

The Impact Of Gestational Diabetes On Maternal And Fetal Characteristics During Pregnancy

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Abstract

Objective: To determine the impact of gestational diabetes on maternal and fetal characteristics during pregnancy

Study design: A retrospective comparative study

Place and Duration: This study was done in Sobhraj Maternity Hospital Karachi from November 2021 to November 2022

Methodology: A total of 120 pregnant women were examined for this investigation, separating 90 into the study group with gestational diabetes and 30 into the control group without diabetes.

The risk factors and complications in the two study groups were analysed using statistical software, and the results were presented in the form of tables.

Results: Results showed that the need for caesarean delivery was higher in the GDM group, with fetal distress being a significantly indicating for this type of delivery. Gestational hypertension was also more common in the GDM group, which was found to increase the risk of premature birth. The occurrence of neonatal respiratory distress was particularly higher in mothers of newborns with GDM, and premature birth was more common in the GDM group. Diet-based treatment was the most common method of blood sugar control in the GDM group. The occurrence of iron deficiency anemia was significantly higher in expecting mothers with GDM compared to the control group.

Conclusion: The results of our study suggest that gestational diabetes is associated with an increased need for caesarean delivery, as well as an increased risk of gestational hypertension, fetal distress, preterm birth, neonatal respiratory distress, and iron deficiency anemia.

Keywords: gestational diabetes mellitus, fetus, pregnant women, complications

Introduction

Diabetes is a condition that interferes with how the body uses glucose for energy. High blood sugar and a number of problems result when the body is unable to make or utilise insulin, the hormone that controls blood glucose levels [1]. A kind of diabetes called gestational diabetes develops during pregnancy and can be harmful to both the mother and the fetus. High blood sugar levels that emerge during pregnancy are its defining feature, and it is defined by a number of risk factors including obesity, advanced age, way of life, and family history. It's critical to remember that gestational diabetes can have negative effects on the mother and the fetus [2]. A preterm birth may occur because of maternal difficulties, which can also increase the risk of diabetes later in life and raise blood

pressure. A higher risk of preterm birth, high birth weight, and the later onset of diabetes are only a few examples of fetal problems. Thus, it is essential to recognise and treat gestational diabetes to lessen the risks and consequences that could be related to this illness [3].

There are several strategies that can be used to prevent or manage gestational diabetes. These may include adopting a healthy lifestyle, such as maintaining a nutrition-filled diet and maintaining a continuous physically active schedule and monitoring blood sugar levels regularly. Medications may also be prescribed for controlling blood sugar levels, and insulin therapy may be required in some cases [4]. It is also important for pregnant women with gestational diabetes to attend regular check-ups and follow the advice of their healthcare provider in order to properly manage their condition and reduce the risks to both themselves and their unborn child [5].

The goal of this research is to investigate the maternal and fetal characteristics of pregnancies complicated by gestational diabetes, in order to understand the potential impacts on maternal and fetal health. By identifying the specific characteristics of gestational diabetes pregnancies, we can improve our understanding of the underlying mechanisms and potential strategies for preventing and managing this condition.

Methodology

A total of 120 pregnant women were examined for this retrospective and comparative investigation, separating 90 into the study group with gestational diabetes and 30 into the control group without diabetes. All of the expectant women gave birth at the same time during the study period. Patient records, including observational notes, birth and operation records, and a medical computer system, were used to gather the study's data. The type of delivery, medical care, and difficulties for both the mother and the fetus was also examined by the researchers [5, 6]. They also looked at peri- and postnatal variables such as the need for a caesarean section, the Apgar score, the baby's weight at birth, and the gestational age at birth [7]. The risk factors and complications in the two study groups were analysed using statistical software, and the results were presented in the form of tables.

Results:

In this study, 83.5% of expecting mothers with gestational diabetes were treated with diet alone, 9.75% needed insulin, and 6.75% received no therapy at all because of a delayed diagnosis. According to the study, there were 97.5% of women in the study group and 74% of women in the control group had pregnancy investigations, a substantial difference between the two groups. Additionally, there were notable disparities in the method of delivery between the two groups, with caesarean sections being used in 85% of cases of gestational diabetes and only 60% in the control group. It is important to note that due to the potential dangers and difficulties associated with gestational diabetes, the use of caesarean deliveries may be more common in women with this condition. In this study, it was observed that women with gestational diabetes were more likely (27%) than women without the condition (19%) to have previously undergone a caesarean section. A dystocic presentation was the most frequent reason for a caesarean delivery in the control group, happening in 18% of cases, while this reason was less frequent in the gestational diabetes group, occurring in just 7.75% of cases. The most common causes of caesarean birth in the group of women with gestational diabetes were cephalopelvic disproportion and dynamic dystocia, which occurred in 23.75% and 11% of cases, respectively. In the control group, these signs were also present but less frequent, showing up in roughly 10% and 5% of instances. In the group of women with gestational diabetes, fetal distress was a significant trigger for caesarean birth, occurring in 10.75% of cases, but was not seen in the control group.

