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# Clinical study of fetomaternal outcome of diabetes mellitus in pregnancy

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**Abstract**
The fetomaternal outcome of pregnancy with gestational diabetes mellitus (GDM). All antenatal women were screened by DIPSI method. Antenatal patients with abnormal OGCT were identified and followed up till 6weeks postpartum. Mode of delivery, maternal and neonatal complications and postnatal follow up of women were noted.

**Keywords:** birth weight, asphyxia, insulin, meal plan, operative delivery, macrosomia

## Introduction
Gestational diabetes mellitus (GDM) is defined as carbohydrate intolerance of variable severity with an onset or first recognition during pregnancy and develops in around 15-17 % of all pregnancies. Women with gestational diabetes are found to have a diminished insulin secretion by pancreas/body and pregnancy induced insulin resistance primarily present due to counter hormones. Normal pregnancy is considered to be a diabetogenic state characterized by increased rate and amount of insulin release, associated with decreased sensitivity to insulin at cellular levels. Many of the changes are results of the progressive rise in the levels of estrogen, progesterone, human placental lactogen, cortisol and prolactin as pregnancy advances .Many of these hormones are insulin antagonists, causing insulin resistance in the mother and cause abnormal glucose tolerance in some women rendering them to develop gestational diabetes.
The prevalence of GDM varies from 4% to 14% depending on the population and the diagnostic methods performed. In India, rates of GDM are estimated to be 10-14.3% which is much higher than the west. In India, because of ethnicity, universal screening is recommended by Govt of India. Universal screening of all patients attending antenatal clinic by doing OGCT with 75gm glucose is done at the first antenatal visit.

**Dipsi criteria:** Testing for GDM at 1st antenatal visit. 75gm oral glucose was given. 2hr plasma glucose value is checked. 2hr PG $\geq$140 mg/dl is considered as GDM. If 2hr PG <140 mg/dl, repeat testing at 24-28weeks and at 32-34 weeks.

**Acog guidelines for postpartum testing**
FBS or 2hr OGTT is done at 6-12 weeks postpartum.

| | | |
|---|---|---|
| FBS $\geq$126 or 75g OGTT $\geq$ 200 | = | Diabetes |
| FBS 100-125 or 75g OGTT = 140-199 | = | Impaired Glucose Tolerance<br>Yearly assessment of glycemic status |
| FBS < 100 or 75g OGTT < 140 | = | Normal<br>Assess glycemic status every 3 years. |

## Aim of Study
To assess the fetomaternal outcome of pregnancy with gestational diabetes mellitus (GDM).

## Primary objective
Antenatal patients with abnormal OGCT were identified and followed up till 6weeks postpartum. The prevalence of GDM during my study period is analyzed.

## Secondary objective
Evaluate the maternal and perinatal morbidity in gestational diabetes mellitus complicating antenatal women.

## Materials and Methods

### Duration of Study
Two Years, July 2015 To July 2017.

### Sample Size
700 patients.

### Study Design
Cross Sectional Study.

### Methodology
All antenatal women were subjected to DIPSI Method:
75g oral glucose challenge test (OGCT) at their first booking visit.

- Single step procedure. Serves as both screening and diagnostic procedure.
- Pregnant women need not be fasting.
- Blood sugar 2hours post glucose (75gms) $\geq$ 140mg/dl by GOD-POD method were diagnosed as GDM.

### Subject Selection
### Cases
### Inclusion Criteria
Antenatal patients of five groups:

a. GDM on Meal plan.
b. GDM on Oral Hypoglycaemic Drugs.
c. GDM on Insulin.
d. GDM on Oral Hypoglycaemic Drugs and Insulin.
e. Normal antenatal women without GDM were identified and followed up for fetomaternal outcome from first antenatal visit to 6weeks postpartum.

### Exclusion criteria
a. Unwilling to participate in the study
b. Pregnant women with pre-existing diabetes
c. Twin pregnancy/ abnormal lie or other known complication
d. Pregnant women who gave birth at home or in another institution.

### Controls
Pregnant women whose gestational evaluation has not presented any clinical or laboratory alteration compatible with GDM.

