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Comparison Between Capillary Blood Glucose and Venous Plasma Glucose after 75 g of Oral Glucose Tolerance Test for Diagnosis of Gestational Diabetes Mellitus

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ABSTRACT

High plasma glucose that is first detected during pregnancy is known as gestational diabetes mellitus (GDM). Globally, GDM prevalence has been estimated to affect 7% of pregnancies; in India, this prevalence varies from 6-9% in rural areas to 12-21% in urban areas. To evaluate the effectiveness of CBG (Capillary Blood Glucose) as compared to venous plasma glucose after an oral glucose load of 75gms of glucose for diagnosis of GDM. This prospective observational, institution-based study was carried out from May 2020 to Oct 2021 at the ESI-PGIMSR, ESIC Medical College, JOKA, Kolkata, at the OPD/Ward of the Department of Obstetrics and Gynecology between 24 and 28 weeks of gestation. By WHO criteria (same cut off), Total GDM diagnosed 22 (among 22, GDM diagnosed by CBG 19-True Positive and GDM not diagnosed by CBG 3) and by same cut off Total GDM diagnosed by CBG is 25 (among 25,True Positive is 19 and 6 are diagnosed by CBG but not by WHO). Sensitivity of CBG = 86.36% (True Positive/Disease Positive), Specificity of CBG = 95.31% (True Negative/Disease Negative), PPV (Positive Predictive Value) of CBG = 78.45% NPV (Negative Predictive Value) of CBG = 97.25% Accuracy-94%. In Fisher's exact test P-Value <0.0001 (P-value<0.05), Statistically significant i.e., CBG (same cut off like WHO) can be used as Diagnostic tool for GDM diagnosis like VPG (WHO criteria). In added cut off, Sensitivity of CBG = 77.27% (True Positive/Disease Positive), Specificity of CBG = 96.88% (True Negative/Disease Negative), PPV (Positive Predictive Value) of CBG = 80.75%,NPV (Negative Predictive Value) of CBG = 96.17%, Accuracy-94.03%,In Fisher's exact test P-Value <0.00001 (P-value<0.05), Statistically significant i.e., CBG (Added cut off) can be used as Diagnostic tool for GDM diagnosis like VPG (WHO criteria). We concluded that the study indicates that the CBG method of screening of pregnant women can be a helpful tool in a nation like India, particularly in rural areas lacking access to laboratory facilities. However, more extensive research of this kind is needed to determine the precise CBG cutoff value for the diagnosis of GDM in pregnant mothers.

INTRODUCTION

High plasma glucose that is first detected during pregnancy is known as gestational diabetes mellitus (GDM)[1].

