

## Original Research

### Assessment of gestational diabetes mellitus among women attending antenatal care

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#### ABSTRACT:

**Background:** GDM is defined as glucose intolerance of varying degrees with onset or first recognition during pregnancy. The present study was conducted to assess prevalence of gestational diabetes mellitus among women attending antenatal care. **Materials & Methods:** 80 pregnant women were included. Parameters such as education level, parity, family history of diabetes and/or hypertension and past history of GDM were recorded. Various risk factors were recorded. **Results:** Age group 16-20 years had 18, 21-25 years had 34, 26-30 years had 18 and >30 years had 10 patients. BMI <18.5 Kg/m<sup>2</sup> was seen in 28, 18.5-24.9 Kg/m<sup>2</sup> in 40 and >25 Kg/m<sup>2</sup> in 12 patients. Parity 0 was seen in 42, 1 in 31, 2 in 4 and >3 in 3 patients. The difference was significant (P < 0.05). **Conclusion:** risk factors for gestational diabetes mellitus were BMI >25 kg/m<sup>2</sup>, past history of GDM, family history of HTN, family history of DM and age >25 years.

**Key words:** gestational diabetes mellitus, hyperglycemia, family

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#### INTRODUCTION

GDM is defined as glucose intolerance of varying degrees with onset or first recognition during pregnancy.<sup>1</sup> Prevalence of gestational diabetes mellitus varies widely. Depending on the population studied and the diagnostic test employed, prevalence may range from 2.4 to 21% of all pregnancies. In India, it is difficult to predict any uniform prevalence levels because of wide differences in living conditions, socioeconomic levels and dietary habits.<sup>2</sup> The prevalence of diabetes mellitus (DM) is increasing worldwide and more in developing countries including India. The increasing prevalence in developing countries is related to increasing urbanization, decreasing levels of physical activity, changes in dietary patterns and increasing prevalence of obesity.<sup>3</sup> As women with gestational diabetes mellitus (GDM) and their children are at increased risk of developing diabetes mellitus in future, special attention should be paid to this population especially in developing countries.<sup>4</sup> The consequences of

unmanaged GDM in pregnancy can be severe both to the mother and the newborn and includes an increased risk for Preeclampsia, hydramnios, fetal macrosomia, fetal organomegaly, birth trauma, caesarean section, obstructed labor, perinatal mortality, neonatal respiratory problems and metabolic complications (hypoglycemia, hyperbilirubinemia, hypocalcemia), increased risks of miscarriage and congenital anomalies which can be especially serious in low-resource settings.<sup>5</sup> The present study was conducted to assess prevalence of gestational diabetes mellitus among women attending antenatal care.

#### MATERIALS & METHODS

The present study consisted of 80 pregnant women. All gave their written consent for the participation in the study.

Data such as name, age etc. was recorded. Parameters such as family history of diabetes and/or hypertension, education level, parity and past history of GDM were recorded. American Diabetes

Association (ADA) criteria for 75 g 2-h OGTT was used for diagnosing GDM. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

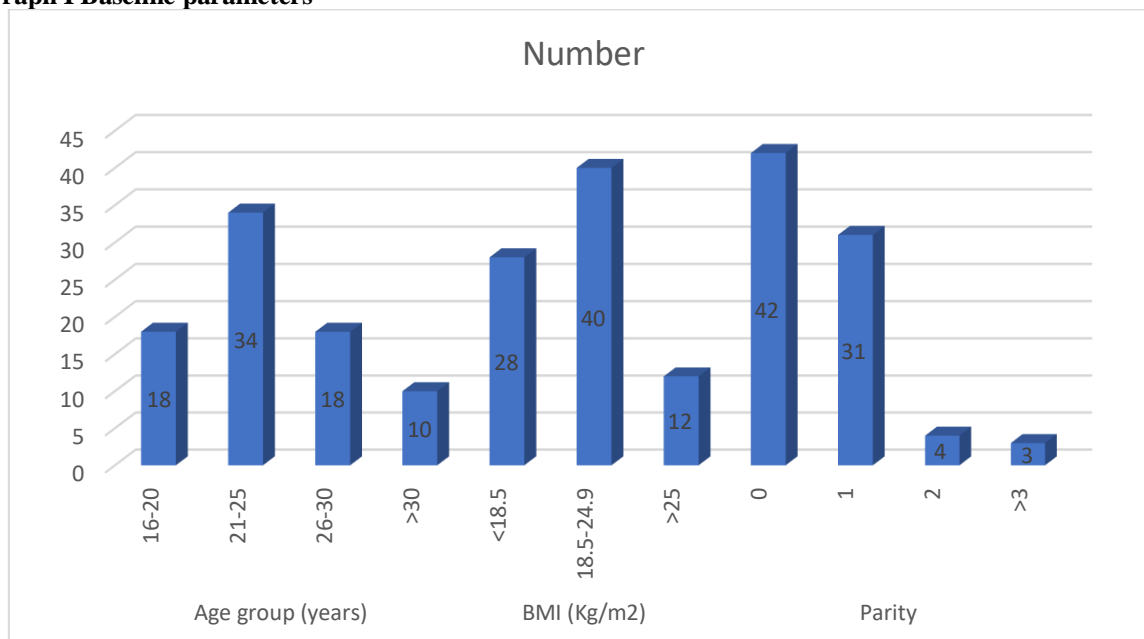
**RESULTS**

**Table I Baseline parameters**

Parameters	Variables	Number	P value
Age group (years)	16-20	18	0.82
	21-25	34	
	26-30	18	
	>30	10	
BMI (Kg/m <sup>2</sup> )	<18.5	28	0.05
	18.5-24.9	40	
	>25	12	
Parity	0	42	0.01
	1	31	
	2	4	
	>3	3	