### Observations
### Operative delivery group
Operative delivery was found to be common in women with OGCT >124.

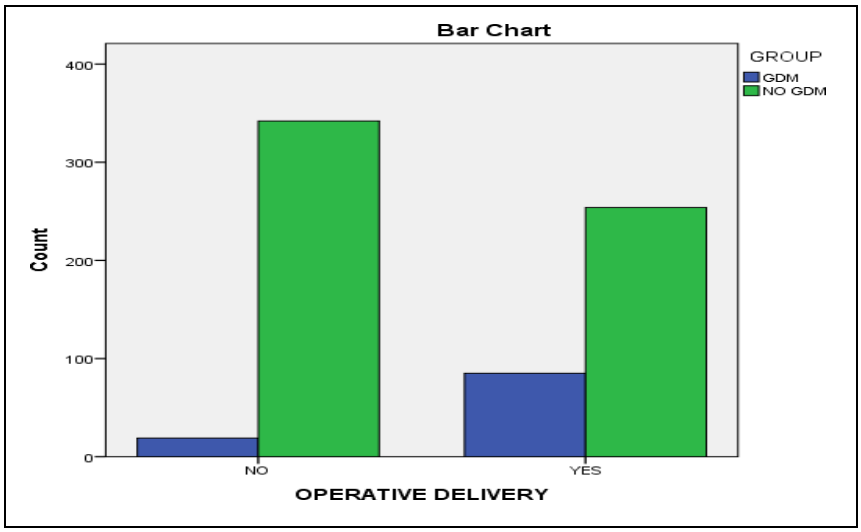


**Fig 1:** Term/Preterm Group

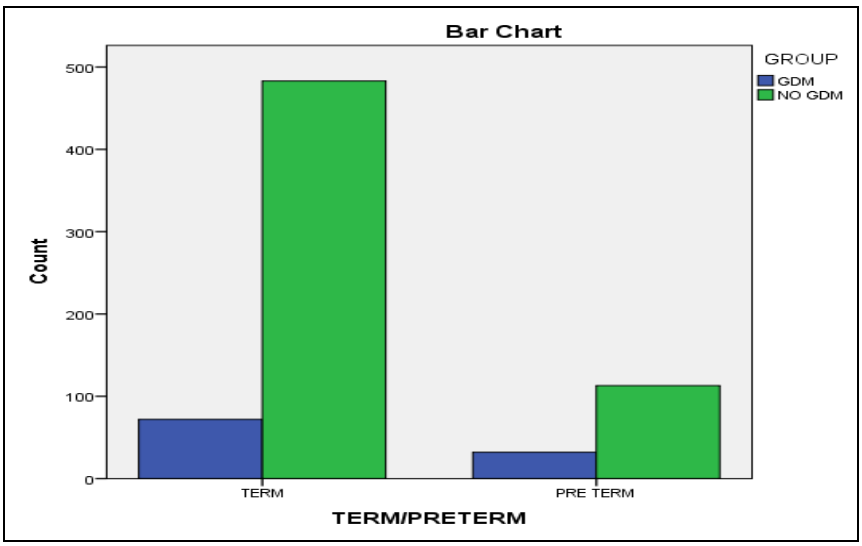


**Fig 2:** Preterm babies were common in women with OGCT > 172.

**Results**

In this study, the prevalence of GDM was 14.85% Prevalence of GDM was more in the age group 26-30yrs (6.6%) In our study GDM was prevalent among multigravida in primi the prevalence was 6%, in second gravida 6% and in 3rd gravida 1.7%. No significant difference in the rate of abortions was noted. Prevalence of abortions was 75% among GDM women and 84.2% among non-GDM. Family history of diabetes mellitus was noted in 19.2% of our GDM women. Recurrence rate of GDM in women with previous history of GDM was found to be 11.5%BMI was directly linked with the incidence of GDM. In our study 13.5% were normal weight, 53.8 % were overweight, 30% were obese, 2.7% were morbidly obese. Operative delivery was found to be increased among the GDM women in our study (81.7%) GDM women were found to have increased risk of association with PIH (17.3%) when compared to the non GDM group (5.7%) Macrosomia in babies was found in about 7.7% of GDM women in our group. In our postnatal follow-up it was found that 27.8% of the women turned into type 2 diabetes mellitus.

**Discussion**

GDM prevalence worldwide was from 4% to 14%. In this study, the prevalence of GDM was 14.85%. There was a prevalence of GDM of 6.6% in antenatal women of age group 26-30years. In primi, the prevalence was 6%, in second gravida 6% and in 3rd gravida 1.7%. In this study, there was an equal prevalence of abortion in both GDM (75%) and non GDM (84.2%) patients. In 19.2% of the GDM patients, there was a positive family history. The recurrence rate of GDM in antenatal women with previous history of GDM was found to be around 11.5% in our study 13.5% were normal weight, 53.8 % were overweight, 30% were obese, 2.7% were morbidly obese. The most common maternal complication seen in GDM mothers was gestational hypertension (17.3%). Increased caesarean rates were noted in the GDM group. 28.8% compared to normal group 9.4% Prevalence of preterm birth was 30.8% among GDM women and 19% among non GDM women. Macrosomia was found in 7.7% of GDM women. Macrosomia was found to be common in women with OGCT value >133 of these GDM patients, 9.1% were complicated with gestational hypertension/ pre- eclampsia. LBW (IUGR) was common in women with OGCT < 106. Respiratory distress syndrome (RDS) was found in 23.1% of neonates of GDM mothers. The cut off value of OGCT was found to be $\geq$120. In the study, by doing OGCT antenatally, out of the 700 patients screened, 104 patients were diagnosed as GDM. These patients were treated and followed up till delivery. These patients were followed up to 6-12 weeks postnatally by doing OGTT. Out of the 104 GDM patients followed up postnatally, 75 patients were under meal plan and were asked to follow up 3 yearly once with glycemic status.14 patients were under oral anti hypoglycemic drugs and 15 patients were under insulin. These 29 patients were asked to follow up yearly with glycemic status.

**Conclusion**

The prevalence of the GDM in the current study is 14.85% The risk factors for GDM are increased maternal age, multiparity, obesity, poor past obstetric history, family history of diabetes, previous history of GDM. In this study there was increased association of GDM with polyhydramnios, pre-eclampsia, operative delivery, preterm birth. There was a higher risk of intra uterine death, congenital malformation, respiratory distress syndrome, transient tachypnoea of new born, macrosomia, neonatal hypoglycemia in neonates. Women with GDM and their off springs are at increased risk of developing type 2 diabetes later in life. In our postnatal follow-up it was found that 27.8% of the women turned into type 2 diabetes mellitus. Hence considering the risk to the mother and the baby, both during pregnancy and perinatal period, screening of GDM and identifying those at risk is important for subsequent management and reduction of maternal and perinatal morbidity and mortality.

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