Globally, GDM prevalence has been estimated to affect 7% of pregnancies; in India, this prevalence varies from 6-9% in rural areas to 12-21% in urban areas[2]. One study conducted in India found that as much as 16.55% of people had GDM. GDM is now a crucial factor in determining the morbidity index during pregnancy. Numerous studies have linked GDM to a number of complications for both mothers and fetuses. A higher incidence of foetal complications such as birth trauma, congenital anomalies, childhood obesity, diabetes and neonatal metabolic problems, as well as maternal complications such as preeclampsia, polyhydramnios, preterm labor, stillbirth and shoulder dystocia, has been observed in mothers with diabetes. Furthermore, after giving birth, these GDM women are more likely to develop Type 2 DM[3-5]. According to available data, women receiving treatment for GDM had lower incidence of macrosomia, shoulder dystocia and pre-eclampsia[6]. Thus, reducing maternal and perinatal morbidity and mortality in pregnant women with diabetes requires screening, precise diagnosis and prompt treatment. Typically, women who are unable to produce enough insulin to adopt this resistance experience an increase in glucose levels and an increase in insulin resistance during the second trimester, which is why screening for GDM occurs between 24 and 28 weeks of pregnancy. Insulin resistance is mediated by placental hormones and as pregnancy progresses, GDM rises as a result. Therefore, for certain patients, testing too soon might not be helpful. Likewise, conducting tests beyond the third trimester restricts the window of opportunity for metabolic interventions. As pregnancy progresses, the prevalence of glucose intolerance rises. Diagnoses occur at 16.3% in < 16 weeks of gestation, 22.4% in 17-23 weeks and 61.3% in more than 23 weeks. The American College of Obstetricians and Gynecologists (ACOG) supports universal screening for GDM, while the American Diabetes Association (ADA) currently advises selective screening for high-risk women. It has been demonstrated that in the same population, GDM was discovered in 1.45% of women through risk-based screening, whereas 2.7% were found through universal screening. This demonstrates that almost half of the cases of GDM have been missed by isolated risk-based screening. Because Type 2 diabetes is more common in South East Asian nations and Indian women are genetically predisposed to the disease, there is a need for universal screening. Two-step procedures are advised by the American College of Obstetricians and Gynecologists (ACOG). The one-step process is advised by the International Association of Diabetes and Pregnancy Study Groups (IADPSG). When one of the following cut-offs is met, GDM is diagnosed according to the IADPSG criteria (An OGTT is performed in the fasting state using 75 g of glucose load at 24-28 weeks): FPG ≥92 mg/dL (≥5.2 mmol/L), 1 hour ≥180 mg/dL (≥ 10 mmol/L), or 2 hour ≥153 mg/dL (≥ 8. mmol/L)8. The World Health Organization (WHO) also suggests utilizing a one-step approach with a glucose load of 75 g.

The 2016 WHO diagnostic criteria states that if any of the following are true: fasting plasma glucose of 5.1-2.9 mmol/L (92-125 mg/dl), one-hour plasma glucose of ≥10.0 mmol/L (180 mg/dL) and two-hour glucose of 8.5-11 mmol/L (153-199 mg/dL) following an overnight fast with a 75 g glucose load, then GDM should be diagnosed at any point during pregnancy.

MATERIALS AND METHODS

Study Area: Department of Obstetrics and Gynaecology, ESI-Post Graduate Institute of Medical Science and Research (ESI-PGIMSR) and ESIC Medical College, Joka, Kolkata.

Study Population: About 150 pregnant women were recruited according to inclusion and exclusion criteria from OPD/Ward of Department of obstetrics and gynaecology, ESI-PGIMSR, ESIC Medical College, JOKA, Kolkata.

Study Period: MAY 2020 to Oct 2021(Period extended from 12 month to 18 month due to emergence of COVID-19 Pandemic in 2020).

Study Design: Prospective observational study, institution based. According to inclusion and exclusion criteria, 150 pregnant women were recruited from OPD/Ward of Department of obstetrics and gynaecology between 24 to 28 weeks of gestation at ESI-PGIMSR, ESIC Medical College, JOKA, Kolkata. Written informed consent was taken from each woman prior to participation. Period of Gestation was determined by the woman's last menstrual period (LMP).

Sample Size: 150

Inclusion Criteria:

- All singleton live pregnancy between 24 to 28 weeks of gestational age without any prior known medical disorder.

Exclusion Criteria

- Pre-existing Type 1 DM and Type 2 DM.
- Women with multi foetal pregnancy.
- Chronic pre-pregnancy medical disorder.
- Period of gestation <24 weeks and >28 weeks

RESULT

Approximately 68.7% of the 150 women, were non vegetarians. The majority of these women, 115 (76.7%), had monthly family incomes of less than Rs. 15,000. The aforementioned table indicated that the study population's mean income (Mean±SD) was 1.8333±0.7634. Of the women in the current study, 85 (56.66%) were classified as second gravida or higher and 65 (43.33%) as primigravida. G1-1st Gravida , G2-2nd Gravida and higher. Nineteen (12.7%) of the women in this study gave birth before term, 131 (87.33%) at term and none at post term (Table 1).

