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Maternal and perinatal outcome in gestational diabetes mellitus in a tertiary care hospital

Dr.Aparna Padala[1*], Dr. Vamsidhar Paduchuru[2].

1. **Associate Professor, Department of OBGY, Fathima Institute of Medical Sciences. Kadappa.**
2. **Assistant Professor, Dept of General Medicine, Mahavir Institute of Medical Sciences, Vikarabad.**

CORRESPONDING AUTHOR

*** Dr.Aparna Padala**

Abstract:

Background: The term "gestational diabetes mellitus" (GDM) refers to a form of carbohydrate intolerance that is initially identified during pregnancy and may have a negative impact on both the mother and the foetus.

Aim: The purpose of the study was to ascertain the neonatal and maternal outcome in GDM cases.

Materials and Methods: This study examines GDM-diagnosed women who received prenatal care and gave birth at our hospital. The 100-gram oral glucose challenge test, or ACOG recommendation, was used to diagnose GDM. Noted were several medical co-morbidities. Every woman was monitored until giving birth, and any difficulties were noted. In every instance, the baseline data (age, body mass index, parity, mode, and time of delivery) were recorded. Out of the 200 individuals that were screened for GDM, a total of 25 patients fulfilled the criteria for the disease.

Results: The percentage of people with GDM was 12.5%. Twenty patients, or eighty percent, belonged to the 21–25 age range. Six instances included additional obstetric problems, and 76% of the cases had a BMI between 18.5 and 24.99. Women received insulin in 72% of cases. In eighty-six percent of the women, the glucose readings were within the acceptable range. 7 needed to be admitted to the ICU for newborns. 1 case had IUD and 1 had macrocosmic baby. New-borns of mothers whose GDM optimally treated had fewer complications.

Conclusion: In this study, the prevalence of GDM was 12.5%. Maternal and newborn outcomes can be almost normal with appropriate treatment of GDM based on nutrition, oral hypoglycemic medications, or insulin to achieve euglycemia. For the most part, insulin was needed for therapy, and better blood glucose control led to fewer difficulties for newborns.

Keywords: Gestational diabetes mellitus, maternal outcome in GDM, neonatal outcome in GDM.

INTRODUCTION:

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The medical term for glucose intolerance that initially manifests or begins during pregnancy is gestational diabetic mellitus (GDM). Being pregnant causes diabetes in and of itself. In a given demographic or ethnic group, the prevalence of Type 2 diabetes directly correlates with the prevalence of GDM, which ranges from 1 to 14%[1]. The WHO's definition for a 2-hour blood glucose level of 140 mg/dl places the Indian population in the high-risk ethnic category for diabetes. According to recent data, the prevalence of GDM in India is 16.55 percent[2]. Because different organisations utilise different criteria, there are disagreements over the use of glucose level thresholds, screening methods, and diagnostic instruments[3]. There is a higher chance of difficulties with GDM for both the mother and the kid. There is a higher chance of macrosomia in the newborn and a higher probability of preeclampsia and caesarean sections in the mother[4]. Pregnancy-related blood glucose control has been shown to be beneficial in lowering the risk of certain newborn problems, including respiratory distress syndrome, macrocosmic infants, hyperbilirubinemia, and shoulder dystocia[5]. There are difficulties with care in our hospital, which treats patients from disadvantaged backgrounds. The purpose of this study was to examine the impact of comorbidities on the results of GDM. Hyperglycemia and unsatisfactory pregnancy outcome were the most compelling indicators of a poor pregnancy outcome in women with gestational diabetes (HAPO) [6] . Indian recommendations for GDM, which are frequently utilised in Indian conditions, were developed by Seshiah et al. after conducting a community-based investigation on the prevalence of GDM in South India[7] .

