Risk factor and outcome with Gestational Diabetes Mellitus (GDM): A Cross-sectional Analysis

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Abstract—*Gastational diabetes Mallitus (GDM) is a condition in pregnancy which may result bad maternal and neonatal outcomes. So this study was aimed to find out various risk factors associated with GDM. This study was conducted 500 females of 2nd and 3rd trimester pregnancy. They underwent GCT (Glucose Challenge Test) with 50 gm of glucose load which was followed by GTT (Glucose tolerance test) with 75 gm glucose recommended by WHO after 72 hrs of GCT irrespective of result of GCT. Out of 500 pregnant women 27(5.4%) women are diagnosed as GDM. In women with GDM gravida ≥3, age >25 years and positive family h/o of diabetes were found with high proportion of GDM. PIH, preeclampsia and recurrent infections are most common antenatal complication seen in GDM group. It can be concluded from this that universal screening should be done for early diagnosis of GDM so complication related to tit can be controlled and bad pregnancy outcomes may be prevented.*

Keywords: Gastational diabetes Mallitus (GDM), Risk factors, Pregnancy outcomes.

I. INTRODUCTION

Gestational diabetes mellitus (GDM) is defined as carbohydrate intolerance of varying severity with onset or first recognition during pregnancy.[1] Early diagnosis of gestational diabetes is important, because of the increased risk of adverse maternal and feto-neonatal outcomes. In addition, GDM also confers a future risk of type 2 diabetes to mothers and their fetus.[2]

Gestational diabetes mellitus affects about 7% of all pregnancies worldwide and recent studies have reported an increase in the prevalence in last two decades.[3-7] In India, the prevalence ranges from 6% to 9% in rural and 12-21% in urban areas, with most studies being done in either South or North India.[8-10]

Unfortunately, GDM has common signs or symptoms and can be diagnosed only through the use of laboratory tests. However, for the detection and diagnosis of GDM, controversy concerning optimal strategy still continues.

II. METHODOLOGY

This cross-sectional analytic study was carried out in the department of Gynecology and Obstetrics at Rajkiya Mahila Chikitsalaya, JLN Medical College, Ajmer and associated hospitals, during period from November 2014 to July 2016.

The present study was undertaken on 500 pregnant women attending the outpatient door (OPD) department. These women were selected randomly by systemic random sampling.

Pregnant women with singleton or multiple pregnancies in second and third trimester were included in this study and women with history of overt diabetes, intake of drugs that affects glucose metabolism like corticosteroids or progesterone and who refused to undergo screening and diagnostic test were excluded from the study. Finally 500 pregnant eligible women were included in this study.

Procedure of study: Pregnant women under study underwent detailed clinical examinations including evaluation of risk factors for GDM.

They were given 75gm oral glucose tolerance test (GTT) recommended by WHO and venous blood sample was collected after 2 hrs.

As per WHO diagnostic criteria, pregnant women having 2 hr plasma glucose >140 mg/dl were served as cases and those not diagnosed as GDM served as controls for study.

All the patients were closely followed during antenatal, intrapartum period. Any complications if occurred during these periods were recorded in both the groups. The outcomes of pregnancy were recorded in both the groups.

A percent wise comparison was made for various parameters between the two groups. Risk factor associations were found with the help of test of significance i.e. Chi square test in qualitative parameters and Unpaired 't' test in quantitative parameters.

III. RESULT

Out of 500 pregnant women, 47.8% women were seen in the age group of 21 - 25 years , 17% were < 20 yr, 24.6% were 26- 30 yrs, 7.8% were 31-35yrs, 2.8% were > 36 yrs. (Figure 1)

Out of 500 pregnant women 112 (22.4%) were primigravida, 155 (31%) were second gravid, 134 (26.8%) were third gravid and 99 (19.8%) were fourth gravida and above. (Figure 2)