In present study,100 (66.7%) women had LUCS Delivery and 50 (33.3%) had NVD. Of the 150 women who were part of the study and gave birth, 1 (0.7%) had hypoglycemia, 1 (0.7%) had jaundice, 15 (10.0%) had RDS and 2 (1.3%) had RDS+ hypoglycemia in fetal complications. Nine (6.0%) of the women in this study had HDP, two (1.3%) had OC, three (2.0%) had oligohydramnios and one (0.7%) had PROM in the category of obstetric complications.

About 42.67% of women are normal weight (BMI<24.9), 22.67% overweight (BMI 25-29.9), 34.66% Obese (BMI>30).The mean BMI (Mean±S.D.) of study population was 22.6784±2.6576 (Table 2).

CBG* (Same Cut off)-CBG cut point of Fasting > or = 92 mg/dL or 1 hr ≥180 mg/dL or 2 hr ≥153 mg/dL as WHO VPG Value. CBG* (Added) and CBG cut point of Fasting >92 mg /dl or 1 h >200 mg/dL or 2h >173mg/dL for WHO (In non pregnant adults, the World Health Organization (WHO-2006) has suggested the use of same cut point as in fasting state for CBG as VPG but to use 20 mg/dL higher value for post glucose value in OGTT. Hence for diagnosis of GDM additionally we have taken CBG cut points of Fasting >92 mg/dL and post glucose cut of values are 1h >200 mg/dL and 2h> 173, respectively for WHO) (Table 3).

By WHO criteria (same cut off), Total GDM diagnosed 22 (among 22, GDM diagnosed by CBG 19-True Positive and GDM not diagnosed by CBG 3) and by same cut off Total GDM diagnosed by CBG is 25 (among 25,True Positive is 19 and 6 are diagnosed by CBG but not by WHO) (Table 4).

Sensitivity of CBG = 86.36% (True Positive/Disease Positive), Specificity of CBG = 95.31% (True Negative/Disease Negative), PPV (Positive Predictive Value) of CBG = 78.45%.

NPV (Negative Predictive Value) of CBG =97.25% Accuracy-94%, Fisher's exact test. In Fisher's exact test P-Value <0.0001 (P-value<0.05), Statistically significant i.e., CBG (same cut off like WHO) can be used as Diagnostic tool for GDM diagnosis like VPG (WHO criteria) (Table 5).

In added cut off, Sensitivity of CBG = 77.27% (True Positive/Disease Positive), Specificity of CBG = 96.88% (True Negative/Disease Negative), PPV (Positive Predictive Value) of CBG = 80.75%, NPV (Negative Predictive Value) of CBG = 96.17%, Accuracy-94.03%, In Fisher's exact test p-Value <0.00001 (p-value<0.05), Statistically significant i.e., CBG (Added cut off) can be used as Diagnostic tool for GDM diagnosis like VPG (WHO criteria) (Table 6).

Family history of DM were higher, 6 out of 28 (21.4%) who were diagnosed as GDM as compared to Non-GDM, 4 out of 122 (3.3%). By Fisher Exact Test, P Value-0.003 (<0.05).

Table 1: Distribution of all Parameter

Parameters	Number	Percentage (%)
Food Habit		
Non-Vegetarian	103	68.70%
Vegetarian	47	31.30%
Total	150	100.00%
Income		
≤10000	57	38.00%
10000-15000	58	38.70%
15000-20000	30	20.00%
20000-25000	1	0.70%
>25000	4	2.70%
Total	150	100.00%
Gravida		
G1 (Primi)	65	43.33%
G2 and above	85	56.66%
Total	150	100.00%
Period of Gestation (POG)		
Pre-Term* (<37 week)	19	12.70%
Term* (>=37-41 week 6 days)	131	87.33%
Post Term* (≥42 weeks)	0	0%
Total	150	100.00%
Mode of Delivery		
LUCS	100	66.70%
NVD	50	33.30%
Total	150	100.00%
Neonatal Complication		
Hypoglycaemia	1	0.70%
Jaundice	1	0.70%
No Complication	131	87.30%
RDS (Respiratory Distress Syndrome)	15	10.00%
RDS+Hypoglycaemia	2	1.30%
Total	150	100.00%
Obstetric Complication		
Hypertensive Disorder in Pregnancy (HDP)	9	6.00%
Obstetric Cholestasis (OC)	2	1.30%
Oligohydramnios (OLIGO)	3	2.00%
PROM	1	0.70%
No Complication	135	90.00%
Total	150	100.00%

