

Original Research Article

Prevalence of gestational diabetes mellitus, maternal and neonatal outcomes in a peripheral hospital in North India

Naiyma Choudhary^{1*}, Mohd Rasheed², Vivek Aggarwal³

¹Department of Health and Family Welfare, Jammu and Kashmir - 180001, India

²Department of Obstetrics and Gynaecology, Command Hospital, Lucknow - 226002, Uttar Pradesh, India

³Department of Internal Medicine, Armed Force Medical College, Pune - 411040, Maharashtra, India

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*Correspondence:

Dr. Naiyma Choudhary,

E-mail: drnaiyma2007@gmail.com

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ABSTRACT

Background: Gestational diabetes mellitus (GDM) is a well-known medical entity which should be diagnosed at the earliest to prevent adverse maternal and neonatal outcomes due to hyperglycemia.

Methods: This study was done in patients attending antenatal OPD in a peripheral hospital in North India. A total of 569 patients diagnosed as GDM were included in the study out of 6321 who attended the antenatal clinic.

Results: The prevalence of gestational diabetes mellitus was found to be 9%. Gestational hypertension was seen in 29.35% of patients. The percent of babies who were admitted to NICU was 29.35%.

Conclusions: These results stress the need for early detection and treatment of GDM to prevent adverse outcomes.

Keywords: GDM, Maternal, Neonatal outcome, Prevalence

INTRODUCTION

Gestational diabetes mellitus (GDM) is defined as carbohydrate intolerance of varying severity with onset or first recognition during pregnancy.¹ Gestational diabetes mellitus affects about 7% of all pregnancies worldwide and recent studies have reported an increase in the prevalence in last two decades.²⁻⁴ This increase is attributed to various factors like ageing population, urbanization, obesity and sedentary life style. Diabetes is known to cause maternal complications like pregnancy-induced hypertension, infections and fasting hyperglycemia; pregnancy complications of abortion, preterm labour, hydramnios, unexplained fetal deaths and fetal outcomes like macrosomia, neural tube defects, cardiac anomalies etc.

Many Indian studies have shown the prevalence of GDM ranging from 6% to 9% in rural and 12% to 21% in urban

areas.⁵⁻⁷ The reasons for this wide range are differences in living conditions, socio-economic levels and dietary habits.

With the increasing burden of GDM on health care, it has become a necessity to quantify data from various GDM studies for rational planning and allocation of resources which would result in improved maternal and neonatal consequences. This study was undertaken to determine the prevalence of GDM along with maternal and fetal outcomes in these patients. The study was conducted in a peripheral hospital in North India.

METHODS

This study was carried out in a peripheral hospital in North India from July 2012 to April 2015. All pregnant women who consented to participate in study after being informed underwent screening and diagnostic test as per

ACOG guidelines using Carpenter and Coustan criteria. The American Congress of Obstetrics and Gynecology recommends that all pregnant women be screened for GDM using a random 50g 1-hour glucose load test, followed by a diagnostic fasting 100g 3-hour oral glucose tolerance test (OGTT) if their screening test is positive.⁸ Carpenter-Coustan (CC) criteria are more inclusive with lower threshold values of 95 mg/dL, 180 mg/dL, 155mg/dL and 140mg/dL.⁹ Any two values at or above established thresholds diagnose GDM.

The study protocol was approved by the institutional ethics committee. Informed consent was taken from patients included in the study. Women who were known diabetics, or who were suffering from any chronic illness were excluded from the study. A proforma containing general information on demographic characteristics, socio-economic status, education level, parity, family history of diabetes and hypertension and past history of GDM was filled up. All patients were given complete physical examination and underwent laboratory investigations. Data collected was analyzed using SPSS Software version 20.0.

RESULTS

A total of 6321 pregnant women were screened out of which 569 women were diagnosed as having GDM and were included in the study.

Table 1: Baseline characteristics of the patients.

Age (years)	Number	Percentage
16-20	1121	17.73
21-25	3754	59.39
26-30	1221	19.32
>30	225	3.56
BMI (Kg/m²)		
<18.5	599	9.48
18.5-24.9	4876	77.14
≥25	846	13.38
Parity		
0	2432	38.47
1	2754	43.57
2	821	12.99
>3	314	4.97
Educational qualification		
Professional/postgraduate/graduate	1255	19.85
Intermediate/high school/middle school	4143	65.54
Primary school	711	11.25
Illiterate	212	3.53
Socio-economic status		
Upper class	124	1.96
Upper middle	655	10.36
Lower middle	5542	87.68

The prevalence was found to be 9%. Out of 6321 patients screened, 9.48% women had BMI<18.5, 77.14% had BMI between 18.5-24.9 and BMI≥25 in 13.38%. Majority of the patients were in the age group of 21-25 years (59.39%).

Majority of the patients 65.54% were intermediate, high or middle school qualified. 87.68% of women belonged to lower middle socio-economic class (Table 1).

Table 2: Maternal outcome in patients of GDM.

Variables	Number	Percentage
Gestational hypertension	167	29.35
PROM	89	15.64
APH	113	19.86
PPH	100	17.57
Preeclampsia	83	14.59
Preterm labour	142	24.96
UTI	161	28.29
Mode of delivery		
LSCS	246	43.23
SVD	275	48.33
Instrumental	48	8.44

Table 2 shows the percentage of different maternal outcomes in patients of GDM. Gestational hypertension was seen in 29.35% of patients and 28.29% patients had urinary tract infections.

Preterm labour was reported in 24.96%, antepartum haemorrhage (APH) in 19.86%, postpartum haemorrhage (PPH) in 17.57%, PROM in 15.64% and preeclampsia in 14.59% of patients. Spontaneous vaginal delivery was reported in 48.33% of patients while 8.44% had instrumental deliveries. 43.23% patients underwent caesarean section.

Table 3: Neonatal outcome in patients of GDM.

Variable	Number	Percentage
Shoulder dystocia	36	6.33
Birth weight >3.5 kg	43	7.55
NICU admission	167	29.35
Macrosomia	88	15.47
Still birth	41	7.20
Jaundice	109	19.16
Hypoglycemia	55	9.67

Table 3 shows various neonatal outcomes with 6.33% patients having shoulder dystocia. Babies with birth weight >3.5kg were 7.55% and 15.47% had macrosomia. The percent of babies who were admitted to NICU was 29.35%. Other neonatal complications like jaundice and hypoglycemia were seen in 19.16% and 9.67% respectively. The percent of stillbirths was 7.20%.

DISCUSSION

This study provides important information regarding prevalence of GDM along with maternal and neonatal outcomes. The prevalence of GDM was found to be 9%. In a similar study done in western India, the prevalence was found to be 9.5%.¹⁰ Worldwide studies have shown prevalence of GDM to be varying between 0.6-13.7% (WHO) criteria.¹¹

The maternal complications shown in this study have been corroborated in a study by Khan R et al too.¹² Various other studies have supported similar neonatal outcomes in their results.^{13,14}

CONCLUSION

This study has shown prevalence of GDM and also concluded various major maternal and neonatal outcomes of the disease. These findings lay stress on the fact that early diagnosis and treatment of GDM are important factors to prevent these outcomes.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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