Research Paper

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A STUDY OF GESTATIONAL DIABETES MELLITUS AND ITS FETOMATERNAL OUTCOME IN VSSIMSAR,BURLA

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ABSTRACT

BACKGROUND : Gestational diabetes mellitus is defined as carbohydrate intolerance of variable severity with onset or first recognition during the present pregnancy.

OBJECTIVES : To assess the fetomaternal outcome of pregnancy in mothers with gestational diabetes mellitus (GDM).

MATERIALS & METHODS: A study, conducted in 100 patients, where 50 were normal pregnant women and 50 pregnant women with GDM , was carried out in the department of obstetrics & gynecology of VSSIMSAR BURLA , over a period of 2 years .

RESULTS: Increasing age(31±5.5years) of patient was associated with GDM. Preterm deliveries were more common among GDM cases (83%).IUGR and gestational hypertension are present in 71 % & 67 % of GDM cases.

CONCLUSION: Early detection of GDM and treatment would reduce fetomaternal mortality and morbidity.

KEYWORDS

Gestational diabetes mellitus,IUGR,Gestational hypertension.

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INTRODUCTION

1 out of every 200 pregnant women will develop gestational diabetes mellitus (GDM).

GDM is diagnosed in approximately 3-7% of pregnancies. The incidence of GDM increases in older and more obese pregnant women.Women diagnosed with GDM are at increased risk for a variety of pregnancy complications including gestational hypertensive disorders, foetal macrosomia, shoulder dystocia, and caesarean delivery.

GDM confers a 7-fold risk for future type 2 diabetes23 and upto one-third of women with type 2 diabetes have been diagnosed with Gestational diabetes mellitus (GDM) a common metabolic disorder in pregnancy and is defined as “any degree of glucose intolerance with onset or first recognition during pregnancy with or without remission after the end of pregnancy”(1).

OBJECTIVES:

To assess the fetomaternal outcome in pregnant women with gestational diabetes mellitus.

MATERIAL & METHODS:

STUDY TYPE : Prospective observational study.
PLACE OF STUDY : VSSIMSAR BURLA,Department of O&G
TIME PERIOD : December-2015 to November2017

INCLUSION CRITERIA :

1. Pregnant women attending OPD of O & G Dept and having GDM and expected to deliver here.
2. Pregnant women of any parity and should be of singleton pregnancy.

EXCLUSION CRITERIA:

Patients with known type 1 or type 2 DM.

The cases were taken from those who attended the OPD of O&G deptt or were admitted to the same during DEC 2015 to NOV 2017.
The pregnant women irrespective of trimesters were subjected to 75gm 2Hr PGBS Test. Those women with 2 hour PGBS level ≥140 mg/dl were diagnosed as GDM & were taken as cases & they were followed up for fetomaternal outcome. Those having 2 hr PGBS < 140mg/dl were taken as controls & were followed up to compare the fetomaternal outcome.

A total of 100 cases were taken into the study excluding the dropouts out of which 50 were taken as cases with GDM and same number of cases were taken as control to compare the fetomaternal outcome.

OBSERVATION

Table 1 : Distribution of GDM and Non-GDM cases in <25 and 25 age groups

Age groups (in years)	GDM		Non-GDM		Total	
	Number (50)	%	Number (50)	%	Number (100)	%
<25	12	24	36	72	48	48
25	38	76	14	28	52	52
P value 0.000						

Most (76%) of GDM women were in the age group of 25 years with a P value of 0.000 which is statistically highly significant whereas 24% of GDM cases were in the age group of <25 years. Most (72%) of the Non-GDM women were in the age group of <25 yrs.

Table 2 : Distribution of GDM and Non-GDM cases according to socio economic status

Socio economic status	GDM		Non-GDM		Total		P value
	Number (50)	%	Number (50)	%	Number (100)	%	0.000
Upper	10	20	7	14	17	17	
Middle	30	60	8	16	38	38	
Lower	10	20	35	70	45	45	

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Majority of patients belong to lower socioeconomic status. Among GDM group maximum (60%) belong to middle class, 20% belong to each of upper & lower class whereas in Non-GDM group maximum (70%) belong to lower class, followed by 16% belong to middle class 14% belong to upper class. 60% of GDM cases is associated with middle class whereas 16% of Non- GDM cases is associated with the same with a P value of 0.000 which is statistically highly significant.

Table 3 : Distribution of GDM and Non-GDM cases according to no of abortuions previously present

Number of abortions	GDM		Non-GDM		Total	
	Number (50)	%	Number (50)	%	Number (100)	%
Nil	8	16	46	92	54	54
1	42	84	4	8	46	46
P value 0.000						

84% of GDM cases had past history of abortions i.e. 1 whereas only 8% of Non-GDM cases had past history of abortions. GDM is associated with past history of abortions with a P value of 0.000 which is statistically highly significant.