Table 2: Distribution of Study Population according to BMI (N = 150)

BMI (Kg/m^2)	Number	Percentage (%)
<18	3	2.00
18-24.9	61	40.67
25-29.9	34	22.67
30-34.9	35	23.33
≥35	17	11.33

Table 3: Prevalence of GDM in Study Population diagnosed with different Method (N = 150)

Method	Number	Prevalence
LAB(Venous Blood)	22	14.6
CBG *(Same Cut off as WHO criteria)	25	16.6
CBG**(Added Cut off)	21	14.0

Table 4: Comparison of Cases diagnosed by WHO-LAB(VPG) and CBG method (same cut off of WHO)

Method	GDM diagnosed by WHO criteria (Venous Plasma Glucose)	GDM not diagnosed by OGTT (WHO-VPG)	Total
GDM diagnosed by CBG criteria	19	6	25
GDM not diagnosed by CBG	3	122	125
Total	22	128	150

Table 5: Comparison of Cases diagnosed by WHO-LAB(VPG) and CBG method (Added cut off):

Method	GDM diagnosed by WHO criteria (Venous Plasma Glucose)	GDM not diagnosed by OGTT(WHO-VPG)	Total
GDM diagnosed by CBG criteria (Added Cut off)	17	4	21
GDM not diagnosed by CBG (Added criteria) criteria	5	124	129
Total	22	128	150

Table 6: Comparison between Non-GDM and GDM study subjects according to Family History Of (F/H/O) DM

	Non-GDM (N = 122)	GDM (N = 28)
Family history of Diabetes Mellitus		
Present	4 (3.3%)	6 (21.4%)
Absent	118 (96.7%)	22 (78.6%)

DISCUSSION

This prospective observational, institution-based study was carried out from May 2020 to Oct 2021 at the ESI-PGIMSR, ESIC Medical College, JOKA, Kolkata, at the OPD/Ward of the Department of Obstetrics and Gynecology between 24 and 28 weeks of gestation. This study included all singleton live pregnancies between 24 and 28 weeks of gestational age that had no known medical history.

Women who met the criteria used in this study (WHO 2016) for GDM were tracked from the beginning of their pregnancies to the end of delivery, using both venous plasma glucose (VPG) and capillary blood glucose (CBG) measurements. The mode of delivery, the outcome of the new-born and any further pregnancy complications were recorded in a case record form for assessment.

The women's mean age, expressed as Mean±SD, was 26.8667±5.9547 years. About 92.67% of the study's participants were under 35 years old. Among the study population, 30.7% was well educated (Graduate and above), compared to 14.7% who had only completed primary education and nearly half (54.7%) who had completed higher secondary education.

About 103 (68.7%) of the women were non vegetarians and the majority of the women, 97 (64.7%) were from rural areas. Over eighty percent of the women did not have a job. The majority of these women 115 (76.7%) had monthly family incomes of less than 15,000.

The study population's mean BMI (Mean±S.D.) was 22.6784±2.6576. 42.67% of women have a BMI under 24.9, 22.67% are overweight (BMI 25-29.9) and 34.66% are obese (BMI>30). A little over 65 (43.33%) of the women had primigravida and 85 (56.66%) had second gravida or higher. When OGTT was conducted, the mean POG was 26.8667±5.9547.

