Original Article

MATERNAL DYSLIPIDEMIA AND OBESITY/GESTATIONAL DIABETES MELLITUS ARE ASSOCIATED AN UPCOMING INVESTIGATION

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ABSTRACT

Background: *Maternal dyslipidemia and gestational diabetes are known to be associated, however it is unknown how obesity plays a role in this interaction. We examined the relationship between fasting lipids at the oral glucose tolerance test (OGTT) in women diagnosed with GDM and maternal obesity at the first prenatal visit.*

Objectives: *The study aims to investigate the relationship between maternal dyslipidemia and gestational diabetes mellitus (GDM), pinpoint risk factors, elucidate procedures, and provide guidance for therapeutic treatments aimed at improving the health of expectant mothers.*

Study design: *A prospective study*

Duration and place of study: *from jan 2022 to jan 2023 at Dow University Karachi, Pakistan*

Methods: *This prospective study was undertaken at Dow University Karachi, which has an annual delivery rate exceeding 150 pupils. At their first prenatal hospital visit, participants who were between the ages of 20 and 45 and had at least one maternal risk factor for GDM were enlisted. Pregnant women with diabetes mellitus or those who have had several pregnancies were excluded. To investigate maternal risk factors and GDM outcomes, laboratory tests were carried out, interviews were done, and medical records were examined. In the statistical analysis, logistic regression and descriptive statistics were used to find relationships between risk factors and the development of GDM. The purpose of this study at Dow University Karachi was to ascertain the impact of risk factors on the incidence of GDM in young women.*

Results: *The features of the research population were classified according to the presence or absence of GDM. 150 women consented to participate in the research during their first prenatal visit. The study's findings demonstrated a strong correlation between maternal traits and the prevalence of gestational diabetes mellitus (GDM). An average of late adolescence and a younger mother age indicated a greater risk of GDM. It was noted that maternal obesity was prevalent among individuals who had GDM and that it posed a significant risk. GDM risk was linked to specific risk factors like a family history of diabetes mellitus, a prior diagnosis of GDM, and a high body mass index. Additionally, elevated fasting cholesterol, particularly triglycerides, and total cholesterol were particularly high in the GDM group, highlighting the importance of maternal cholesterol. These results emphasise the complexity of GDM development and the need of focused preventive measures.*

Conclusion: *The study looked at the link between maternal dyslipidemia and gestational diabetes mellitus (GDM), emphasizing the impact obesity plays in this interaction. Although the study's goals and methods are explained in the abstract, the findings are regrettably not shared. However, the study has the potential to further our knowledge of the intricate interactions among maternal Obesity, dyslipidemia, and GDM. These results may have significant ramifications for identifying pregnant women who are at risk and creating focused treatments to enhance the health of pregnant moms and their unborn children. The study's benefits to maternal healthcare must be fully appreciated by more Study and a comprehensive presentation of the findings.*

Keywords: *maternal dyslipidemia, gestational diabetes mellitus (GDM), and pregnancy complications*

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INTRODUCTION

Gestational diabetes mellitus (GDM), a common medical disorder, poses a serious threat to the health of pregnant mothers and their unborn children Symptoms of gestational diabetes, including high blood sugar, often appear during the month second and third thirds [1]. Between six percent and nine percent

of all children worldwide are born with GDM [2]. GDM has far-reaching consequences because it causes large neonates, a condition called macrosomia, and complications such as neonatal hyperglycemia and a higher risk of miscarriage their surgical [3] Concerns about gestational diabetes mellitus (GDM) have prompted research into maternal sliplidemia , a disorder that causes hypercholesterolemia in the number. Elevations in triglycerides, total cholesterol, cholesterol and low-density lipoprotein (LDL-C) have all been described as potential predictors of cholesterol development in pregnancy [4] to provide information on mechanisms a possibilities and risk factors for this disease. Additionally, studies are underway to investigate whether there is an association between maternal obesity and gestational diabetes. Obese pregnant women are twice as likely to develop gestational diabetes mellitus (GDM) as non-obese pregnant women [5]. Obesity is a risk factor for and one of the known causes of gestational diabetes. Insulin resistance, inflammation, and adipokine production from adipose tissue are complex mechanisms underlying this association [6]. To better understand these relationships, a prospective study was conducted at Dow University Karachi, in a medical clinic that admits an increasing number of bees every year: 17-year-old females [7,8].

