

Prevalence of Gestational Diabetes Mellitus in Pakistan: A Cross Sectional Study

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ABSTRACT

Introduction: Gestational diabetes mellitus (GDM) also known as diabetes of pregnancy is associated with adverse fetomaternal outcomes threatening the life of both mother and fetus. Timely diagnosis and early management of GDM is the key to prevent complications resulting from this incapacitating illness. Purpose of current study is to assess the prevalence of GDM in Pakistan.

Methodology: A descriptive cross-sectional study was conducted. Data was collected at department of obstetrics and gynaecology from 190 pregnant women. Ethical approval was obtained from IRB of institution and informed consent was taken from all the study participants. Detailed history was gathered and oral glucose tolerance test (OGTT) performed. Data was analyzed using SPSS version 23.0. Descriptive statistics like frequencies and percentages were calculated to assess the prevalence of GDM.

Results: According to age, GDM was prevalent in age group of 33-43 years 30(55%). Also educational status of participant reveals the fact that GDM was common in matric group 20(22%). Parity status >1 show more cases of GDM. Similarly, positive family history and time interval <24 months between pregnancies were prone to GDM. Out of 190, GDM was present in 18(9.47%) cases. So, in this study calculated prevalence rate was 9.47%.

Study findings will help policy makers to design programs for creating public awareness regarding Gestational diabetes through the use of multiple media. Policies regarding early evaluation of gestational diabetes will help to prevent fetomaternal complications. Hence would prove fruitful to decrease the cost and burden of illness.

Conclusion: It is concluded from our study that prevalence of GDM is 9.47% in Pakistan. There is a need to make early diagnosis and timely management of GDM to avoid the life threatening consequences. Policy makers should pay special attention to overcome this issue and proper antenatal visits should be planned for pregnant mothers.

Keywords: Prevalence, GDM, Pregnancy, Pakistan

INTRODUCTION

Diabetes is a chronic debilitating illness responsible for millions of deaths across the globe. Worldwide prevalence of diabetes and glucose intolerance in adults has been increasing over recent decades¹. People with diabetes have an increased risk of developing a number of life-threatening health problems resulting in higher medical care costs, reduced quality of life and increased mortality².

Gestational diabetes mellitus (GDM) also known as diabetes of pregnancy is associated with adverse fetomaternal outcomes threatening the life of both mother and fetus³. GDM, diagnosed for the first time during pregnancy is a public health issue of concern worldwide. Prevalence of GDM is 1-14% attributed to numerous factors and complicates 7% of pregnancies yearly across the world⁴. In Pakistan, prevalence of GDM was noted as 3.45% in 2014 which is now increased up to 10%⁵. As compared to recent years, worldwide incidence rate is increased due to multiple factors like obesity, physical inactivity, un-healthy food practices and sedentary life style habits⁶.

GDM is caused due to abnormal glucose metabolism resulting from B-cell destruction. In pregnancy, insulin resistance develops due to maternal and pregnancy related factors⁷. As, placental hormone in second and third trimester also cause insulin desensitization⁸. Effects of progesterone, growth hormone, estrogen and cortisone levels are also noticeable in increasing insulin resistance during pregnancy⁹.

GDM imparts a significant role in causing hypertension, pre-eclampsia, C-section deliveries along with future risk of cardiovascular disease & Type II diabetes for mother¹⁰. Effects of GDM on fetus are also worthwhile resulting in macrosomia, polyhydramnios, birth injuries, bone fractures, IUGR, congenital anomalies, neonatal hypoglycemia, RDS, LBW babies etc¹¹. International Diabetes Federation (IDF) estimated that one in every six live births is affected with hyperglycemia in pregnancy¹².

Timely diagnosis and management of GDM is the key to prevent fetomaternal complications resulting from this

incapacitating illness. In developing countries like Pakistan, multiple factors hinder timely diagnosis and delay the treatment choices¹³. Mothers attending antenatal clinics avail a chance of early detection of pregnancy associated issues. Numerous diagnostic criteria have been developed for diagnosis of GDM¹⁴. In countries with low socio-economic status like Pakistan, an increased maternal and neonatal morbidity & mortality rate is reported due to GDM¹⁵. So, there is a need to evaluate the cases of GDM to avoid life threatening consequences. Purpose of current study is to assess the prevalence of GDM in Pakistan.

