

## Pregnancy outcome among gestational diabetes mellitus patients


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**Background and Aim:** Though not all babies have birth defects there is still a high probability of congenital defects if the glucose level is not under control during pregnancy and also increased morbidity in terms of hypoglycemia, hyperbilirubinemia, and respiratory distress syndrome warranting NICU admissions. The objective of this study was to find out the maternal and perinatal outcome in patients with gestational diabetes mellitus. **Material and Methods:** An observational study was conducted among 400 pregnant women who came for antenatal checkups attending the OPD of the department of obstetrics and gynecology, the tertiary care institute of Gujarat, from June 2012 to November 2013. A detailed history including maternal age, parity, BMI, and clinical examination along with antenatal checkup was done. **Results:** Out of 400 antenatal women tested for OGTT using 75 grams of glucose, about 12.75% (51) of antenatal women developed GDM. Out of 51 GDM mothers, about 10% ie.,5 antenatal women had pregnancy-induced hypertension and only 2 developed polyhydramnios and preterm delivery in 11.76% of antenatal women with GDM Out of 51 babies, 19.6% of them had respiratory distress syndrome, 7.8% of the babies requiring NICU admissions because of hypoglycemia, hyperbilirubinemia, and hypocalcemia. **Conclusion:** Gestational diabetes mellitus was once thought to be a mild condition but now it carries significant short-term and long-term implications for the women and their offspring. Screening for diabetes is mandatory in preventing complications as strict glycemic control is necessary for preventing macrosomia and unexplained stillbirths.

**Keywords:** Gestational diabetes mellitus, Hyperbilirubinemia, Polyhydramnios, Pregnancy

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## Introduction

Gestational diabetes mellitus (GDM) is defined as glucose intolerance detected during pregnancy [1]. The prevalence of GDM is increasing and affects between 1 and 14% of all pregnancies, caused by a global increase in the number of women with obesity around reproductive age and by more stringent diagnostic criteria for GDM [1-4].

Untreated GDM is associated with an increased rate of neonatal and obstetric complications [5-7]. Adverse pregnancy outcomes have been shown to improve with timely diagnosis and treatment of GDM [8]. Gestational diabetes mellitus has been associated with an increased risk for pregnancy-induced hypertension (PIH) with relative risk ranges from 1.4 to 4.15 [8-12]. although some studies suggest that the relation between PIH and GDM is not well understood [13-14].

It also increases the rate of cesarean delivery by up to 57.4% and has a greater impact in cases of obesity and/or previous history of cesarean section [15-19]. The risk of induction of labor ranges from 33–38% [20-22], premature rupture of membranes (PROM), antepartum hemorrhage (APH), and postpartum hemorrhage (PPH) were associated with GDM [23-25].

Many studies report maternal and fetal complications with GDM but were flawed due to several confounding factors such as obesity, older maternal age, and various other co-morbidities [26].

Most convincing evidence of adverse pregnancy outcome in gestational diabetes was provided by Hyperglycaemia and adverse pregnancy outcome (HAPO) study done in nine countries [27]. GDM is important as it poses a risk to the pregnant woman, her fetus, and newborn baby. Maternal complications include pre-eclampsia, polyhydramnios, elevated rates of operative delivery, PROM, and a higher incidence of Type 2 DM later in life [28].

Fetal complications include spontaneous abortion, malformations, altered fetal growth, unexplained fetal demise, hydramnios whereas neonatal complications include respiratory distress syndrome, hypoglycemia, hypocalcemia, hyperbilirubinemia, long term impaired cognitive development, and risk of inheritance of DM in the future [29,30].

Though not all babies have birth defects there is still a high probability of congenital defects if the glucose level is not under control during pregnancy and also increased morbidity in terms of hypoglycemia, hyperbilirubinemia, and respiratory distress syndrome warranting NICU admissions.

The objective of this study was to find out the maternal and perinatal outcome in patients with gestational diabetes mellitus.

## Methods

An observational study was conducted among 400 pregnant women who came for antenatal checkups attending the OPD of the department of obstetrics and gynecology, tertiary care institute of Gujarat, from June 2012 to November 2013. All pregnant women with a singleton pregnancy were included in the study. A detailed history including maternal age, parity, BMI, and clinical examination along with antenatal checkup was done. Oral glucose tolerance test with 75 grams of glucose was given at 24 to 28 weeks of gestation. Patient was labeled as GDM when anyone value more than the following criteria (FBS > 92 mg/dl, one-hour glucose > 180 mg/dl, 2-hour glucose > 153 mg/dl). Initially, patients were started with a diabetic diet, if blood sugar was not controlled on diet insulin was started. Any antenatal complications including urinary tract infection, preeclampsia, polyhydramnios, and candidiasis were noted. Both maternal and perinatal outcome in GDM was noted.

