

## Clinico-epidemiological study of gestational diabetes in a tertiary care hospital of Karnataka



### Medical Science

**KEYWORDS :** clinico-epidemiological study, gestational diabetes, outcome.

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### ABSTRACT

**Background:** Prevalence of gestational diabetes mellitus (GDM) on the rise globally and in India. Apart from familial and genetic factors, rise is largely attributed to urbanization, sedentary lifestyle, unhealthy dietary patterns and increasing prevalence of obesity. A range of maternal and foetal complications in GDM are reported. Owing to high risk of morbidity, mortality and overt diabetes in future this group requires a special attention.

**Objective:** To assess the maternal and foetal outcomes among GDM mothers delivered in Yenepoya Medical College Hospital, Mangalore.

**Methodology:** A retrospective 5 years (2009-2013) record analysis was done for GDM mothers delivered in study hospital. Demographic, anthropometric, obstetric, biochemical, maternal and foetal complications were studied. Data was analysed using Statistical Package for Social Sciences Version 16. Descriptive statistics was used to express the results.

**Results:** A total of 100 GDM cases were studied. Mean age was 29±4.47 years. Mean pre-pregnancy BMI was 26.2±4.6 kg/m<sup>2</sup> and 31% and 25% were overweight and obese, respectively. Nearly 40% of them had family history of diabetes and 16 multiparas had history of GDM in previous pregnancy. Almost 2/3rds of them were delivered by caesarean section. As much as 60% delivered before 38 weeks. Neonatal hypoglycaemia (28%), low birth weight (10%), macrosomia (7%), congenital anomalies (12%) RDS (8%) and hypocalcemia (4%) were the neonatal complications.

**Conclusion:** Overweight, obesity, family history of diabetes were the common GDM risk factors in this study. Hypoglycemia and congenital anomalies were quite common among neonates. Early diagnosis and apt intervention could avert these adverse outcomes.

### INTRODUCTION

- Gestational Diabetes Mellitus (GDM) is defined as carbohydrate intolerance of variable severity, with onset or first recognition during the present pregnancy
- Pregnancy affects both the maternal and fetal metabolism and even in non-diabetic women exerts a diabetogenic effect.
- The prevalence of GDM in some ethnic groups ranges from 1 to 15%
- 2.2% in South America to 15% in the Indian subcontinent. (5)
- Most women who have GDM give birth to healthy neonates, especially when their blood glucose levels are well controlled
- In some cases, GDM can negatively affect the pregnancy and result in adverse perinatal outcome like macrosomia, birth trauma, shoulder dystocia and higher rates of cesarean section (2)

### OBJECTIVE

To assess the maternal and fetal outcomes of pregnancy in mothers with gestational diabetes mellitus (GDM)

### MATERIAL & METHODS

A retrospective hospital based study was carried out in the department of obstetrics & gynecology of Yenepoya medical college; a tertiary health care referral centre in Mangalore, Karnataka over a period of 5 years from January 2009 to December 2013.

- Antenatal and perinatal data obtained from the patients' medical records and hospital database included: age, parity, BMI, gestational age at delivery, antenatal complications, mode of delivery, and birth weight of the baby, as well as maternal and neonatal morbidity and mortality.

- Patients diagnosed to have GDM were put on an 1800-kcal diabetic diet for 5 days followed by a blood sugar profile (BSP) to measure the fasting blood sugar and 2-hrs postprandial-breakfast, lunch and dinner serum glucose levels. If the fasting blood sugar was ≤100 mg/dL and the postprandial blood sugar levels <125 mg/dL; the patients were managed by diet alone. Patients with higher values were treated with subcutaneous injections of regular and NPH insulin

- Inclusion criteria
- pregnant women with gestational diabetes
- Exclusion criteria
- Pregnant women receiving steroids in any form
- Multiple gestation
- Known medical disorder
- All selected outcome variables were recorded on a pre tested pro forma in the hospital & the data analyzed
- Findings were analyzed with special emphasis on maternal outcome & fetal outcome.
- Statistical Package for Social Sciences Version 16. was used for analysis. Descriptive statistics was used to express the results.