Figure 1

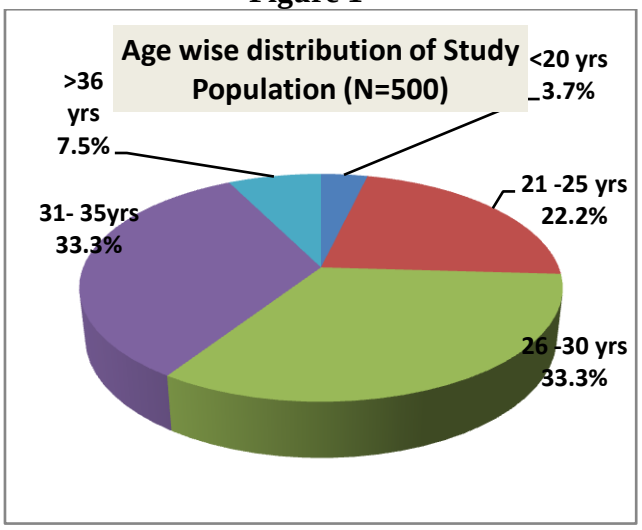
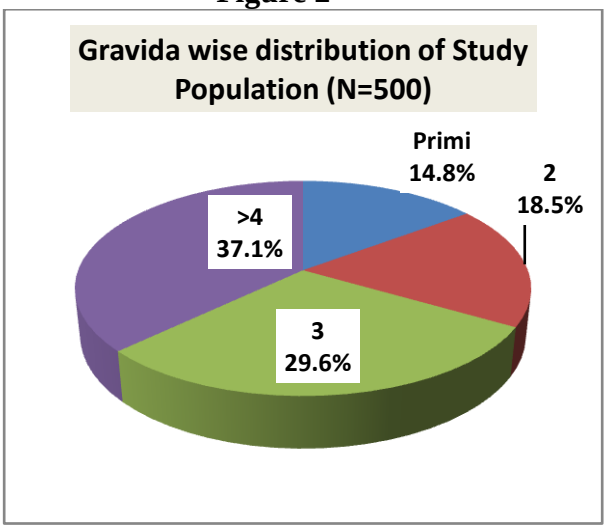


Figure 2



In this study, out of 500 women, 27 women (5.4%) were diagnosed as GDM as per the WHO diagnostic criteria and remaining 473 (%) were non GDM. (Figure 3)

Out of 27 GDM women, 5 had no risk factor but 22 (81.5%) type of risk factors. (Figure 4)

Figure 3

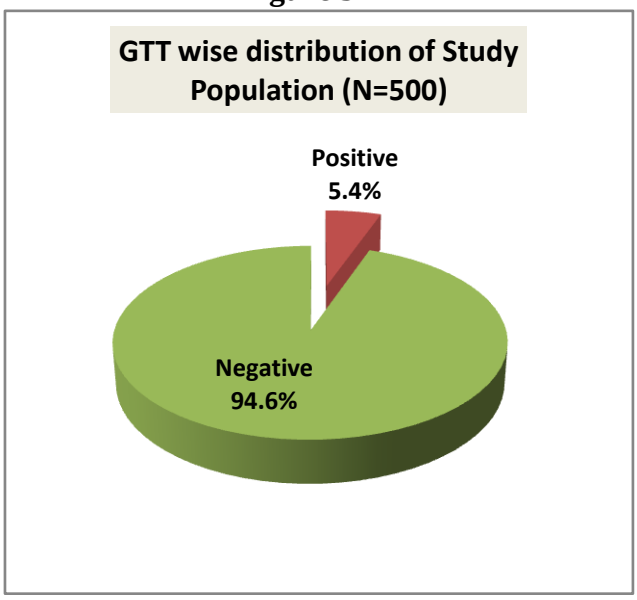
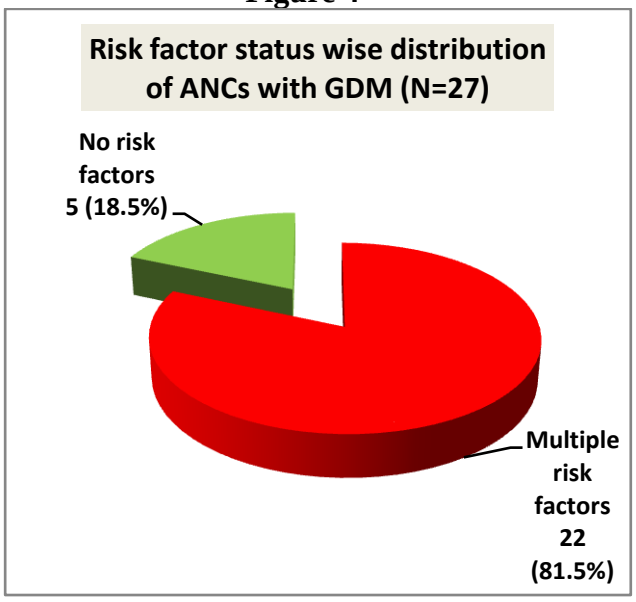


Figure 4



Among the historical risk factors, family history of diabetes mellitus was the most common risk factor present in 51.9% of these ANCs with GDM followed by H/o pre-eclampsia, H/o still birth, H/o recurrent abortions, H/o unexplained neonatal loss and H/o congenital anomaly in previous baby. (Table 1)

Table 1
Historical Risk factors with ANCs with GDM (N=27)

