

Prevalence of Gestational Diabetes Mellitus in Women of Quetta: A Cross Sectional Study

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Abstract

Aim: To determine the prevalence of gestational diabetes mellitus in women of Quetta Pakistan

Study Design: Cross sectional study

Place and duration: This study was conducted at Bolan Medical Complex Hospital Quetta, Pakistan., for one year, from July 2020 to July 2021

Methodology: All pregnant women having gestational age 24 weeks or more were given a 75 g oral glucose load following a preliminary clinical evaluation, regardless of the time since their previous meal. If the two-hour plasma glucose level was more than 140 mg/dl, gestational diabetes mellitus was established. The results were obtained using Chi-square and an unpaired t-test.

Results: The study enlisted the participation of 330 women, 49.60% were 26 and 30 years old, and 42.4% of the females were in 24–26 weeks of gestation. The prevalence rate of GDM was 8.4%, with all cases being diagnosed for the first time during the research. The link between GDM and literacy was ($p > 0.05$).

Conclusion: A significant percentage of pregnant females were identified with gestational diabetes, and no link has been observed between GDM and educational level.

Keywords: Gestational diabetes, prevalence, women

Introduction

Diabetes is becoming more prevalent worldwide, and women with gestational diabetes are no exception. The World Health Organization (WHO) released forecasts of adults with diabetes in all countries based on UN Population Division demographic projections for the year 2025, attempting to document there will be more women with diabetes than men and that the burden of Gestational Diabetes Mellitus (GDM) will rise significantly, especially in less prosperous countries (1)(2) There is substantial evidence that social and economic development and urbanization sparked this epidemic, which has been linked to overall improvements in nutrition and lifespan, obesity, decreased physical activity, growth failure in children, and increased diabetes susceptibility.

GDM is a type of glucose intolerance that develops or is first noticed during pregnancy. (3) GDM affects between 1% and 28% of the world's population. (4, 5). In the United States of America, gestational diabetes mellitus affects around 7% of all pregnancies each year, resulting in roughly 200,000 cases, and Type 2 diabetes develops in 5 to 10% of women who have gestational diabetes after delivery. (6) GDM prevalence varies from 4.2 - 26% in Pakistan depending on geographical area and diagnostic procedures utilized. (7). The prevalence of GDM is more in urban regions than in rural areas. (8). Because of the natural hormonal changes that occur during pregnancy, virtually all pregnant women's ability to effectively utilize glucose deteriorates, but not all acquire gestational diabetes, and children of women with gestational diabetes are more likely than other children to develop type 2 diabetes later in life. (9) This study was performed to determine the prevalence of GDM and its association with the literacy level among the residents of Quetta Pakistan.

Methodology

The current cross-sectional study was carried out at Bolan Medical Complex Hospital Quetta, Pakistan., for one year, from July 2020 to July 2021. Permission was taken from the ethical review committee of the institute. Pregnant women who came to the OPD or department of Obs and Gynae and met the criteria were contacted, and those with a gestational age of 24 weeks or more gave their informed consent to participate in the study. The study enrolled 330 pregnant women who met the criteria. Women with a gestational age of 24 weeks or more and were the permanent residents of Quetta were included. Those women in which Diabetes mellitus had already been identified were excluded.

The data was gathered from the study participants using a pre-tested semi-structured questionnaire. Age, literacy, domicile, income, parity, previous pregnancy history of GDM, family history of Gestational diabetes or diabetes mellitus, last pregnancy outcome were all gathered. Blood samples were also taken from the participants to confirm the diagnosis of gestational diabetes. After having a preliminary clinical assessment, an oral glucose load 75 g was given to all pregnant women aged 24 weeks and up, regardless of how long it had been since their last meal. Blood specimens were obtained and sent to the laboratory for further processing. A baseline blood sample was taken, and samples were taken at 1 and 2 hours after a 75 g glucose solution intake. Serum glucose levels were also measured at these time points. GDM was labelled if the plasma glucose level ≥ 140 mg/dl after two hours of oral

glucose load [10]. SPSS Version 21 was used for Data entry and Data analysis. The frequency distributions were calculated using descriptive statistics. The results were obtained using Chi square Test and an unpaired t-test. A $P < 0.05$ was considered statistically significant.