METHODOLOGY

A descriptive cross-sectional study was conducted at a public sector tertiary health care facility from June 2021 to December 2021. Data was collected at department of obstetrics and gynecology from 190 pregnant women having age 22-43 years attending the antenatal clinic during 16 to 36 week of gestation. Sample size was calculated on the basis of prevalence at 95% confidence interval with 0.5% margin of error. Inclusion criteria of the study was non-diabetic pregnant women having age of 22-45 years with gestational age of 16-36 weeks without any chronic illness.

Ethical approval was obtained from IRB of institution before data collection. Confidentiality of the participants was maintained. Informed consent was taken from all the study participants and they were assured that their participation will be voluntary without any coercion.

Detailed history of all the study participants was gathered and oral glucose tolerance test (OGTT) performed following American Diabetes Association guidelines. OGTT was considered normal with BSF < 95mg/dl, after 1 hour < 180mg/dl, after 2 hour <155mg/dl, and < 140mg/dl after 3 hours. Patients having difference in any two values were identified positive for GDM.

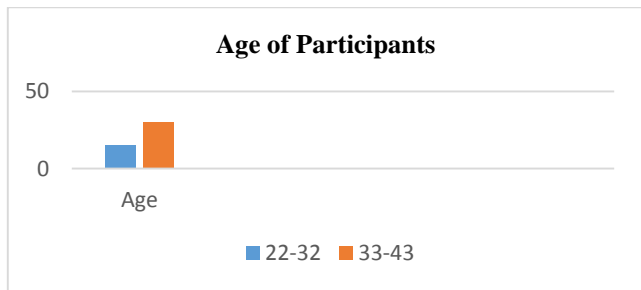
Data was analyzed using SPSS version 23.0. Descriptive statistics like frequencies and percentages were calculated to assess the prevalence of GDM.

RESULTS

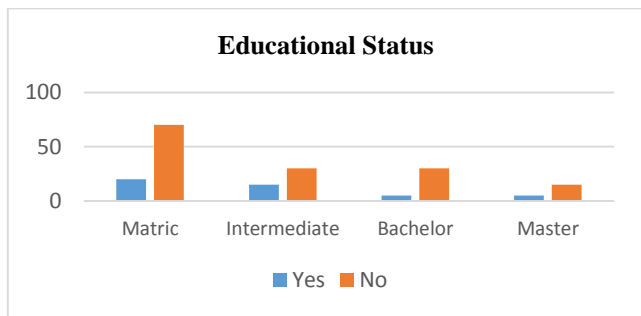
Total 190 pregnant mothers were included in this study. Results given in table show the cases of GDM.

Table 1: Demographics of study participants.

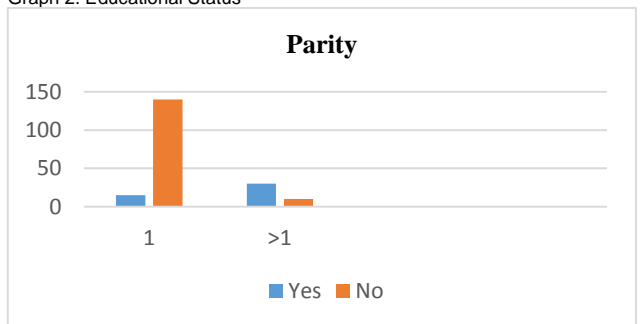
Risk Factors	Gestational Diabetes		Total
	Yes	No	
Age			
22-32	15(11%)	120(89%)	135(71%)
33-43	30(55%)	25(45%)	55(29%)
Education			
Matric	20(22%)	70(78%)	90(47%)
Intermediate	15(33%)	30(67%)	45(24%)
Bachelor	5(14%)	30(86%)	35(18%)
>Masters	5(25%)	15(75%)	20(11%)
Parity			
1	15(10%)	140(90)	155(82%)
>1	30(86%)	10(14%)	35(18%)
Gravity			
<2	10(20%)	40(80%)	50(26%)
>2	35(23%)	115(77%)	150(74%)
Family History of DM			
Yes	25(42%)	70(58%)	60(32%)
No	20(15%)	110(85%)	130(68%)
Time Interval Between Pregnancies			
< 24 Months	38(33%)	77(67%)	115(61%)
>24 Months	8(10%)	67(90%)	75(39%)
Total	45(24%)	145(76%)	190(100%)