MATERIALS AND METHODS

A tertiary care institution at Fathima Institute of Medical Sciences, Kadapa, diagnosed and treated 25 GDM patients who had been screened among 200 prenatal patients. This study was a retrospective cohort analysis. During the same period, 175 more women with normal profiles who were not affected by GDM gave birth. Women's age, body mass index (BMI), parity, mode of delivery, and timing of birth were recorded as baseline characteristics. OGTT was used to diagnose GDM using 100 g of glucose. If any two of the following values are greater than the criteria (fasting blood sugar [BS] >95 mg/dl, BS ≥180 mg/dl, BS ≥155 mg/dl, and BS ≥ 140), the patient was diagnosed with GDM. Patients were initially put on a diabetic diet and encouraged to exercise. A nutritionist initiated the diet. Women were started on oral hypoglycemic medication or insulin if their blood sugar levels did not improve while following a diabetic diet. According to definition 8, GDM was deemed to be optimally controlled if the fasting glucose (FBS) was less than 95 mg/dl and the postprandial glucose (PPBS) was less than 120 mg/dl. Every woman was monitored until giving birth, and the results for both the mother and the foetus were documented. The women had prenatal care on a regular basis. Preeclampsia, hypothyroidism, candidiasis, urinary tract infections (UTI), and other prenatal problems were identified and addressed. Shoulder dystocia was described as a vaginal cephalic delivery in which mild traction has failed and more obstetric manoeuvres are necessary to deliver the foetus after the head has delivered. Birth weight greater than 4 kg was referred to as macrosomia. When point-of-care glucose testing revealed a plasma glucose level less than 45 mg/dl, it was considered neonatal hypoglycemia, which was then verified by laboratory testing 9. According to protocol, all GDM

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patients receiving insulin were induced at 38 weeks, and those under diet management were induced at 39 weeks, provided they were not in labour by then. The Institute ethics committee approved the study, and the subjects provided written informed permission.

INCLUSION CRITERIA:

All patients attending the antenatal OPD of tertiary health care centre.

EXCLUSION CRITERIA: All pregnant patients with

1. History of GDM in previous pregnancy.
2. Known case of diabetes mellitus/family history of diabetes mellitus
3. History of macrosomic baby.

OBSERVATIONS AND RESULTS: Of the 200 women who underwent screening, 25 women met the criteria for GDM using a 100 g OGTT, resulting in a 12.5% prevalence. Fourteen percent were under diet management, eighteen percent needed insulin, and three dozen percent were on oral hypoglycemic agents (metformin). Of the 200 instances that were examined, 15 (7.5%) were between the ages of 18 and 20, 161 (80.5%) were between the ages of 21 and 25, 19 (9.5%) were between the ages of 26 and 29, and 5 (2.5%) were older than 30.

Table.1. Treatment given for GDM cases

	No of patients in %
Diet	04 (16%)
Insulin	18 (72%)
Metformin	03 (12%)

The age range of the cases evaluated in the overall study group was 18 to 37 years, with a mean ± SD of 25.1 ± 3.4 years. Eighty percent of GDM cases, or the maximum number, were in the age group of 21 to 25. Distribution of instances studied in the study group with varying gravities.

Table.2. Age distribution studied in the group

Age in Years	No of cases n	No of GDM cases N
18-20	15 (7.5%)	1 (4%)
21-25	161 (80.5%)	20(80%)
26-29	19(9.5%)	3 (12%)
≥30	5 (2.5%)	1 (4%)
Total	200	25

Of the 200 patients examined, 110 (55.0%) had multigravida and 90 (45.0%) had primigravida in the study group. Of the 14 GDM instances, or 56%, were multigravida, and 11% were

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primigravida. Among the 200 patients under investigation, 5 (2.5%) had a BMI of less than 18.50 kg/m2, 158 (79.0%) had a BMI of between 18.50 and 24.99 kg/m2, 31 (15.5%) had a BMI of between 25.00 and 29.99 kg/m2, and 6 (3.0%) had a BMI of more than 30.00 kg/m2 in the study group. A BMI of 18.5 to 24.99 kg/m2 was present in 76% of the 19 cases of GDM. Out of 200 study participants, 114 cases (or 57% of the total) had vaginal births, 37% had caesarean sections, and 12 instances had instrumental deliveries (6 percent).