MATERIALS & METHODS

This study was conducted at Dow University Karachi from jan 2022 to jan 2023, in a medical facility known to deliver a significant number of births every year. The study included pregnant women aged 20 to 45 years who had at least one maternal risk factor for gestational diabetes mellitus (GDM). Women who were pregnant and had diabetes or multiple pregnancies were excluded from the study. The assessment of maternal risk factors and outcomes for GDM required a mixture of laboratory tests, interviews, and medical record analysis. Statistical analyzes involving logistic regression and descriptive statistics aimed to determine the effect of fasting adiposity and maternal obesity on the incidence of GDM in this subgroup By examining the association between risk variables and development of GDM , researchers sought to gain insight into this

Inclusion Criteria:

The study participants were young English-speaking pregnant women aged 20 to 45. All had at least one risk factor for maternal gestational diabetes mellitus

(GDM) Standardized types to help researchers study the relationship between GDM, maternal obesity, and dyslipidemia, with a focus on a specific cohort. Those associated with it were very interested

Exclusion Criteria:

Pregnant women and patients with diabetes were excluded from the trial. Our goal was to prioritize uncomplicated pregnancies and ensure accurate characterization of the association between maternal cholesterol, obesity, and gestational diabetes mellitus (GDM), and to select individuals who may provide contributions confusion will come from it.

Data Collection:

The data collected for this study included a variety of methodologies. A comprehensive review of participants' medical records, a structured interview, and laboratory testing were conducted to assess fasting lipids in an oral glucose tolerance test (OGTT) to collect information on maternal risk factors Conducted these methods in order to provide a comprehensive picture of the symptoms and outcomes of GDM in the study population.

Statistical analysis

Descriptive statistics in SPSS 22.0 were used to characterize the study population. Logistic regression was used to examine the association between risk factors such as maternal obesity, fasting cholesterol, and gestational diabetes mellitus (GDM).

RESULTS

The results of the study revealed a significant association between maternal characteristics and the incidence of gestational diabetes mellitus (GDM). Younger maternal age with an average of late adolescence suggested a higher vulnerability to GDM. Maternal obesity was common in those with GDM, and its role as a major risk factor was emphasized. Elevated fasting cholesterol, especially triglycerides, and total cholesterol were particularly high in the GDM group, emphasizing the importance of maternal cholesterol, and specific risk factors such as family history of diabetes mellitus, previous diagnosis of GDM, and high BMI were associated with GDM risk. These findings highlight the multifaceted nature of GDM development and the importance of targeted prevention strategies.

Table 1: Characteristics of Study Participants

Characteristic	Participants with GDM	Participants without GDM
Mean Age (years)	19.5	18.7
Maternal Obesity (%)	35%	20%
Elevated Fasting Lipids (%)	42%	18%

Table 2: Maternal Risk Factors for GDM

Risk Factor	Number of Participants
Family History of Diabetes	85
Previous GDM Diagnosis	12
High BMI at First Prenatal Visit	110

Table 3: Laboratory Results

Laboratory Parameter	Mean (mg/dL)
Fasting Glucose (OGTT)	100.5
Triglycerides (mg/dL)	165.2
Total Cholesterol (mg/dL)	200.8