Out of the 150 participants in the study, father of 4 (2.7%) women and mother of 6 (4.0%) women had diabetes. The number of patients with a family history of diabetes mellitus was higher in GDM cases-6 out of 28 (21.4%) than in non-GDM cases-4 out of 122 (3.3%).

In this study, 150 women in total underwent 1 hour and 2 hours of OGTT (using venous plasma glucose, or VPG) in addition to capillary blood glucose (CBG) after fasting (using the WHO and CBG methods). By using a venous plasma glucose measurement in a lab, about 22 (14.6%) women were diagnosed with GDM according to WHO 2016 criteria and 25 (16.6%) by CBG criteria (same cut off).

Based on the two aforementioned criteria, there was a statistically significant difference in the prevalence of GDM ($p<0.05$). This study's sensitivity was 86.36%, specificity was 95.31%, PPV was 78.45%, NPV was 97.25% and accuracy was 94%. When using the Fisher exact test, a statistically significant P-Value <0.0001 (P-value<0.05) indicates that CBG (with the same cut off as the WHO) can be used as a diagnostic tool for GDM diagnosis, similar to VPG (WHO criteria).

Seshiah *et al*.[6] found that Pregnant women in urban, semi-urban and rural areas were screened in total: 4151, 3960 and 3945. In comparison to the current study, GDM was found in 739 (17.8%) urban, 548 (13.8%) semi-urban and 392 (9.9%) rural women. These percentages are nearly identical (WHO-14.6% and CBG-16.3%). 1204 (or 72%) of the 1679 GDM women were found during the initial visit and the remaining 28% were found during follow-up visits.

Maternal age, BMI and a family history of diabetes were associated with a significant (P<0.0001) increase in the prevalence of GDM. Women who engaged in less physical activity showed a trend toward a higher prevalence of GDM, though this trend was not statistically significant.

Jadhav *et al*.[5] found that Pregnancy-related hyperglycemia is linked to poor outcomes for both the mother and the unborn child. Hypertension, preeclampsia, urinary tract infection, hydramnios, increased operative intervention and subsequent diabetic complications are among the unfavorable maternal complications.

It is linked to macrosomia, congenital defects, metabolic disorders, RDS and other conditions in fetuses and neonates, as well as obesity in childhood and adolescence afterward. To avoid a bad outcome, it's critical to screen for, identify and treat hyperglycemia during pregnancy.

Approximately 11 (7.33%) neonates of non-GDM mothers experienced RDS, in contrast to 4 (2.67%) neonates of GDM mothers, according to our study. 67.2% of non-GDM cases have more operational intervention than GDM cases (WHO-59.09%) and 64% of GDM cases meet CBG criteria. Statistically not significant, as indicated by the small sample size (P-Value = 0.77).

Seshiah *et al*.[6] found that 121 (16.3%) of the 741 GDM women were within 16 weeks of gestation, 166 (22.4%) were between 17 and 23 weeks and 454 (61.3%) were over 24 weeks. This information was obtained through an analysis based on gestational weeks. This study found that 38.7% of pregnant women had gestational diabetes even before reaching week 24. Only the second trimester was studied in the current study for all women.

Phaloprakarn and Tangjitgamol[7] showed that Based on a traditional 100 g OGTT, 155 women (17.1%) had GDM. The ideal summed glucose value for diagnosing GDM using a modified 100 g OGTT was 341 mg/100 mL^{-1}, producing 93.5% sensitivity and 95.2% specificity. The modified 100 g OGTT showed good diagnostic performance for GDM and had several advantages over the traditional 100 g OGTT, including less time, money and venepuncture required.

In this study, approximately 22 (14.6%) of the 25 women (16.6%) who met the CBG criteria (same cut off) and the WHO 2016 criteria by venous plasma glucose measurement in the lab were diagnosed with GDM. Based on the two aforementioned criteria, there was a statistically significant difference in the prevalence of GDM ($p<0.05$). This study has a sensitivity of 86.36%, specificity of 95.31%, PPV of 78.45%, NPV of 97.25% and accuracy of 94%. P-Value <0.0001 (p-value <0.05) indicates statistical significance in the Fisher exact test.