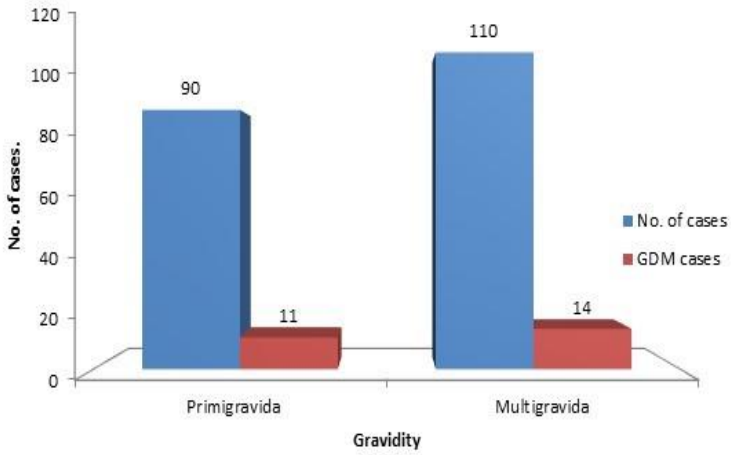

Figure.1.Gravidity

14 cases i.e 56% of GDM underwent vaginal delivery, 3 (12%) cases underwent Instrumental delivery and 8 i.e 32% underwent LSCS. The majority 189 (94.5%) were term deliveries and 11 (5.5%) were preterm.3 (12%) of GDM cases were preterm and 22 (88%) were term. Of 200 cases studied, 171 (85.5%) did not have any complication, 13 (6.5%) had severe anaemia, 5 (2.5%) had gestational hypertension, 4 (2.0%) had pre-eclampsia, 1 (0.5%) had epilepsy and 6 (3.0%) had other complications in the study group. Out of which 19 (76%), 2 (8%) cases had gestational hypertension ,3(12%) cases had pre-eclampsia and 1 (4%) had hypothyroidism.

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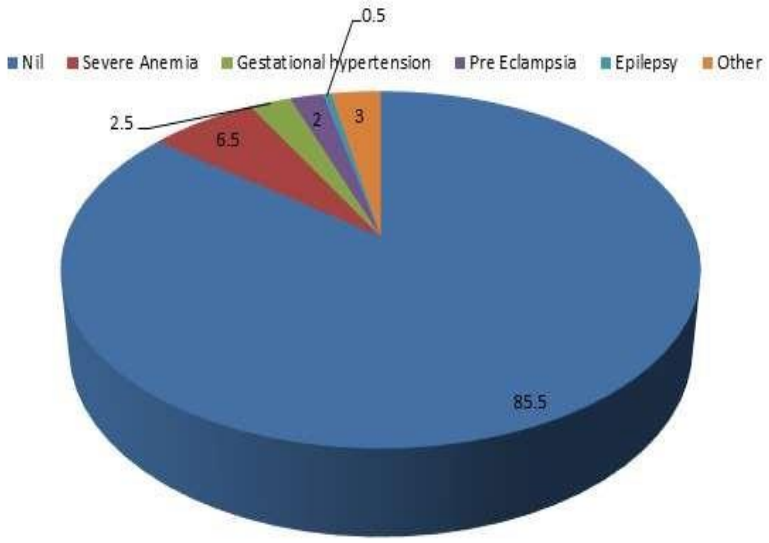

Figure. 2 Distribution of Complications

In this study 1 had macrosomia,7 neonates required NICU admission in which 3 had respiratory distress ,2 had hypoglycaemia, 2 had IUGR.1 GDM case had IUD as she also had severe preeclampsia and lost to follow up after 33 weeks.

DISCUSSION: Comparing maternal and foetal outcomes in cases of gestational diabetes mellitus determined by the "Oral Glucose Tolerance Test" was the primary goal of the study (OGTT). GDM, or gestational diabetes mellitus, is a frequent pregnancy-related condition. However, there are disagreements over the harmful consequences of GDM since different research employ different criteria, and these studies' confounding variables vary. The current study's 12.5 percent GDM incidence was determined to be comparable to Nair et al13 .'s percent finding. [10] Pregnancy induced hypertension In the study, be Saxena et al., the incidence of PIH was 40% [11]. According to Wahi et al. in Jammu, India it was 6.45% [12]. Xiong et al. reported mothers with GDM were at increased risk of presenting with pre-eclampsia as they have similar risk profile [13]. Twenty percent of the patients in the current study exhibited pregnancy complications related to both GDM and PIH (8 percent had gestational hypertension and 12 percent preeclampsia). However, the majority of patients' current pregnancies were free of PIH. Between the two groups, there was no statistically significant difference (p=0.61). There exists a correlation between PIH and GDM; hence, prompt diagnosis and treatment initiation are imperative to enhance the prognosis. .

