

## Original Research

### Evaluation of pregnancy outcome in women with gestational diabetes mellitus

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#### ABSTRACT:

**Background:** Diabetes mellitus is a global health problem which cuts across all age groups, of both sexes. The present study was conducted to evaluate pregnancy outcomes in women with gestational diabetes mellitus. **Materials & Methods:** 95 pregnant women with gestational diabetes mellitus were included. Parameters such as parity, socioeconomic status (SES), family history of DM, and past history of GDM were recorded. Assessment of BMI, BP, fasting blood sugar, and oral glucose tolerance was done. **Results:** Parity was Primi in 42, 2nd gravida in 30, and 3<sup>rd</sup> gravida in 18. BMI <18 kg/m<sup>2</sup> was seen in 16, 18-24.9 kg/m<sup>2</sup> in 38, and >25 kg/m<sup>2</sup> in 36 patients. The difference was significant (P < 0.05). The mode of delivery was cesarean in 40 and vaginal in 50 cases. Complications found were hypoglycemia in 3, hyperbilirubinemia in 2, and transient tachypnoea in 5 patients. The difference was significant (P < 0.05). **Conclusion:** Vaginal delivery was the most common method of delivery. Transient tachypnoea, hypoglycemia, and hyperbilirubinemia were complications.

**Keywords:** hypoglycemia, hyperbilirubinemia, gestational diabetes mellitus

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#### INTRODUCTION

Diabetes mellitus is a global health problem which cuts across all age groups, of both sexes. Gestational diabetes mellitus (GDM) was first described as diabetes occurring “only during pregnancy, being absent at other times” by Duncan in 1982.<sup>1</sup> The frequency of diabetes in pregnancy is highly variable but generally reflects the underlying pattern of type 2 diabetes in the particular population. Hyperglycemia first detected in pregnancy during between 24-28 weeks which does not meet the criteria for overt diabetes is called GDM. Previously, diagnostic cut-off was validated by future risk of development of type 2 diabetes.<sup>2</sup>

Pregnancy is normally attended by progressive insulin resistance that begins near mid-pregnancy and progresses through the third trimester to levels that approximate the insulin resistance seen in individuals with type 2 diabetes.<sup>3</sup> The insulin resistance appears to result from a combination of increased maternal adiposity and the insulin-desensitizing effects of

hormonal products of the placenta. The fact that insulin resistance rapidly abates following delivery suggests that the major contributors to this state of resistance are placental hormones. The second point is that pancreatic  $\beta$  cells normally increase their insulin secretion to compensate for the insulin resistance of pregnancy.<sup>4</sup>

The International Association of Diabetes and Pregnancy Study Group (IADPSG) proposed more stringent diagnostic thresholds for GDM. These new diagnostic criteria (fasting plasma glucose level  $\geq$  5.1 mmol/l and/or 1-h plasma glucose level  $\geq$  10.0 mmol/l and/or 2-hours plasma glucose level  $\geq$  8.5 mmol/l) have been adopted by the American Diabetes Association in 2010, the World Health Organization (WHO) in 2013 and the International Federation of Gynaecology and Obstetrics in 2015.<sup>5</sup> The present study was conducted to evaluate pregnancy outcomes in women with gestational diabetes mellitus.

**MATERIALS & METHODS**

The present study consisted of 95 pregnant women with gestational diabetes mellitus. All subjects gave their written consent for the participation in the study.

Data such as name, age, etc. was recorded. Detailed history and a thorough clinical examination were

carried out. Parameters such as parity, socioeconomic status (SES), family history of DM, and past history of GDM were recorded. Assessment of BMI, BP, fasting blood sugar, and oral glucose tolerance was done. Data thus obtained were subjected to statistical analysis. P value < 0.05 was considered significant.

**RESULTS**

**Table I Baseline characteristics**

Parameters	Variables	Number	P value
Parity	Primi	42	0.05
	2 <sup>nd</sup>	30	
	3 <sup>rd</sup>	18	
BMI (kg/m <sup>2</sup> )	<18	16	0.04
	18-24.9	38	
	>25	36	

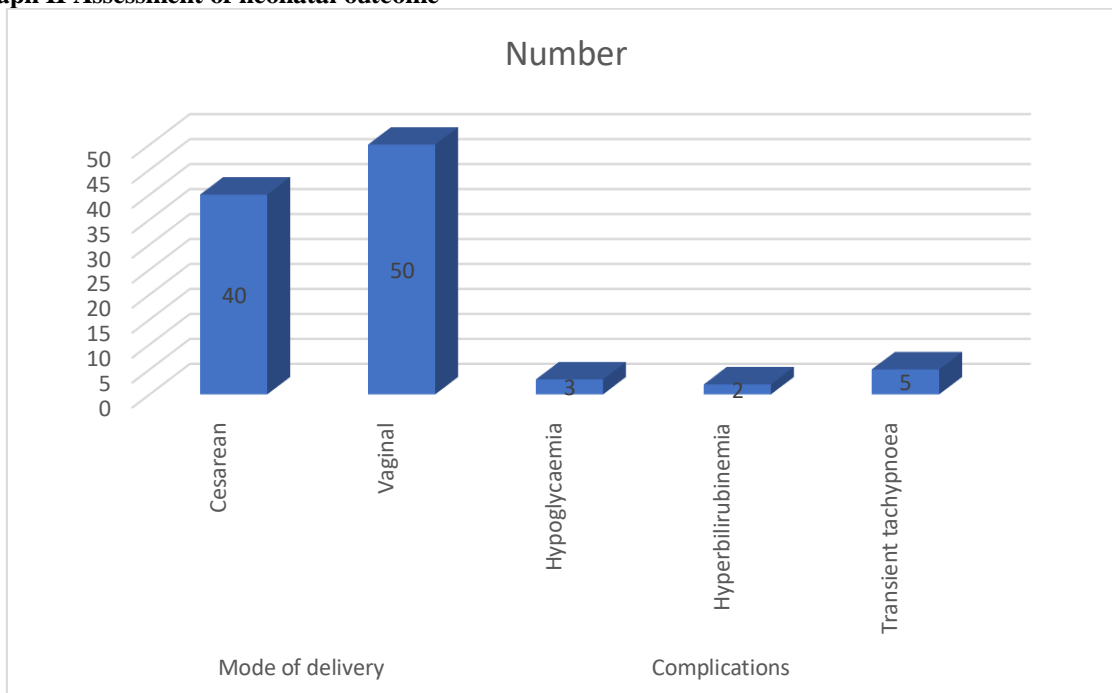
Table I shows that parity was Primi in 42, 2nd gravida in 30, and 3<sup>rd</sup> gravida in 18. BMI <18 kg/m<sup>2</sup> was seen in 16, 18-24.9 kg/m<sup>2</sup> in 38, and >25 kg/m<sup>2</sup> in 36 patients. The difference was significant (P < 0.05).