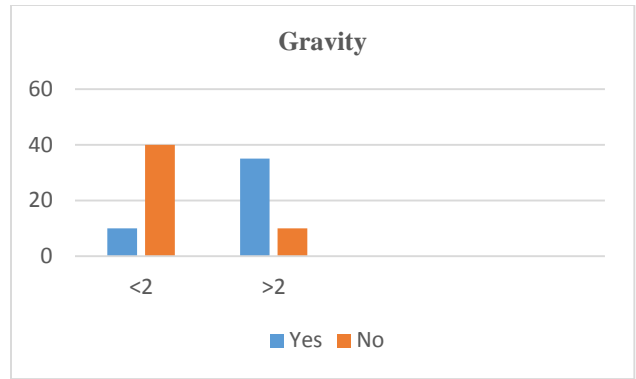
Graph 1: Age



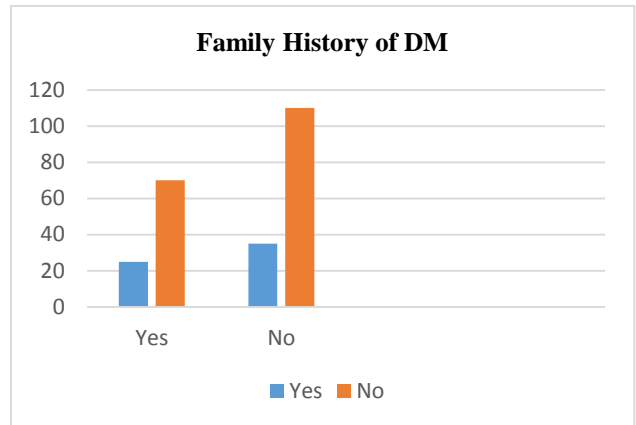
Graph 2: Educational Status



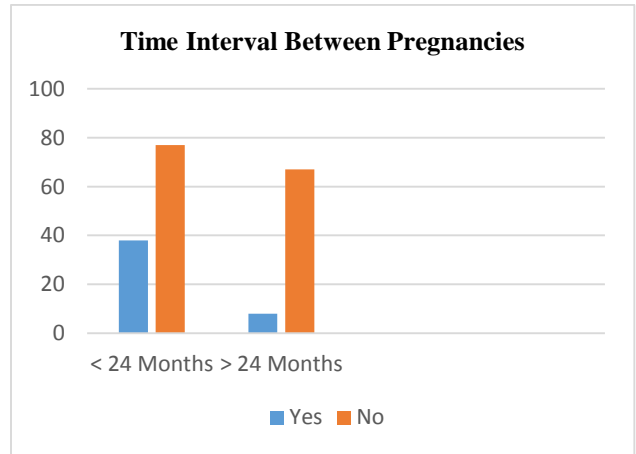
Graph 3: Parity



Graph 4: Gravity



Graph 5: Family History of DM

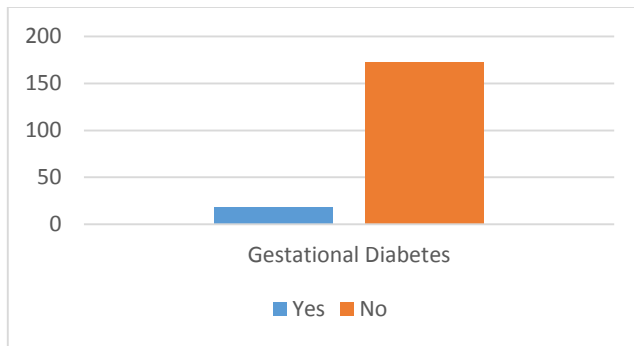


Graph 6: Time Interval Between Pregnancies

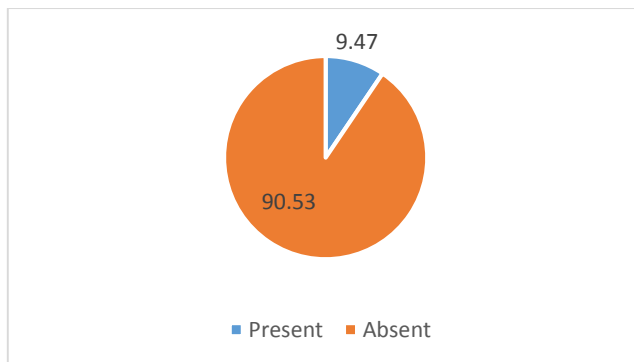
Above mentioned table & graphs depicts the cases of GDM according to demographic characteristics of study participants. According to age, GDM was prevalent in age group of 33-43 years 30(55%) than 22-32 years i.e. 15(11%). Also shown in above table, educational status of participant reveals the fact that GDM was common in matric group 20(22%). Parity status >1 show more cases of GDM. Similarly, positive family history and time interval <24 months between pregnancies were prone to GDM.

Table#2: Prevalence of Gestational Diabetes Mellitus.

Gestational Diabetes	Frequency	Percentage
Yes	18	9.47
No	172	90.53
Total	190	100



Graph 7: Frequency of GDM



Graph 8: Percentage of GDM

Results showed in Table#2 figure out the prevalence of GDM in studies population. Out of 190, GDM was present in 18(9.47%) cases. So, in this study calculated prevalence rate was 9.47%.

DISCUSSION

Gestational diabetes mellitus is a devastating illness having hostile effects on both mother and fetus. In current study, findings clearly give a notion that GDM is associated with age group and cases increase with maternal age as results showed that more i.e. 30(55%) cases belong to age group 33-43 years compared to 15(11%) cases in age group of 22-32 years. This findings are consistent with other studies highlighting the association of age and GDM¹⁶.