premature birth According to a research by Mahalakshmi et al., 19% of live births were preterm. 14 Preterm births occur 12 percent of the time, according to Saxena et al. 11 Twelve percent of the study's participants had preterm deliveries. In the current study, preterm labour, early induction in cases of severe preeclampsia, and premature preterm rupture of the membranes were all linked to preterm deliveries. Since there is a higher risk of IUFD, no pregnancy was prolonged until after diathesis. Method of ending It was reported that 60% of individuals with GDM have LSCS, according to Kale et al. [15]. According to Saxena et al.., caesarean was done in 42% cases. Wahi et al. reported 22.58% incidence of caesarean [16]. Cassey et al. reported

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caesarean section rates of 30% in women with GDM. A study in Denmark by Jenson et al., and in Sweden by Aberg et al. also found an increased rate of caesarean section in patients with GDM. [17, 18] . In the present study, 32 % patients of underwent LSCS. 68 % delivered vaginally. Difference was not statistically significant (p=0.21). Macrosomia In study by Cypryk et al., history of big baby (macrosomia) was present in 11% of patients [19]. According to Najafian et al., 9 percent of cases had macrosomia incidence [(20)]. It is estimated that 9.9% of Indians suffer from macrosomia (Balaji et al. Four percent of the infants in the current study experienced macrosomia. A statistically significant difference was not seen. The main risk factors for macrosomia were age, maternal obesity (BMI), gestational diabetes, and a positive history of previous macrosomia as compared to newborn groups of normal weight. Fetal macrosomia represents a common adverse neonatal outcome of gestational diabetes mellitus if it remains undetected and untreated.

Macrosomia raises the baby's risk of genital injuries, postpartum haemorrhage, and shoulder dystocia. newborn issue In his evaluation of the literature, Mitanchez concluded that there was insufficient information available to discuss the frequency of respiratory distress in babies born to women with GDM. Three individuals in the current investigation exhibited respiratory distress.

CONCLUSION: GDM presents a window of chance for preventing diabetes in the future, but this window of opportunity can only be used if the prenatal patient with GDM receives the best possible medical and obstetric care. It is still difficult for obstetricians and endocrinologists to handle GDM optimally. In India, GDM is more common, albeit the frequency varies by region and socioeconomic position. Maternal and newborn outcomes can be almost normal with appropriate treatment of GDM based on nutrition, oral hypoglycemic medications, or insulin to achieve euglycemia. Despite this, newborn hypoglycemia and birth weight are still increased in GDM patients.

Limitations: Our study is limited by the retrospective character of the analysis, the absence of information on the mother's weight gain during pregnancy, and the newborn's ponderal index. Our institute does not have an endocrinologist on staff for consultation.

REFERENCES:

1. PriyankaKalra, Chetan Prakash Kachhwaha, Hilda Victoria Singh Prevalence gestational diabetes mellitus and its outcome in western Rajasthan2013- Indian journal of endocrinology and metabolism; 17 :677-680.

2. Seshiah V, Balaji V, Balaji MS, Paneerselvam A, Arthi T, Thamizharasi M, Datta M.Prevalence of gestational diabetes mellitus in South India (Tamil Nadu)—a community based study.JAssoc Physicians India. 2008 May;56:329-33

3. Maternal hyperglycemia during labor and related immediate post-partum maternal and perinatal outcomes at the Yaoundé Central Hospital, Cameroon. Djomhou M, Sobngwi E, Noubiap JJ, Essouma M, Nana P, Fomulu NJ J Health Popul Nutr. 2016 Aug 22; 35(1):28.