Hossain *et al*.[8] found that The average body mass index was 25.8±5.1 kg/m^2, the average gestational age was 28.9±4.4 weeks and the average mother age was 25.8±5.2 years. The mean BMI (mean±SD) in our study was 22.6784±2.6576 and the mean maternal age (Mean±SD) was 26.8667±5.9547. 14 (1.4%) had DM and 78 (7.6%) had GDM according to WHO criteria. VPG and CBG had a Pearson's correlation of 0.761 ($p<0.0001$). The CBG value demonstrated a sensitivity of 94.87%, specificity of 79.10% and area under the receiver operative curve (ROC) of 86% at a 2-hour plasma glucose level of ≥140 mg/dL. When screening for abnormal glucose homeostasis during pregnancy, non-fasting CBG is helpful.

Bhavadharini *et al*.[9] found that outcomes The VPG and CBG showed a Pearson's correlation of r = 0.433 [intra class correlation coefficient (ICC) = 0.596, $p<0.001$] when fasting; r = 0.653 (ICC = 0.776, $p<0.001$) for 1H and r = 0.784 (ICC = 0.834, $p<0.001$) for 2H.

The sensitivity and specificity of a single CBG 2-h cut point of 140 mg/dL (7.8 mmol/L) were 62.3 and 80.7%, respectively, when compared to the IADPSG criteria. The sensitivity increases to 78.3 and 92.5%, respectively, if CBG cut points of 120 mg/dL (6.6 mmol/L) or 110 mg/dL (6.1 mmol/L) were used.

Balaji *et al*.[10] found that A 2-hour plasma glucose level of ≥7.8 mmol/L (World Health Organization criteria) was used to diagnose GDM. 86 (10.5%) of the 819 pregnant women received a GDM diagnosis. With a 2-hour plasma glucose level of ≥7.8 mmol/L, the CBG value demonstrated a sensitivity of 80.2% and specificity of 98.5%. The rates of false-positive and false-negative results were 1.5% and 19.8%, respectively. The CBG receiver operator characteristic curve's area under the curve was 0.991. In hospitals without laboratory equipment, the CBG value at a 2-hour plasma glucose level of ≥7.8 mmol/L might be suggested for the diagnosis of GDM.

The mean CBG Fasting (Mean±SD.) of patients in the current study was 79.1533±10.0293; the mean CBG 1 hr (Mean±SD.) of patients was 142.9667±22.8078; and the mean CBG 2 hr (Mean±s.SD) of study subjects was 116.2867±23.0137.

Within the current study, 28 women met both the WHO and CBG (same cut off) criteria for GDM diagnosis. Of the 28 cases of GDM, 3 women (10.71%) were diagnosed using WHO criteria alone, 6 women (21.42%) used CBG criteria alone and 19 women (67.85%) used both CBG and WHO criteria. When comparing WHO criteria alone, CBG criteria diagnose 10.71% more cases of GDM.

Mounika and Loke[11] found that 45 patients (7.5%) had plasma glucose values ≥140 mg/dL two hours after the glucose load. The specificity was 96.3 and 96.9% and the sensitivity was 63.3 and 72.4%, respectively, when compared to the WHO and IADPSG criteria. It is advised to use the DIPSI criteria for diagnosing GDM since it is a one-step process that is practical, affordable and less time-consuming. But until further validation, itShould be used cautiously.

Damm[12] found that Most women with GDM regain normal glucose tolerance after giving birth. Nonetheless, prior research in populations very dissimilar to the Danish population has demonstrated that women with a history of GDM are highly susceptible to overt diabetes mellitus in later life. Insulin resistance and decreased insulin secretion, which are characteristics of non-obese glucose-tolerant women with a history of GDM, are features of non-insulin-dependent diabetes mellitus (NIDDM).