Table I, graph I shows that age group 16-20years had 18, 21-25 years had 34, 26-30 years had 18 and >30 years had 10 patients. BMI <18.5Kg/m<sup>2</sup> was seen in 28, 18.5-24.9Kg/m<sup>2</sup> in 40 and >25Kg/m<sup>2</sup> in 12 patients. Parity 0 was seen in 42, 1 in 31, 2 in 4 and >3 in 3 patients. The difference was significant (P< 0.05).

**Graph I Baseline parameters**



**Table II Odds ratio for risk factors found to be associated with GDM**

Parameters	Percentage	Odds ratio	P value
Age >25 years	26%	3.2	0.01
BMI >25 kg/m <sup>2</sup>	12%	4.9	0.03
Past history of GDM	4%	22.4	0.02
Family history of HTN	12%	2.3	0.05
Family history of DM	25%	2.4	0.01

Table II shows positive correlation of age >25 years, BMI >25 kg/m<sup>2</sup>, past history of GDM, family history of HTN, family history of DM with GDM was observed. The difference was significant (P< 0.05).

**DISCUSSION**

Diabetes is a complex metabolic disorder characterized by chronic hyperglycemia. There are different types of diabetes: Type I Diabetes Mellitus (T1DM), Type II Diabetes Mellitus (T2DM) and Gestational Diabetes Mellitus (GDM). The number of

people with diabetes is steadily increasing globally in recent decades. The prevalence is growing most rapidly in low- and middle-income countries. Associated risk factors such as being overweight or obese are also increasing.<sup>6</sup>The present study was

conducted to assess prevalence of gestational diabetes mellitus women attending antenatal care.

We found that age group 16-20 years had 18, 21-25 years had 34, 26-30 years had 18 and >30 years had 10 patients. BMI <18.5 Kg/m<sup>2</sup> was seen in 28, 18.5-24.9 Kg/m<sup>2</sup> in 40 and >25 Kg/m<sup>2</sup> in 12 patients. Parity 0 was seen in 42, 1 in 31, 2 in 4 and >3 in 3 patients. Despite serious complications, the diagnosis of GDM is not performed until the late second or early third trimester, allowing only a shorter duration for interventions.<sup>7,8</sup> However, an earlier identification of the risk group might be beneficial to reduce morbidities (such as large for gestational age offspring) through lifestyle modification, as previously shown in obese patients. This might be achieved by measuring biochemical predictors such as fasting plasma glucose (FPG) and glycosylated hemoglobin (HbA1c), or other laboratory parameters of glycemic condition like fasting insulin (FI) or fasting C-peptide (FCP). Another approach for an early risk assessment is to evaluate the extent of metabolic alterations by analyzing the amount of insulin sensitivity and secretion.<sup>9,10</sup> This might be done using the hyperinsulinemic-euglycemic clamp, frequently-sampled intravenous glucose tolerance test, or dynamic indices based on oral glucose tolerance test (OGTT) measurements. Although these examinations could provide detailed insights on the pathophysiological processes besides an altered glucose metabolism, they are rather time consuming and expensive.<sup>11,12</sup>

We observed a positive correlation of age >25 years, BMI >25 kg/m<sup>2</sup>, past history of GDM, family history of HTN, family history of DM with GDM. One of the major advantages is both FPG and HbA1c could be used for detecting diabetes already at the first antenatal visit (i.e., if FPG exceeds 125 mg/dL [6.9 mmol/L] and HbA1c exceeds 6.4% [47 mmol/mol]). However, it is an ongoing matter of debate if the concentration below these thresholds could be used for diagnosing GDM (which could be regarded as a transient "prediabetic" state of altered glucose metabolism) before 24 weeks of gestation as well. Although this approach is currently not supported by healthcare organizations due to lack of evidence, most authors agree that the predictive value of laboratory assessments needs further evaluation to allow an accurate risk stratification at the beginning of pregnancy. Previous studies have assessed the association between first trimester FPG and GDM manifestation in 24 and 28 weeks of pregnancy using the IADPSG definition and observed concordance measures (i.e., ROC-AUC values) between 61.4% and 65.4%.<sup>13,14</sup>

The limitation the study is small sample size.

## CONCLUSION

Authors found that risk factors for gestational diabetes mellitus was BMI >25 kg/m<sup>2</sup>, past history of GDM,

family history of HTN, family history of DM and age >25 years.

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