ISSN:0975 -3583,0976-2833 VOL 8, ISSUE 04, 2017

4. Kampmann U, Madsen LR, Skajaa GO, Iversen DS, Moeller N, Ovesen P. Gestational diabetes: A clinical update. World J Diabetes 2015;6:1065-72.
5. Horvath K, Koch K, Jeitler K, Matyas E, Bender R, Bastian H, et al... Effects of treatment in women with gestational diabetes mellitus: Systematic review and meta-analysis. BMJ 2010;340:c1395.
6. Metzger BE, Lowe LP, Dyer AR, Trimble ER, Chaovarindr U, Coustan DR, Hadden DR, McCance DR, Hod M, McIntyre HD, Oats JJ, Persson B, Rogers MS, Sacks DA Hyperglycemia and adverse pregnancy outcomes.HAPO Study Cooperative Research Group.,. N Engl J Med. 2008 May 8; 358(19):1991-2002.
7. Gestational diabetes mellitus--Indian guidelines.Seshiah V, Sahay BK, Das AK, Shah S, Banerjee S, Rao PV, Ammini A, Balaji V, Gupta S, Divakar H, Misra S, Thanawala U .J Indian Med Assoc. 2009 Nov; 107(11):799-802, 804-6.
8. Landon MB, Gabbe SG. Gestational diabetes mellitus. Obstet Gynecol 2011;118:1379-93.
9. Jain A, Agarwal R, Sankar MJ, Deorari A, PauVl K. Hypocalcemia in the newborn. Indian J Pediatr 2010;77:1123-8.
10. Nair VG, Sandhu GS, Biswas M, Bhalla R. Evaluation of the incidence and outcome of gestational diabetes mellitus using the current international consensus guidelines for diagnosing hyperglycaemia in pregnancy. Int J Reprod Contracept Obstet Gynecol. 2016;5:3361–6.
11. Saxena P, Tyagi S, Prakash A, Nigam A. Pregnancy Outcome of Women with Gestational Diabetes in a Tertiary Level Hospital of North India Indian J Community Med. 2011;36(2):120-3.
12. Wahi, Prevalence of Gestational Diabetes Mellitus (GDM) and its Outcomes in Jammu Region, J Assoc Physicians India, 2011;59:227-30.
13. Xiong X, Saunders LD, Wang FL, Demianczuk NN. Gestational diabetes mellitus: Prevalence, risk factors, maternal and infant outcomes. Int J Gynaecol Obstet. 2001;75:221-8.
14. Mahalakshmi MM. Clinical profile, outcomes, and progression to type 2 diabetes among Indian women with gestational diabetes mellitus seen at a diabetes center in south India. Indian J Endocrinol Metab. 2014;18(3):400-6.
15. Yajnik CS, Kale SD, Kulkarni SR, Meenakumari K, Joglekar AA, Khorsand N, et al... High risk of diabetes and metabolic syndrome in Indian women with gestational diabetes mellitus. Diabetes Medicine 2004;21:1257-9.
16. Casey BM, Lucas MJ, McIntire DD, Leveno KJ. Pregnancy outcomes in women with gestational diabetes compared with the general obstetric population. Obstet Gynecol. 1997;90:869-73.
17. Jensen DM, Damm P, Sorensen B, Molsted-Pedersen L, Westergaard JG, Klebe J, et al... Clinical impact of mild carbohydrate intolerance in pregnancy: a study of 2904 nondiabetic Danish women with risk factors for gestational diabetes mellitus. Am J Obstet Gynecol. 2001;185:413-9.

ISSN:0975 -3583,0976-2833 VOL 8, ISSUE 04, 2017

18. Aberg A, Rydhstroem H, Frid A. Impaired glucose tolerance associated with adverse pregnancy outcome: a population-based study in southern Sweden. Am J Obstet Gynecol. 2001;184:77-83.
19. Cypryk K, Szymczak W, Czupryniak L, Sobczak M, Lewiński A. Gestational diabetes mellitus-an analysis of risk factors. Endokrynologia Polska. 2008;59(5):393-7.
20. Najafian M, Cheraghi M. ccurrence of Fetal Macrosomia Rate and Its Maternal and Neonatal Complications: A 5- Year Cohort Study, ISRN Obstet and Gynecol. 2012:2012:5.