

MATERNAL AND FOETAL OUTCOMES IN GESTATIONAL DIABETES MELLITUSManikant Singla¹, Ashish Ahuja², Sunil K. Juneja³¹Associate Professor, Department of Endocrinology, Dayanand Medical College & Hospital, Ludhiana.²Associate Professor, Department of Surgery, Dayanand Medical College & Hospital, Ludhiana.³Professor, Department of Obstetrics & Gynaecology, Dayanand Medical College & Hospital, Ludhiana.**ABSTRACT****BACKGROUND**

The aim of the study was to evaluate maternal and foetal outcomes in pregnant females having gestational diabetes mellitus. Gestational diabetes mellitus is defined as carbohydrate intolerance that begins or is first recognised during pregnancy. Many studies suggest that early diagnosis and strict control of blood sugar levels throughout the pregnancy can significantly reduce maternal and foetal complications.

MATERIALS AND METHODS

A retrospective study was done from January 2010 to December 2014 on 5400 pregnant patients delivered in Department of Obstetrics and Gynaecology in Dayanand Medical College and Hospital, Ludhiana.

RESULTS

The result of this study confirms that there is increased maternal and foetal morbidity in terms of preterm delivery, rate, neonatal complications and caesarean section.

CONCLUSION

GDM is a condition that should be treated aggressively and it is a problem that affects a significant number of women during pregnancy. Women with GDM are at an increased risk for adverse obstetric and perinatal outcomes.

KEYWORDS

Gestational, Diabetes Mellitus, Maternal, Foetal, Glucose, Outcomes.

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BACKGROUND

Gestational diabetes mellitus (GDM) is defined as carbohydrate intolerance that begins or is first recognised during pregnancy.¹ Risk factors for gestational diabetes include diabetes in a first degree relative, history of glucose intolerance including previous gestational diabetes, marked obesity and a previous infant with macrosomia.² Many studies suggest that early diagnosis and strict control of blood sugar levels throughout the pregnancy can significantly reduce maternal and foetal complications (Oman Medical Journal). Census has put forth a sequential model of testing using a 50 g non-fasting one hour glucose challenge test between 24 and 28 weeks gestation. In high risk pregnant women, screening with 50 g glucose GCT is done at mere first antenatal visit.³

Women with a positive screening test, the 100 g 3 hour oral glucose tolerance test is used to diagnose gestational diabetes. WHO recommends simultaneous screening and diagnosis using a 75 g OGTT.⁴

Medical nutritional therapy is the first line of treatment. Pharmacotherapy is indicated when medical nutritional therapy is associated with elevated fasting glucose levels, lack of expected weight gain or when patient is constantly hungry.

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Corresponding Author:

Dr. Ashish Ahuja,

#132/1, Rani Jhansi Road,

Civil Lines, Ludhiana.

E-mail: drahuja17@gmail.com

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A retrospective study was done from January 2010 to December 2014 on 5400 pregnant patients delivered in Department of Obstetrics and Gynaecology in Dayanand Medical College and Hospital, Ludhiana. Out of 5400 women, 129 had Gestational diabetes mellitus. Maternal and foetal outcomes were studied in these pregnant women. The data was statistically analysed.

AIM OF THE STUDY

The aim of the study was to evaluate maternal and foetal outcomes in pregnant females having gestational diabetes mellitus.

MATERIALS AND METHODS**Exclusion Criteria**

Women with diabetes mellitus co-existing with other medical conditions such as sickle cell disease.

Inclusion Criteria

Women with singleton pregnancy and gestational age between 24 to 28 weeks.

A retrospective study was done from January 2010 to December 2014 on 5400 pregnant patients delivered in Department of Obstetrics and Gynaecology in Dayanand Medical College and Hospital, Ludhiana. Out of 5400 women, 129 had gestational diabetes mellitus. Maternal and foetal outcomes were studied in these pregnant women. The data was statistically analysed.

RESULTS

Total No. of Deliveries	5400
Patients with DM	129

Table 1

As shown in table 1, a total of 5400 deliveries were conducted between 2010 and 2014. Out of the 5400 deliveries that were conducted, 129 had diabetes mellitus. The incidence of GDM were found to be 2.38%.

Age	Frequency
<25	10
25-30	63
31-35	36
36-40	20

Table 2: Age wise Distribution

As depicted in table 2, majority of the females were in the age group of 25-30 years. 63 females were in the age group of 25-30 years. The incidence was less in the age group less than 25 years. There were 36 females in the age group of 31 to 35 years and 20 females in the age group of 36 to 40 years.

Caesarean	77
Vaginal	52

Table 3: Mode of Delivery

Out of 129 deliveries, caesarean was the mode of delivery in 77 females and vaginal delivery was done in 52 females.

