



SCREENING FOR GESTATIONAL DIABETES MELLITUS AND ITS IMPACT ON FETOMATERNAL OUTCOME

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ABSTRACT **Aims:** The study was carried out to screen the pregnant women for gestational Diabetes Mellitus, to prevent or to detect and treat any complication at the earliest and to assess the impact of screening on maternal and fetal outcomes and maternal and fetal morbidity and mortality. **Material And Methods** A Prospective observational study was done on 120 pregnant women attending the outpatient Department of Swaroop Rani Nehru Hospital, Department of Obstetrics and Gynaecology. All Pregnant women visiting SRN hospital OPD for routine antenatal checkup in 1st and 2nd trimester. They underwent screening by blood investigations, to identify and screen gestational Diabetes Mellitus, that require management. 120 pregnant women were recruited and Compare the maternal and foetal outcome in booked and un-booked pregnant women. **Results** It was observed that adverse events such as Gestational Hypertension 10(25.6%) were more common among un-booked pregnant women. On the other hand, Ceasarean section 10(12.34%) were found more commonly among booked pregnant women. It was observed that fetal adverse outcomes were more common among patients who were un-booked as compared to their booked counterparts and the incidence of preterm birth 10(25.7%), FGR 8(20%), IUFD 3(8.6%), Low birth weight 3(12.8%) and NICU admission 12(31.4%), Congenital anomaly 1(2.9%) of the infant among them. **Conclusion** The findings of the present study indicate screening is a valuable tool in the prediction as well as prevention of both adverse maternal as well as fetal outcomes.

KEYWORDS : GDM screening, maternal outcome, fetal outcome,

INTRODUCTION

Screening is the search for unrecognized diseases or defects by means of rapidly applied test examination or other procedures in an apparently healthy individual. Screening is considered a preventive care function, and some consider it a logical extension of healthcare^[1]. Screening is secondary prevention; secondary prevention is early diagnosis and adequate treatment^[2].

Universal screening of all pregnant women at first antenatal contact for diagnosis of gestational diabetes or pregestational diabetes. If the first test is negative, the second Oral Glucose Tolerance test (2 hours after 75gm) is administered between 24-28 weeks of pregnancy for diagnosis of gestational diabetes^[1]. Any degree of glucose intolerance during pregnancy is associated with adverse maternal and foetal outcomes. The adverse maternal complications include hypertension, preeclampsia, urinary tract infection, hydramnios, increased operative intervention, and future DM. In the foetus and neonates, it is associated with macrosomia, congenital anomalies, metabolic abnormalities, respiratory Distress Syndrome (RDS), etc., and subsequent childhood and adolescent obesity^[12].

AIMS AND OBJECTIVES

The study was carried out to screen the pregnant women for gestational Diabetes Mellitus, to prevent or to detect and treat any complication at the earliest and to assess the impact of screening on maternal and fetal outcomes and maternal and fetal morbidity and mortality.

MATERIALS AND METHODS

This Prospective observational study was conducted in Department of Obstetrics and Gynaecology, Moti Lal Nehru Medical College, Swaroop Rani Nehru Hospital, Prayagraj, over a period of one year from 1st August 2021 to 31st July 2022. All Pregnant women visiting SRN hospital OPD for routine antenatal checkup in 1st and 2nd trimester. They underwent screening by blood investigations, to identify and screen gestational Diabetes Mellitus, that require management. 120 pregnant women were recruited and Compare the maternal and foetal outcome in booked and un-booked pregnant women.

Pregnant women with known case of diabetes mellitus were excluded from study. A detailed clinical history was collected from each participant which included data pertaining to their sociodemographic characteristics, past history, family history, personal history, obstetric and menstrual history. Then a complete physical examination was performed, including general, systemic, and obstetric examination.

Laboratory Investigations:

ORAL GLUCOSE TOLERANCE TEST (2 hours after 75gm glucose given orally), venous blood was taken under aseptic condition. **Specific**

Assess Maternal outcomes and Foetal outcomes in pregnant women who opt in for screening. Compare the maternal and foetal outcome in booked pregnant women and un-booked pregnant women.

The statistical analysis was performed using the Statistical Package for the Social Sciences (SPSS) software v.25. Comparison of proportions of outcome between groups was made using the Chi-square test, and a p-value of <0.05 was considered to be statistically consequential.

RESULTS

This Prospective observational study was carried out in the Department of Obstetrics and Gynaecology, Moti Lal Nehru Medical College, Prayagraj. After obtaining ethical clearance and informed consent, 120 pregnant women attending the outpatient department of Swaroop Rani Nehru hospital were enrolled as per inclusion and exclusion criteria.

Most of the pregnant women 95(79.2%) were aged between 20 and 34 year. Most of the study participants 25 (20.8%) were from rural areas.

Table 1: Study participants according to number of antenatal screenings attended (n=120)

Screenings attended	Frequency	Percentage
First trimester only	48	39.6
Second trimester only	54	45.0
Both first and second trimester	18	15.4
Total	120	100

It was observed that among the Pregnant women assessed as a part of the present study, 48(39.6%) pregnant women had antenatal screenings only in first trimester. 54(45%) pregnant women had antenatal screenings only in second trimester and 18(15.4%) pregnant women attended antenatal screenings in both the first and second trimesters of their pregnancy.