S. No.	Historical risk factor	Number	Percentage
1	**Family H/o DM**	14	51.90%
2	**H/O PIH/ Preeclampsia**	6	22.20%
3	**H/O still birth**	5	18.50%
4	**H/O recurrent abortions**	3	11.10%
5	**H/O Unexplained neonatal loss**	2	7.40%
6	**H/O congenital anomalies in previous baby**	2	7.40%
7	**Past H/O Macrosomia**	1	3.70%

Among the clinical risk factors age >25 yrs was the most common risk factor present in 74.1% of these ANCs with GDM followed by PIH, obesity, recurrent infections and polyhydroamnios. (Table 2)

Table 2
Clinical Risk factors with ANCs with GDM (N=27)

S. No.	Clinical risk factor	Number	Percentage
1	**Age >25**	20	74.10%
2	**PIH**	13	48.10%
3	**Obesity**	10	37.10%
4	**Recurrent infections(Candidiasis, UTI, vaginitis)**	5	18.50%
5	**polyhydroamnios**	2	7.40%

Among the antenatal complications, PIH/preeclampsia, Recurrent infections and malpresentations were more commonly found with GDM group than with the control group but it was found significant only in PIH/preeclampsia. (Table 3)

Table 3
Comparison of Ante Natal complications in ANCs with GDM and ANCs without GDM group

S. No.	Ante Natal complications	GDM group		Non- GDM group		P Value
		No.	%	No.	%	
1	**PIH /Preeclampsia**	13	48.1%	54	11.4%	< 0.001
2	**Recurrent Infections**	5	18.5%	54	11.4%	0.420
3	**Preterm Labour**	3	11.1%	60	12.7%	0.953
4	**Malpresentations**	3	11.1%	24	5.1%	0.362
5	**Polyhydroamnios**	2	7.4%	30	6.3%	0.854
6	**IUGR**	2	7.4%	30	6.3%	0.854

Out of 27 GDM women, 32 were delivered during study period and likewise out of 473 non GDM women, 415 were delivered during study period. The proportion of caesarean section was 7(30.4%) in GDM and 96(23.1%) in control group which was not found at significant difference. (Table 4)

Table 4
Comparison of modes of delivery in ANCs with GDM and ANCs without GDM group

S. No.	Modes of Delivery	GDM group		Non- GDM group	
		No.	%	No.	%
1	**Vaginal**	16	69.6%	319	76.9%
2	**LSCS**	7	30.4%	96	23.1%

Chi-square = 0.304 with 1 degree of freedom; P = 0.581

IV. DISCUSSION

This present study found GDM in 5.4% of ANCs. Various studies conducted in different regions of the country also reported their observations well in resonance with this study. Zargar et al[7] reported prevalence of GDM as 3.8% among kashmiri women and Verma et al[8] reported 6.7% prevalence in rural area of Jammu. In another community based study i.e study conducted by Seshiah et al[9] found prevalence of GDM in urban, semiurban and rural area of south India as 17.8%, 13.8% and 9.9%.

In the present study, the mean age of the patients was 24 years. This is comparable to the mean age of the pregnant women in the study conducted by Seshiah et al[9], which was 23±4 years.

Almost all ANCs with GDM belong to incipient type 2 DM, the usual age for onset of which is age 40 years. It is therefore expected that risk of GDM would increase with age. This was clearly seen in the present study as 33.3% of women with GDM were between 26 -30 years and 40.8% women with GDM were above 30 years of age. This age wise distribution was comparable with other studies which also show that the proportion of GDM increases with age as shown in table below.

Table 5
Age wise distribution of proportion of Diabetes in various studies

Age group	Seshiah et al[8]	Present study
≥ 20	14.5%	3.7%
21-25	13.7%	22.2%
26-30	19.5%	33.3%
≥ 30	25%	40.8%

It was found in this study that age > than 25 yrs and family h/o diabetes mellitus were found to be the most prevalent risk factors in ANCs with GDM followed by H/o pre-eclampsia, H/o still birth, H/o

recurrent abortions, H/o unexplained neonatal loss and H/o congenital anomaly in previous baby. Other studies[7-9] also had reported well comparable findings.

V. CONCLUSION

In present study the GDM was found in 5.4% of ANCs. Among these ANCs with GDM majorities were more than 25 yrs of age and with family H/o diabetes. Only 5% were without complications but majority were with complications. PIH/preeclampsia being the commonest antenatal complications which was significantly more when compared control group (48.1% v/s 11.4%).

With universal screening, early diagnosis, strict monitoring and diet management GDM can be found earlier and manage better to control. By achieving euglycemia complications related to it can be minimized which may result in better maternal and fetal outcome.

CONFLICT OF INTEREST

None declared till now.

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