**Table II Assessment of neonatal outcome**

Parameters	Variables	Number	P value
Mode of delivery	Cesarean	40	0.85
	Vaginal	50	
Complications	Hypoglycaemia	3	0.04
	Hyperbilirubinemia	2	
	Transient tachypnoea	5	

Table II, graph II shows that the mode of delivery was cesarean in 40 and vaginal in 50 cases. Complications found were hypoglycemia in 3, hyperbilirubinemia in 2, and transient tachypnoea in 5 patients. The difference was significant (P < 0.05).

**Graph II Assessment of neonatal outcome**



**DISCUSSION**

Gestational diabetes mellitus (GDM) is defined as glucose intolerance detected during pregnancy.<sup>6,7</sup> 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. Untreated GDM is associated with

an increased rate of neonatal and obstetric complications.<sup>8,9</sup>The present study was conducted to evaluate pregnancy outcomes in women with gestational diabetes mellitus.

We found that Parity was Primi in 42, 2nd gravida in 30, and 3<sup>rd</sup> gravida in 18. BMI <18 kg/m<sup>2</sup> was seen in 16, 18-24.9 kg/m<sup>2</sup> in 38, and >25 kg/m<sup>2</sup> in 36 patients. Hakeem et al<sup>10</sup> found that the incidence of gestational diabetes mellitus was found to be 8.6%. There were 511 (74.6%) spontaneous vertex deliveries, and 148 (21.6%) were delivered by lower segment cesarean section. Maternal morbidity in these women was 1.2%. A total of 697 babies were delivered by these 685 women, out of whom 675 were singleton pregnancies, 9 sets of twins, and one set of quadruplets. 687 babies were born alive, 7 babies died in utero and 3 died in the neonatal period. The incidence of neonatal intensive care admission was 4.9%. The mean length of stay in the NICU was 16 days. The commonest cause of neonatal NICU admission was hyperbilirubinemia (41.2%). The risk factors for NICU admission were delivery by non-SVD procedure, preterm deliveries, and induction of labor.

We observed that the mode of delivery was cesarean in 40 and vaginal in 50 cases. Complications found were hypoglycemia in 3, hyperbilirubinemia in 2, and transient tachypnoea in 5 patients. Casey et al<sup>11</sup> in their study found that a total of 61,209 nondiabetic women with singleton cephalic pregnancies were delivered and 874 were diagnosed with class A<sub>1</sub> gestational diabetes. Women with class A<sub>1</sub> gestational diabetes were significantly older, heavier, of greater parity, and more often of Hispanic ethnicity. Hypertension (17 versus 12%), cesarean delivery (30 versus 17%), and shoulder dystocia (3 versus 1%) were significantly increased in these women compared with the general obstetric population. Infants born to women with class A<sub>1</sub> gestational diabetes were significantly larger (mean birth weight 3581 ± 616 versus 3290 ± 546 g, *P* < .001), and this accounted for the increased incidence of dystocia. The attributable risk for large for gestational age (LGA) infants due to class A<sub>1</sub> gestational diabetes was 12%.

Rosenn B et al<sup>12</sup> hypothesized that the rate of complications of pregnancy in women with insulin-dependent diabetes is higher than in nondiabetic women and is associated with poor glycemic control and microvascular disease. Women with diabetes had significantly higher rates of pregnancy-induced hypertension (PIH), polyhydramnios, pyelonephritis, preterm delivery and meconium-stained amniotic fluid. Poor glycemic control, particularly during the first and second trimesters of pregnancy, was associated with all complications, except pyelonephritis. Microvascular disease was associated with PIH and preterm delivery prior to 34 weeks.

Inkster et al<sup>13</sup> reviewed thirteen studies that compared poor versus optimal glycaemic control in relation to

maternal, fetal, and neonatal outcomes. Twelve of these studies reported the outcome of congenital malformations and showed an increased risk with poor glycaemic control, pooled odds ratio 3.44. For four of the twelve studies, it was also possible to calculate a relative risk reduction of congenital malformation for each 1-percent decrease in HbA<sub>1c</sub>, these varied from 0.39 to 0.59. The risk of miscarriage was reported in four studies and was associated with poor glycaemic control, pooled odds ratio 3.23. Increased perinatal mortality was also associated with poor glycaemic control, pooled odds ratio 3.03 from four studies.

## CONCLUSION

Authors found that vaginal delivery was the most common method of delivery. Transient tachypnoea, hypoglycemia, and hyperbilirubinemia were complications.

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