Table 2: Study participants and their booking status (n=120).

Booking status	Frequency	Percentage
Booked	81	67.6
Un-booked	39	32.4
Total	120	100

It was observed that among the Pregnant women assessed as a part of

the present study, 81(67.6%) booked pregnant women who had 3 or more antenatal check-ups along with investigation reports.39(32.4%) un-booked pregnant women who had less than three antenatal check-ups.

Table 22: Distribution of booked and un-booked study participant according to maternal outcome (n=120)

Adverse events	Booked (n=81, %)	Un-booked (n=39%)
Gestational Hypertension	2(2.46%)	10(25.6%)
Pre-eclampsia	4(4.93%)	8(20.51%)
PPH	4(4.93%)	7(17.94%)
Cesarean section	10(12.34%)	8(20.51%)

It was observed that adverse events such as Gestational Hypertension 10(25.6%) were more common among un-booked pregnant women . On the other hand, Cesarean section 10(12.34%)were found more commonly among booked pregnant women.

Table 28: Association between booking status and adverse fetal outcomes. (n=120)

Adverse outcomes	Booked (n=81 %)	Un-booked (n=39 %)
Preterm birth	5 (6.17)	10 (25.7)
Fetal growth restriction	3 (3.7)	8 (20.0)
IUFD	0 (0.0)	3 (8.6)
Congenital anomalies	0 (0.0)	1 (2.9)
NICU admission	13 (16.0)	12(31.4)
Low birth weight	2 (2.46)	3 (12.8)

It was observed that fetal adverse outcomes were more common among patients who were un-booked as compared to their booked counterparts. There was a statistically significant correlation observed between un-booked status of participants and the incidence of preterm birth, FGR, IUFD, Low birth weight and NICU admission of the infant among them

DISCUSSION

The present study was carried out with the objective of assessing the impact of antenatal screening on the maternal and fetal outcomes of pregnant women presenting and delivering at a tertiary care hospital of North India. For the purposes of the present study, 120 pregnant women who presented to the study institution for their antenatal checkup (ANC) were recruited. They underwent screening to identify GDM that require management. The antenatal screening can easily be expanded to assess and identify not only maternal high-risk states but also predict potentially adverse fetal outcomes.

It was observed that the mean age of the study participants was 25.00±3.29 years, with 97.9% of them aged between 20 and 34 years. The findings of the present study are similar to those reported by Vijayaselvi et al. who assessed antenatal risk factors among South Indian pregnant women and correlated them to adverse pregnancy outcomes^[51]. In their study on the prevalence and impact of gestational diabetes mellitus among pregnant women presenting to a tertiary care institution of central India, Pregnancies in the adolescence predispose pregnant women to developing serious complications such as preterm birth, fetal growth restriction, postpartum hemorrhage etc. and have been observed to be significantly associated adverse fetal outcomes also, namely fetal distress, low-birth-weight deliveries, and birth asphyxia^[55].

Pregnant women enrolled in the present study, 55% presented at first trimester, and 45% presented during the second trimester of pregnancy. The mean gestational age of the pregnant women at the time of presentation for GDM screening was 15.2±6.9 weeks. Among these pregnant women, 39.6% presented in their only first trimester, 45% presented in their only second trimester, and 15.4% presented in their first trimester and came back for a follow-up screening in their second trimester. Diabetes mellitus was also found to be prevalent among the study participants. Of the patients, 22.9% had diabetes mellitus at the time of presentation. The findings of the present study were substantially higher than the reported prevalence of 16.6%, 17.8%, and 6.9% prevalence reported by Seshiah et al. in 2004, Seshiah et al. in 2008, and Wahi et al. in 2011 in different parts of the country^[81,82,83]. Seshiah et al. in their 2004 study assessed the prevalence of gestational diabetes mellitus among pregnant women presenting to a tertiary care hospital of South India. In 2008, the authors again conducted a similar study. However, at this time, it was community-based prospective research. The findings of the 2008 study indicated that not only is gestational diabetes mellitus prevalence

increasing among Indian mothers, but also that the prevalence of the condition in the community was higher than that observed . Those pregnant women with abnormal reports on any of the three tests were followed up and managed for possible infections, organ dysfunction, or in case of urinary protein, risk of developing pre-eclampsia and eclampsia. Abnormal urine finding among pregnant women is a surprisingly common finding. Studies such as that done by Lata et al. reported abnormal urinalysis and culture/sensitivity findings among 20.5% of pregnant women assessed by them^[84]. An even higher prevalence of 35% was reported by Ranjan et al. in 2017^[85]. Presence of urinary protein was reported in 10.4% of Indian pregnant women by Magee et al^[86] in a single institution

CONCLUSION

The findings of the present study indicate that antenatal screening is a valuable tool in the prediction as well as prevention of both adverse maternal as well as fetal outcomes. While the timing of the antenatal screening was not found to be an important predictor of adverse events, it was observed that those pregnant women who had less than three antenatal check-ups (un-booked mothers) were at a significantly higher risk of developing both adverse maternal as well as fetal outcomes as compared to their booked counterparts.

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