Table 4 : Distribution of GDM & Non-GDM cases according to BMI

BMI (Kg/M^2)	GDM		Non-GDM		Total	
	Number (50)	%	Number (50)	%	Number (100)	%
<25	4	8	40	80	44	44
25-29	12	24	8	16	20	20
30	34	68	2	4	36	36
Mean	29.81		23.00		26.40	
SD	3.76		3.39		4.94	

68% women of GDM group had BMI 30 Kg / M^2 showing a highly significant association (P value 0.000) between obesity (BMI 30 kg / m^2) and GDM. 24% and 8% of GDM women had BMI of 25-29 and < 25 kg/m^2 whereas 80%, 16% and 4% of Non-GDM women had BMI of <25,25-29 and 30 Kg/m^2 respectively. Mean BMI was higher in women with GDM (29.81 3.76 Kg/m^2) than Non-GDM (23.00 3.39 Kg/m^2). The mean BMI of total patients found out to be (26.40 4.94 Kg/m^2).

Table 5 : Presence of PIH in GDM group and Non-GDM group

PIH	GDM		Non-GDM		Total	
	Number (50)	%	Number (50)	%	Number (100)	%
Present	15	30	6	12	21	21
Absent	35	70	44	88	79	79
P value	0.027					

PIH is seen in 15 out of 50 (30%) of GDM cases whereas it is seen in 6 out of 50 (12%) of Non-GDM cases. PIH is found to be associated with GDM with a P value of 0.027 which is statistically significant.

Table 6 : Maternal complications in GDM and Non-GDM group

Maternal complications	GDM		Non-GDM		Total		P value
	Number (50)	%	Number (50)	%	Number (100)	%	
Polyhydramnios	6	12	2	4	8	8	0.140
UTi	11	22	5	10	16	16	0.102
Preterm labour	6	12	4	8	10	10	0.505
IUGR	5	10	02	4	7	7	0.240
Vaginal candidiasis	6	12	3	6	9	9	0.295
Nil	16	32	34	68	50	50	0.000

Maternal complications like UTL polyhydramnios, IUGR & vaginal candidiasis are proportionately more in GDM group than in Non-GDM group. Out of 50 GDM patients 16 are having no complication and UTI occurs in 22% of GDM patients. In Non-GDM group 10% of patients had UTI. 68 had no complications in comparison to 32% GDM patients. Which has got a statistically highly significant P value of 0.000. All other parameters are not statistically significant.

Table 7 : Distribution of GDM and Non-GDM cases according to mode of delivery

Mode of Delivery	GDM		Non-GDM		Total	
	Number (50)	%	Number (50)	%	Number (100)	%
Vaginal Delivery	17	34	35	70	52	52
Instrumental	10	20	5	10	15	15
LSCS	23	46	10	20	33	33
P value	0.001					

34% of GDM cases had vaginal delivery whereas in Non-GDM cases it is 70% incidence of operative delivery is more in GDM cases i.e. 20% had instrumental delivery and 46% had LSCS whereas in Non-GDM cases 10% had instrumental delivery and 20% had LSCS which is statistically significant (P value 0.001).

Table 8 : Presence of live birth and still birth foetuses at the time of delivery of GDM & Non-GDM cases.

LB/SB	GDM		Non-GDM		Total	
	Number (50)	%	Number (50)	%	Number (100)	%
LB	45	90	48	96	93	93
SB	5	10	2	4	7	7
P value	0.240					

90% of GDM patients have live births whereas 96% of Non GDM patients have live births. Still births occur in 10% and 4% of GDM & Non-GDM cases respectively which is not statistically significant (P value 0.240).

Table 9: Distribution of birth weight of baby among GDM and Non-GDM cases

Birth Weight of Baby (in Kg	GDM		Non-GDM		Total	
	Number (50)	%	Number (50)	%	Number (100)	%
<2.5	11	22	5	10	17	17
2.5-3.9	34	68	45	90	79	79
4	5	10	0	0	5	5
Mean	2.860		2.875		2.867	
SD	0.59		0.34		0.48	

On comparison the mean birth weight in women with GDM (2.86 + 0.59 Kg) was almost similar to that among women with Non-GDM (2.87 + 0.34 Kg) with a P value of 0.876 which is statistically not significant. Overall macrosomia (>4 kg) rate was 5%. 10% of GDM mothers had macrosomia whereas none of the Non-GDM mothers had macrosomia. 22% of GDM women had birth weight <2.5 kg. Whereas 10% of non GDM women had birth weight of <2.5 kg. Hence birth weight has got an association with GDM with a P value of 0.012 which is statistically significant.