### Statistical analysis

The recorded data was compiled and entered in a spreadsheet computer program (Microsoft Excel 2007) and then exported to the data editor page of SPSS version 15 (SPSS Inc., Chicago, Illinois, USA). For all tests, confidence level and level of significance were set at 95% and 5% respectively.

## Results

A prospective observational study was conducted among 400 antenatal mothers attending the OPD of the department of obstetrics and gynecology for one year. Among the 400 antenatal mothers' majority of them belong to upper lower socioeconomic status (65.5%). The mean age of the study participants was 27.12 years with a standard deviation of 3.12.

Out of 400 antenatal women tested for OGTT using 75 grams of glucose, about 12.75% (51) of antenatal women developed GDM.

Out of 51 GDM mothers, about 10% ie.,5 antenatal women had pregnancy-induced hypertension and only 2 developed polyhydramnios and preterm delivery in 11.76% of antenatal women with GDM (Table 1). Out of 51 GDM patients, about 49% (25) delivered vaginally which included instrumental deliveries too and the remaining 26 were delivered by lower segment cesarean section (Table 2).

Out of 51 babies, 19.6% of them had respiratory distress syndrome, 7.8% of the babies requiring NICU admissions because of hypoglycemia, hyperbilirubinemia, and hypocalcemia (Table 3).

**Table-1: Maternal complications in GDM.**

Maternal complications	Number	Percentage (%)
PIH	5	9.8
Polyhydramnios	2	3.9
Preterm delivery	6	11.76

**Table-2: Mode of delivery.**

Mode of delivery	Number	Percentage
Vaginal	25	49.01
LSCS	26	50.9

**Table-3: Neonatal complications.**

Neonatal complications	Number	Percentage (%)
RDS	10	19.6
Macrosomia	7	13.75
NICU admissions	4	7.8

## Discussion

Different studies have shown the prevalence of GDM varying from 3.8 to 21% in India. In surveys performed in various cities, the prevalence of GDM was 16.2% in Chennai, 15% in Thiruvananthapuram 21% in Alwaye, 18.8% in Erode, and 17.5% in Ludhiana [30,31]. The study done by Shridevi AS in Davangere, Karnataka reported a prevalence of 11.7%.<sup>32</sup> Some other scholars like Wahi et al. and Kalyani et al. documented a lower prevalence of 6.94% and 8.33% respectively [33,34]. Several maternal characteristics were associated with an increased risk of developing GDM namely maternal age, pre-pregnancy weight. Similarly, family history of type 2 diabetes was significantly higher in gestational diabetes patients which are following studies from Reece et al<sup>35</sup> Maternal complications like polyhydramnios were found in 3.9% of gestational diabetes patients, pregnancy-induced hypertension in 9.8% of antenatal women, which is similar to the study done by al - Hakeem et al where polyhydramnios was found in 2.2% women and preeclampsia in 5.3% [36].

Women with GDM were three times at high risk for PIH compared to their counterparts. The finding was consistent with several other studies [4-8,37,38] which reported that GDM increased the incidence of PIH. Similarly, another study done in Eastern Ethiopia revealed that mothers who had GDM were three times more likely to develop preeclampsia than women who had not. The association might be due to the nature of co-existing mutual risk factors, such as obesity, advanced maternal age, and family history of diabetes and hypertension [38]. In the present study, there is no significant difference in the mode of delivery which is similar to the study done by Nair et al. In the present study the leading cause for NICU admissions was hyperbilirubinemia followed by respiratory distress which is similar to the study done by Langer et al which shows the leading cause of NICU admissions being hyperbilirubinemia which is about 42% followed by respiratory complications in babies of GDM mothers which is about 32.3% [39-41].

## Conclusion

Gestational diabetes mellitus was once thought to be a mild condition but now the current study knows that it carries significant short-term and long-term implications for the women and their offspring.

## What does the study add to the existing knowledge?

Screening for diabetes is mandatory in preventing complications as strict glycemic control is necessary for preventing macrosomia and unexplained stillbirths.

## Author’s contribution

**Dr. Chetna R Vaghela:** Concept, study design **Dr. Vipul Nanjibhai Sarvaiya:** Manuscript preparation

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