Moreover, present study also revealed a close relationship between educational status and GDM. Low educational level was also linked with GDM. 20(22%) cases of GDM in studied population were matric level. Other studies also depict the fact that educational status is closely related with GDM¹⁷.

Similarly other demographics like parity status, gravity level, positive family history of GDM and time interval of <24 months between pregnancies showed significant relationship with the prevalence rate of GDM. Parity status >1 showed more cases of GDM i.e. 30(86%) compared to 15(10%) in parity 1. Also chances of GDM were more in mothers with family history of GDM and 25(42%) cases had positive family history. Pregnancy interval was also a cause of GDM as results showed 38(33%) positive GDM cases in pregnancies with less interval period. Other researchers conducted on the prevalence of GDM also illustrate the importance of parity status, gravity level, positive family history of GDM and time interval of <24 months between pregnancies with GDM¹⁸.

Furthermore, in this study prevalence of GDM was found 9.47%. A study already conducted in Pakistan show the prevalence rate of GDM 6.25%¹⁹. While another study conducted in Sindh showed prevalence of GDM 9.8%²⁰. These findings are consistent with current study regarding prevalence of GDM in

Pakistan. In contrast, a study conducted in Quetta showed prevalence of GDM 24%²¹.

CONCLUSION

It is concluded from our study that prevalence of GDM is 9.47% in Pakistan. Causes of GDM are numerous but there is a need to make early diagnosis and timely management of GDM to avoid the life threatening consequences. Policy makers should pay special attention to overcome this issue and proper antenatal visits should be planned for pregnant mothers. There is a need to raise awareness regarding GDM in Pakistan.

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