive age, prior history of GDM, genetic history of type 2 diabetes mellitus, and race.

According to Kapur *et al.* (2021) changes in food and lifestyle during pregnancy in women with GDM are not only crucial for immediate pregnancy outcomes, but persistent attention is also important for future health. This is because GDM has an effect on the future health of the mother and child.

In a descriptive study conducted by Berkowitz *et al.* (1992) Women from the Middle East and the Indian subcontinent, older mothers, overweight women, those with a family history of diabetes, infertile women, and those who gave birth at the clinic service. These findings suggest that, after adjusting for traditional risk factors (maternal age, pre-pregnancy weight, and a family history of diabetes), women of Asian and first-generation Hispanic origin, those from the Middle East and the Indian subcontinent, those who have experienced infertility in the past, and those with low socioeconomic status are at an increased risk for gestational diabetes.

Khan *et al.* (2013) High risk factors for GDM include maternal age, BMI, multiple pregnancies, prior history of gestational diabetes, and family history of diabetes. The prevalence of GDM is not affected by socioeconomic level. There were no noticeable differences found between the socioeconomic position, degree of education, and occurrence of GDM and healthy pregnant women.

Dietary management of gestational diabetes

Rasmussen *et al.* (2020) suggested that the type, quantity, and distribution of carbohydrates in the diet should be the main topics of discussion in nutritional counselling. Additionally, being physically active has positive impacts on insulin and glucose levels and can help with glycemic control.

According to Castilla *et al.* (2016) For all pregnancies, the nutritional needs for GDM are the same, although carbohydrates are given special consideration. Despite the traditional intervention of limiting carbohydrates, recent research, while still preliminary, appears to support a low-glycemic index diet. The study generally agrees that calorie limitations are necessary when an individual is overweight or obese.

In studies of Mustad *et al.* (2020) it shows that dietary CHO quantity and type can affect maternal hyperglycemia, and dietary guidelines advise women with GDM to either choose complex and low glycemic CHO or to reduce their overall intake.

The low-carbohydrate and calorie-restricted diets have no significant benefits, according to high-quality systematic evaluations. However, numerous reviews have shown that the low glycemic index (GI) diet, which is defined by consumption of high-quality, complex carbohydrates, lowers insulin usage and lowers the risk of fetal death. according to recent research, mediterranean diet is safe during pregnancy. (Mahajan *et al.* 2019)

According to Farabi *et al.* (2019) it was found that in spite of the fact that CHO restriction increases glycemia, at least temporarily, the overall pattern of the evidence shows that identical results might be achieved with less severe methods that might not increase insulin resistance. Modifying nutritional management in GDM from regular intake, which includes but isn't limiting to CHO restriction, lowers maternal glucose and reduces fetal birth weight.

In order to prevent severe insulin resistance, postprandial hyper-glycemia, and excessive foetal development, a diet rich in complex carbohydrates and fibre, lower in simple sugars, and higher in saturated fats may be helpful. (Hernandez *et al.* 2013)

Conclusion

Gestational diabetes mellitus (GDM) has risen in prevalence quickly, making it one of the prominent reasons of mother and child mortality and morbidity globally.

This study indicates the risk factors for gestational diabetes mellitus. In order for physicians to identify patients who are at risk of developing GDM for early identification and later care, it is critical that the risk factors for GDM are understood. Multiparity, prior history of GDM, congenital abnormalities, neonatal deaths, abortions, preterm deliveries, low birthweight, PCOS, age below 25, BMI less than 25, and family history of diabetes have all been found as risk factors for developing GDM. It is suggested to physicians to use a one-step screening strategy rather than a two-step screening method to detect GDM as early as feasible in patients with risk factors. The test should be redone in between 24 and 28 weeks of gestation if the results are negative.

Even evidence linking maternal obesity to a rise in all-cause infant mortality has been found. In addition to previously mentioned risk factors, GDM is also influenced by excessive pregnancy weight gain, increased caloric intake, a deficiency in vitamin D, psychological stress, and depressive mood. The majority of physical exercise therapies increase insulin efficiency and/or enhance glucose management. The key to maternity care is to emphasize on long-term monitoring and diabetes prevention measures.

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