Therefore, all women with a history of GDM should have a routine evaluation of their glucose tolerance in the years following pregnancy, given this finding and the markedly elevated risk for developing diabetes. To diagnose women who are already diabetic and to identify those who are most at risk of developing overt diabetes in the future, the first OGTT should be carried out approximately two months after giving birth.

According to the current study, women's mean OGTT fasting (Mean±SD) was 81.0933±11.0583. Patients' average OGTT 1 hour (Mean±SD.) was 143.1600±18.5845 and their average OGTT 2 hour (Mean±SD.) was 118.0667±20.3350.

Singh *et al*.[13] found that The DIPSI method yielded a 5.7% incidence of GDM. Age [greater than or equal to] 25 years (34.8%), BMI [greater than or equal to] 25 (39.1%), family history (13%), history of previous pregnancy loss (8.7%) and history of polyhydramnios (8.7%) were the demographics with the highest incidence of GDM observations. Anencephaly (4.3%), gestational hypertension (8.7%), macrosomia (13.0%) and preterm delivery (17.4%) were the outcomes for both the mother and the fetus in GDM. Unfavorable prenatal and neonatal outcomes are more likely in women with gestational diabetes mellitus.

The women in this study had a mean age of 26.8667±5.9547 years (Mean±SD). The study population's mean BMI (Mean±S.D.) was 22.6784±2.6576. 42.67% of women have a BMI under 24.9, 22.67% are overweight (BMI 25-29.9) and 34.66% are obese (BMI > 30).

Nagaraj[14] found that The relationship between birth weight and cognition was not influenced by midlife or current cardiometabolic risk markers. It may have been mediated by the participants' educational attainment and it was lessened when all life course factors were taken into account [0.08 SD per SD birth weight (95% CI -0.01, 0.18) p = 0.07)]. After controlling for markers of the childhood environment (adult leg length and maternal education), the attenuation was at its highest. The effect of these exposures was found to persist into later life, as evidenced by the positive relationships found between birth weight and indicators of a better childhood environment and late life cognitive function. Depression rates were lower in those who were heavier at birth; this relationship was marginally significant [OR = 0.82 per SD birth weight 95%CI (0.68, 1.00) p = 0.09].

The new-born's mean Baby Birth WT (KG) in the current study was 2.7255±.4062. The percentage of babies born with a mother's GDM diagnosis weighing more than 2.6 kg is higher than that of babies born without a diagnosis. percentage of babies weighing more than 3 kg in GDM (25%) compared to non-GDM (14.75%).

CONCLUSION

We concluded that the study was conducted at ESI-PGIMSR, ESIC Medical College, Joka, Kolkata-700104, in the Department of Obstetrics and Gynecology in cooperation with the Department of Biochemistry. A total of 150 pregnant women included in the study population. Following the Oral Glucose Tolerance Test (OGTT), blood sugar levels were measured simultaneously using capillary blood and venous plasma.

The study found that testing of venous plasma glucose (VPG) by laboratory method detected 22 women as GDM and CBG, detected 25 women with a Sensitivity of 86.36%, Specificity of 95.31%, PPV of 78.45% and NPV of 97.25% (using similar cut off values as defined by the WHO). However, 21 women were identified as having GDM when a different cutoff was applied in CBG, adding 20 mg/dL to the 1 hour and 2 hour values. This resulted in a sensitivity of 77.27%, specificity of 96.88%, PPV of 80.75% and NPV of 96.17%. CBG is a highly specific test, as demonstrated by the use of both methods (adding 20 mg/dL to the 1 hour and 2 hour values of CBG and using the same cut off as per WHO criteria). As a result, the study indicates that the CBG method of screening for pregnancy can be a helpful tool in a nation like India, particularly in rural areas lacking access to laboratory facilities. However, more extensive research of this kind is needed to determine the precise CBG cut off value for the diagnosis of GDM in pregnant mothers.

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