### Results

- 95 GDM mothers who met all the parameters in the inclusion and exclusion criteria were taken into consideration in this study
- Mean age was 29±4.47 years
- Mean pre-pregnancy BMI was 26.2±4.6 kg/m<sup>2</sup>
- Mean birth weight was 3.098± 0.62 kg
- Among the risk factors , family history of diabetes was found to be 43.20%, HbA1c > 6.5% - 31.60% , pre-pregnancy overweight 32.60%, multigravida 81.10% and pre-pregnancy obesity 26.30% .
- All these were pointing towards the recent shift in lifestyle

and also unawareness indirectly stating the poor educational back up.

- In our study, patients were reported to have co-existing complications like gestational hypertension ( 10.50%), polyhydraminos (8.4%) and PROM (7.40%), thus increasing the morbidity.
- The incidence of LSCS and delivery was 46.40 and 38.90 respectively, where operative interfare was on the higher side.
- Neonates born to women with GDM had significantly higher rates of hypoglycaemia (18.06%) , hyperbilirubinaemia ( 30.50%), macrosomia (> 4 kg ) – 8.40% , RDS – (8.40 %) and NICU admission of 25.30%.

These values are again indicative of uncontrolled diabetes, which in our study was mainly due to poor patient compliance. Hence it cannot be emphasized enough the importance of creating a large scale public awareness is the need of the hour in India.

## DISCUSSIONS

- GDM has been recognized as a clinical entity for the past 50 years. Early studies have strongly indicated untreated carbohydrate intolerance during pregnancy to be associated with higher rates of maternal morbidity and perinatal morbidity and mortality. The purpose of screening, treatment and management of GDM is to prevent stillbirth, and decrease the incidence of LGA babies, thereby reducing maternal and perinatal morbidity and mortality.
- The findings of the present study conform to those of other studies reported in the literature , that GDM patients are liable to have adverse pregnancy outcomes.
- In this study group GDM patients were older with mean age of 29+/- 4.47 years. Similar study done by sheshiah et al from south India, Tamil Nadu reported 25 years as a risk factor for GDM(13).
- In our study, 43.2% had family history of diabetes which was statistically comparable to 41.4% study done by patil et al in Indian subcontinent.
- In our study, a significant proportion with GDM were overweight( 32.6%) and obese (26.3%). Similar results were reported by kalra et from Rajasthan having 66.67% over

weight and 18.18% obese. (6)

- The CS rate of 46.4% in this series correlates with 42% reported by saxena et al yet another Indian study but lower than 79% found in kalra et al's study from rajasthan.(13 ,10)
- Some authors have reported that serious perinatal morbidity can be reduced with treatment of the mothers with GDM. Published, randomized clinical trials confirm that treating pregnant patients with even the mildest form of GDM can reduce the risk of common birth complications among the infants and blood pressure disorders in the mothers.(14)

## CONCLUSION

- Overweight, obesity, family history of diabetes were the common GDM risk factors in this study.
- Hypoglycemia and hyperbilirubinaemia were quite common among neonates. Early diagnosis and apt intervention could avert these adverse outcomes.
- In our study it was more commonly seen in multigravidas.
- Maternal age, parity and obesity along with fetal hyperglycemia are possible contributory risk factors for excessive fetal growth.
- Lifestyle interventions designed to reduce BMIs have the potential to lower GDM risk
- Public health efforts to promote recommended levels of physical activity and healthy eating habits among women of reproductive age should be intensified.
- GDM is recognized to be associated with increased rates of adverse maternal and neonatal outcomes, which are supported by the findings of this study.
- Even the mild form of GDM seems to have significant consequences for women and their offspring and is recommended to be aggressively treated

## TAKE HOME MESSAGE

- Awareness among the public about the maternal and fetal complications of gestational diabetes should be promoted
- In the present study 31% of patient had elevated hba1c that shows improper control of sugars that led to increased hypoglycaemia index in the fetuses

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