RESULTS

The majority of the study population (49.69%, $n=164$) was between 26 and 30 years, with only 1.81 % ($n=6$) older than 36 years. Only 1.5% ($n=5$) of the females were in the 36–40 weeks of gestation, whereas 42.4% ($n=140$) were in 24–26 weeks of gestation. In the current study, 53.03% ($n=175$) females were illiterate, 29.09 % ($n=96$) had less than high school education, and 17.87% ($n=59$) had a high school education or higher [As shown in Table 1]. In the current study, out of 330 pregnant females, GDM was observed in 8.48% ($n=28$) females, and 91.51% ($n=302$) did not show any signs of GDM. [As shown in Table 2]. We observed that 10.28% ($n=18$) of the individuals with less than primary education were diabetic. GDM was observed in 5.26% ($n=5$) and 8.47% ($n=5$) women with primary and high school or above educational level, respectively. However, at $p > 0.05$, the connection was shown to be statistically insignificant. [As shown in Table 3]

Table 1: Age distribution, Gestational Age and Educational level of the studied population

Variable	Number	Percentage
Total	330	100
Age (Years)		
Less than 20	44	13.33
20- 25	91	27.57
26-30	164	49.69
31-35	25	7.87
36 and above	6	1.81
Gestational Age (Weeks)		
24-26	140	42.4
27-29	96	29.0
30-32	80	24.24
33 - 35	9	2.7
36 -40	5	1.5
Educational Level		
Below Primary	175	53.03
Primary	96	29.09
High School or Above	59	17.87

Table 2: Frequency of Gestational Diabetes Mellitus

Gestational Diabetes Mellitus	Number	Percentage
Present	28	8.48
Absent	302	91.51
Total	330	100

Table 3: Educational level and Gestational Diabetes Mellitus

Gestational Diabetes Mellitus	Educational Level			Total
	Below Primary	Primary	High School and Above	
Absent	157 (89.71%)	91 (95.78%)	54 (91.52%)	302 (91.51%)
Present	18 (10.28%)	5 (5.26%)	5 (8.47%)	28 (8.48%)
Total	175	96	59	330

Discussion

In the current study, the prevalence of Gestational Diabetes Mellitus was 8.48%. The age group between 26 to 30 years is the most prevalent group, and we found no significant association of GDM with the literacy level of the female.

A study performed in Bahawalpur, Pakistan, reported 6.25% prevalence of GDM. The prevalence of GDM was 9.8%, according to the study performed in Nawabshah, Sindh (10). These findings are in accordance with the results of our study. However, in contrast to our research findings, another study said that GDM is prevalent in 17.2% women. (8) The later research was performed in an urban setting, and studies have also reported that diabetes is more prevalent in urban areas than rural. (11)

We noticed a wide range of prevalence of GDM across the Indian subcontinent. Prevalence was 16.9 % in urban regions and 9.9 % in rural areas of India. (12) According to reports, approximately 10% of the females in Bangladesh are affected by GDM. (13) In our study, the bulk of the females was 26 to 30 years old. Similar to this, other studies also reported that the majority of the pregnant women were in the same age group. (14, 15)

In our study, we had many females who were illiterate or their educational level was below primary. We observed no significant association between educational level and GDM. However, different studies reported different results, few are in favour of our research, and few are contrasting. (16, 17)

Women who have experienced GDM are at an elevated risk of getting Type 2 diabetes after giving birth to a child. According to a comprehensive review, the risk of acquiring Type 2 diabetes was seven times higher in women who had GDM during pregnancy compared to women who did not have GDM during pregnancy (18, 19)

As a result, GDM opens up a lot of possibilities for developing, testing, and implementing clinical diabetes prevention medicines. Screening all pregnant women for glucose intolerance, attaining euglycemia, and ensuring sufficient nutrition will nearly entirely prevent glucose intolerance from being passed down from generation to generation.

The exact process that causes gestational diabetes is unknown. On the other hand, increased insulin resistance is the most noticeable symptom of gestational diabetes mellitus. As the pregnancy advances, the mother's glucose metabolism changes. Insulin resistance and diabetogenic stress caused by placental hormones demand a compensatory increase in insulin production as pregnancy progresses. Gestational diabetes occurs when this adjustment is insufficient. (20, 21) Similarly, according to the International Diabetes Federation, around 90 % of instances of hyperglycaemia during pregnancy occur in low and middle-income countries. Among low and middle-income countries, this gap may be related to restricted access to maternal health care as well as low socioeconomic position, among other factors. (22, 23) Studies on large scale with multiple variables should be conducted.

Conclusion

Gestational Diabetes Mellitus is common during pregnancy in the Quetta City of Pakistan. The rising prevalence of GDM and its associated co-morbidities in women requires quick attention in terms of preventative and health education.

Funding source

None

Conflict of interest

None

Permission

Permission was taken from the ethical review committee of the institute

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