Foetal Distress	39
Obstructed Labour/Cephalopelvic Disproportion	14
Antepartum Haemorrhage	5
Failure of Induction	8
Elective	11

Table 4: Indications of Caesarean Section

Out of the 129 cases of gestational diabetes mellitus, the indication for cesarean section was foetal distress in 39 cases, obstructed labour and cephalopelvic disproportion in 14 cases, antepartum haemorrhage in 5 cases, failure of induction in 8 cases and elective cesarean in 11 cases.

Pregnancy-induced Hypertension (Gestational Hypertension)	23
Diabetes Ketoacidosis	3
Vaginal Candidiasis	19
Polyhydramnios	17
Oligohydramnios	6

Table 5: Associated Maternal Complications

As shown in table 5, the associated maternal complications were pregnancy-induced hypertension in 23 cases, vaginal candidiasis in 19 cases, polyhydramnios in 17 cases, oligohydramnios in 6 cases and diabetic ketoacidosis in 3 cases.

Intrapartum	Intrauterine Growth Retardation	17
	Macrosomia	8
Neonatal	Jaundice	42
	Necrotising Enterocolitis	1
	Seizures	2
	Hypoglycaemia	6
	Respiratory Distress	19

Table 6: Foetal Complications

Foetal complications during the intrapartum period were intrauterine growth retardation seen in 17 cases and macrosomia in 8 cases. In neonatal period, jaundice was seen in 42 cases, respiratory distress in 19 cases, hypoglycaemia in 6 cases, seizures in 2 cases and necrotising enterocolitis in one case.

DISCUSSION

Pregnancy is a diabetogenic state manifested by insulin resistance and hyperglycaemia. A total of 5400 women were studied during this time period out of which 129 had gestational diabetes mellitus.

In our study, majority (92.3%) of the women were in the age group of 25 to 30 years. Only 7.7% women were <25 yrs. of age. Increasing maternal age was associated with higher frequency of diabetes mellitus which was in accordance with other studies,^{5,6} showing that carbohydrate tolerance deteriorates progressively with age especially in females.

Out of 129 females, 52 females underwent normal vaginal delivery and 77 underwent caesarean section. Almost 60% of women having GDM had caesarean delivery. There is a direct relationship between hyperglycaemia and foetal growth and increased risk of caesarean section. Similar results were seen in other studies.

Woon in his study reported 41.8% caesarean rate. Incidence of shoulder dystocia was 4.65% which was the reason for the caesarean section.

Several obstetric problems occurred in diabetic pregnancy, the frequency of which was directly related to the extent of control. Polyhydramnios was present in 17 patients making its incidence to be 13.17%. Reported incidence is 3-32% which is comparable to our study.^{7,8}

The reported incidence of macrosomia is 25-40%. In our study, macrosomia was present in 8 babies making its incidence to be 6.2%. Maximum baby weight was 4.4 kg.⁹ The incidence of macrosomic infants and its associated morbidity has been established in other studies too.¹⁰⁻¹³ In this study, the indication for Caesarean section in mothers with gestational diabetes were twice likely to be for big babies and obstructed labour than in the controls. This observation further explains the fact that macrosomia was a single complication from which many other complications arise.

Other associated maternal complications were gestational hypertension which was present in 23 women making its incidence to 27.32%. Incidence of stillbirth, diabetic ketoacidosis and vaginal candidiasis was 14.7%, 3%, 27.32% respectively. Other studies reported similar incidences.^{11,12} The increased incidence of vaginal candidiasis in women with gestational diabetes observed in this study would be explained by the increased spill of sugar in urine, thus contaminating the genitalia leading to increased fungal infection. Secondly, diabetic state is generally associated with reduced immunity encouraging opportunistic infections to become prevalent. It is difficult to say whether HIV infection played a role since no HIV tests were carried out.

Preterm delivery was present in 11 patients (8.52%). A study done in Lahore has shown that 15 (38%) of diabetic women delivered preterm.^{13,14} Polyhydramnios could be the associated cause for preterm delivery.

Neonatal complications included neonatal jaundice, hypoglycaemia and respiratory distress. Neonatal jaundice was the most common neonatal complication as reported in

other studies. Neonatal hypoglycaemia occurred in 10% neonates in our study as compared to 25% as reported in other studies.¹⁵

Respiratory distress developed in 19 babies as they were preterm and required surfactant. The Join clinic reported an incidence of 31% respiratory distress syndrome in infants of diabetic women declining to an average of 5.5% in the same clinic with better glycaemic control.^{16,17}

The result of this study confirms that there is increased maternal and foetal morbidity in terms of caesarean section rate, preterm delivery rate and other neonatal complications.

CONCLUSION

GDM is a condition that should be treated aggressively and it is a problem that affects a significant number of women during pregnancy. Women with GDM are at an increased risk for adverse obstetric and perinatal outcomes. Although eradication of GDM is impossible, we can definitely prevent its adverse effects on pregnancy outcome. Increasing age, BMI, weight, marital period and positive family history for diabetes are highly prone to gestational diabetes mellitus and those women have to be considered as high risk group. Strictly, controlling of blood sugar level definitely gives good outcomes of gestational diabetes pregnancy.

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