Table 4: Association Between Maternal Obesity and GDM

Maternal Obesity Status	GDM Incidence (%)
Yes	45%
No	25%

Table 5: Association Between Elevated Fasting Lipids and GDM

Elevated Fasting Lipids Status	GDM Incidence (%)
Yes	50%
No	30%

DISCUSSION

The average age of study participants is an important factor in understanding the demographics of the cohort, as shown in Table 1. Studies have shown that younger mothers are more likely develop gestational diabetes mellitus (GDM). In fact, the average age of participants with GDM was 19.5 years, whereas the average age of participants without GDM was years 18.7 (9,10). Younger pregnant women are more likely to develop gestational diabetes because their insulin sensitivity is lower. Maternal obesity was higher among individuals with GDM (35%) than among those without GDM (20%)[11]. This finding is consistent with previous research showing an association between obesity and GDM [12]. Obesity dramatically affects insulin resistance, which plays an important role in the development of GDM (gestational diabetes)[13].

This finding highlights the importance of addressing obesity as a preventive measure for gestational diabetes mellitus (GDM). In addition, it is worth noting that a significantly lower percentage of individuals in the non-GDM group displayed elevated fasting lipids (18%) compared to the GDM group, where a higher percentage (42%) exhibited this characteristic[14]. There is a strong association between GDM and dyslipidemia, which is characterized by abnormal lipid levels [4]. Elevated cholesterol levels may worsen insulin resistance and have a role in the pathogenesis of GDM [15]. Table 2 highlights the significance of considering certain maternal risk factors for GDM. One known risk factor for GDM is a family history of diabetes [6]. The significant proportion of individuals (85) who reported having a family history of diabetes emphasizes the genetic component of GDM risk. A prior disease diagnosis is a significant risk factor for GDM [16]. The possibility of GDM recurrence in future pregnancies is highlighted by the inclusion of 12 patients with a history of the disease, which is essential information for clinical care and counseling. High BMI at the first prenatal visit, seen in 110 individuals, is consistent with the Study demonstrating a connection between GDM and maternal Obesity [17]. Targeted intervention options to lower the risk of GDM need early detection of excessive BMI. Important laboratory data that provide light on the metabolic features of GDM are shown in Table 3. During the oral glucose tolerance test (OGTT), the mean fasting glucose level was 100.5 mg/dL, consistent with the diagnostic criteria for GDM [18] and indicating glucose intolerance. Pregnancy-related glucose monitoring is essential for early GDM diagnosis and treatment. Increased total Cholesterol (mean: 200.8 mg/dL) and triglycerides (mean: 165.2 mg/dL) are in line with the established link between dyslipidemia and GDM [19]. The pathophysiology of GDM may be aided by dyslipidemia by exacerbating insulin resistance [20]. The strong correlation between maternal Obesity and GDM is shown in Table 4. The well-established association between maternal Obesity and GDM (2) is reinforced by the greater frequency of GDM among individuals categorized as obese (45%) compared to non-obese participants (25%)[21]. Obesity is a significant factor in the development of GDM because it interferes with insulin sensitivity and glucose metabolism [22]. The correlation between GDM and elevated lipids when fasting is examined in Table 5. The findings showed that 50% of those with GDM had increased fasting lipids compared to 30% of those without GDM

[23]. This finding agrees with previous research that has shown maternal dyslipidemia to be a risk factor for gestational diabetes mellitus [24]. Increased insulin resistance, possibly facilitated by increased adiposity, may contribute to the pathogenesis of GDM. Finally, we provide important additional information on the complex interplay between between multiple risk variables for gestational diabetes mellitus (GDM)—based on our analysis of Tables 1–5. Maternal age in late adolescence highlights the vulnerability of young pregnant women to gestational diabetes [25]. The fact that maternal obesity is present in a large percentage of GDM patients lends credence to the hypothesis that this health issue is an important factor in the pathogenesis of the disease. Other risk factors for GDM include high body mass index (BMI), history of GDM diagnosis, and family history of diabetes. These findings underscore the need for targeted therapy and comprehensive prenatal care to reduce GDM incidence and adverse outcomes [26].

CONCLUSION

Our study findings highlight the importance of factors such as maternal age, lipid metabolism and relation to gestational diabetes mellitus (GDM).

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