In this study, no preterm deliveries were recorded among the pregnant women in the control group who did not have gestational diabetes, but 9 out of 90 pregnant women with the condition (10.75%) gave birth early. The incidence of gestational hypertension was higher in the group with gestational diabetes (26%) compared to the control group (14%) and was found to be correlated with the risk of premature birth ($p < 0.05$). During pregnancy, anemia caused by iron deficiency occurred in 77% of pregnant women with gestational diabetes and in 50% of those without gestational diabetes ($p < 0.05$). According to these studies, gestational diabetes may raise the risk of preterm birth and comorbidities such as gestational hypertension and anaemia.

In this study, neonatal complications were observed in a higher proportion of newborns born to mothers with gestational diabetes. These complications included hypoglycemia (5.75%), enterocolitis (2.5%), and pneumonia

(1%). The incidence of neonatal respiratory distress was also higher in newborns of mothers with gestational diabetes (11.75%) compared to those born to mothers without the disease (4.25%). Additionally, respiratory distress was more common in premature babies (34%) compared to those born after 37 weeks of gestation (9.45%) and was found to be correlated with a higher likelihood of a low Apgar score. These findings suggest that gestational diabetes may be associated with an increased risk of neonatal complications.

Table 1: The following table shows the many types of care that expecting mothers with gestational diabetes receive:

Treatment	Percentage
Diet-based	83.5
Insulin	9.75
No treatment	6.75

Table 2: Here is a table representing the distribution by birth method for both the control group and the study group:

Birth Method	Control Group	Study Group
Spontaneous Vaginal	40%	15%
Caesarean section	60%	85%

Table 3:
Below is a representative table of neonatal complications observed in infants of mothers with gestational diabetes:

Complication	Percentage
Hypoglycemia	5.75
Enterocolitis	2.5
Pneumonia	1

Table 4: the rate of neonatal respiratory failure in newborns of mothers with and without gestational diabetes:

	Mothers with Diabetes	Mothers without Diabetes
Respiratory Distress	11.75%	4.25%

Table 5: the percentage of women with gestational diabetes who had a previous caesarean delivery and the main indications for caesarean delivery in both groups:

	Women with Gestational Diabetes	Women without Gestational Diabetes
Previous Caesarean	27%	19%

Main Indication	Dystocic Presentation	Cephalopelvic Disproportion
	Cephalopelvic Disproportion	Dynamic Dystocia
	Dynamic Dystocia	Fetal Distress
	Fetal Distress	

Table 6:the percentage of women with gestational diabetes who gave birth prematurely and the incidence of gestational hypertension and anemia in both groups:

	Women with Gestational Diabetes	Women without Gestational Diabetes
Premature Birth	10.75%	0%
Gestational Hypertension	26%	14%
Anemia	77%	50%

Discussion:

The oral glucose tolerance test (OGTT), which is used to identify gestational diabetes and track blood sugar levels during pregnancy, is one of the most important aspects of managing the illness. In comparison to the prevalence of this screening reported in earlier studies [8, 9], it was observed that the rate of OGTT screening was greater in the general population during the study period. This may be viewed as a positive trend because it indicates that people are becoming more aware of the value of OGTT screening in the treatment of gestational diabetes. The examination of risk factors for gestational diabetes further supported earlier reports [10] that these patients had a

greater incidence of gestational hypertension. In the research group, a pregnant woman's hypertensive condition was linked to more than half of preterm births. These results emphasise the need for meticulous blood pressure monitoring in pregnant women with gestational diabetes to lower the risk of preterm birth and associated problems.

The examination of risk factors for gestational diabetes further supported earlier reports [10] that these patients had a greater incidence of gestational hypertension. In the research group, a pregnant woman's hypertensive condition was linked to more than half of preterm births. The risk of premature birth was found to be higher in the presence of gestational diabetes, as has been demonstrated in other scientific reports. This is supported by the findings of this study, as well as by other studies. Premature birth is associated with numerous complications [11]. The incidence of cephalopelvic dystocia was found to be higher in diabetic pregnant women, as reported in the literature [12]. In this study, macrosomia occurred equally frequently in both groups of pregnant women. However, it is important to consider the characteristics of the pelvis, as there were cases of fetuses with normal size in the study group whose mothers had a dystocic pelvis [13].

New-borns in the study group were at a higher risk of respiratory distress compared to those in the control group, similar to the findings of a cohort study in France. This risk was also higher in premature babies compared to those born at term. Although iron deficiency anaemia is prevalent among expectant mothers, it should still be taken seriously. The findings of this study and previous investigations suggest that anaemia is more common in women with gestational diabetes [14, 15].

Conclusion:

The results of our study suggest that gestational diabetes is associated with an increased need for caesarean delivery, as well as an increased risk of gestational hypertension, fetal distress, preterm birth, neonatal respiratory distress, and iron deficiency anemia. The most common method of treatment for gestational diabetes in our study was diet-based therapy. These findings highlight the importance of early diagnosis and effective management of gestational diabetes to mitigate potential complications for both the mother and baby.

Permission

It was taken from the ethical review committee

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Conflict

No conflict of interest

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