Table 10 : Neonatal complications among GDM and Non-GDM cases

Neonatal complications	GDM		Non-GDM		Total		P value
	Number (50)	%	Number (50)	%	Number (100)	%	
Birth Asphyxia	3	6.66	2	4.16	5	5.37	0.593
Hypoglyemia	7	15.5	2	4.46	9	9.6	0.063
Hyper bilirubinemia	6	13.3	1	2.08	7	7.52	0.040
Polyeythemia	3	6.66	0	0	3	3.22	0.069
Hypoealcemia	3	6.66	0	0	3	3.22	0.069
Respiratory disease	8	17.7	5	10.4	13	13.9	0.306
Nil	15	33.3	38	79	53	56.9	0.000

Neonatal complications like hyperbilirubinemia, hypoglycaemia, respiratory distress, polyeythemia, hypoelcemia are proportionately more in GDM group than in Non-GDM group. 33.3% of GDM group had no neonatal complications whereas 79% of Non-GDM group had no neonatal complications which is statistically highly significant (P value 0.000), 6.66% of GDM women had birth asphyxia of their babies in comparison to 4.16% of Non-GDM women the same, out of all neonatal complications Only hyperbilirubinemia cases are found to be statistically significantly associated with GDM (P value <0.05).

Table 11 : Distribution of GDM and Non-GDM patients according to maternal morbidity during puerperium

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Puerperal complications	GDM		Non-GDM		Total	
	Number (50)	%	Number (50)	%	Number (100)	%
Normal Puerperium	41	82	46	92	87	87
Puerperal pyrexia	4	8	3	6	7	7
Sub-involution of uterus	5	10	1	2	6	6
P value	0.213					

8% of women in GDM group had puerperal pyrexia in contrast to 6% of Non-GDM) group and 10% of GDM women had sub-involution of uterus as against 2% of the women of Non-GDM group but it is not statistically significant (P value 0.213). in 82% of GDM cases there was normal puerperium whereas in 92% of Non-GDM cases there was normal puerperium.

Table 18 : Presence of live birth and still birth foetuses at the time of delivery of GDm & Non-GDM cases.

LB / SB	GDM		Non-GDM		Total	
	Number (50)	%	Number (50)	%	Number (100)	%
LB	45	90	48	96	93	93
SB	5	10	2	4	7	7

90% of GDM patients have live births whereas 96% of Non GDM patients have live births. Still births occur in 10% and 4% of GDM & Non-GDM cases respectively which is not statistically significant (P value 0.240).

DISCUSSION :

Author	Study Year	Result	Present Study
Nilofer A R et al	2012	31.3 % of study population of > 25 y	52 % of study population of >25 y
Rajput R et al	2013	Prevalence of GDM in upper middle and lower ses were 25%,27%,48%	Same prevalence is 20%,60% & 20% respectively
Chanu et al	2015	29.5 % of GDM & 11.3 % of NGDM cases had past history of abortions	84% of GDM & 8 % of NGDM cases had the same
Rajput R et al	2013	Women with BMI >25 & BMI< 18.5 had GDM 22% & 4%	Women with BMI 25-29 & BMI <25 had GDM 24% & 8% respectively
Makwana M et al	2017	Incidence of PIH in GDM vs NGDM group was26.32% vs 14.61%	Here the same incidence was 30% vs 12%
Sudhanshu SN et al	2014	Incidence of vag cand ,poly and preterm labour are 23%,8%,4% in GDM	Its 12% for all the above complications in GDM cases
Pikee saxena et al	2011	42% of GDM patients had undergone lscs	46% of GDM cases had undergone for the same
Selvi et al	2017	Inciden ce of SB in GDM & NGDM cases 9% & 3%	For same it is 10% & 4%
Abdulbari Bener et al	2011	10.3% of GDM and 5.9% of NGDM group had macrosomic babies	10% and 09% respectively for the same
Pikee saxena et al	2011	Diabetic mothers having complications like hypocal,hbl,polycyth are 14%,34%,8%	For the same its 6.66%,13.3%,6.66% respectively

CONCLUSION

Women with GDM are at an increased risk for adverse obstetrics and perinatal outcomes. Due to high prevalence of GDM in India early universal screening is essential.

- The present study illustrates that Age ≥ 25 years, middle socio-economic status, past history of GDM and family history of DM, multigravida, past history of abortions and obesity are significant risk factors in GDM population.
- Good maternal and foetal outcome results from early and meticulous prenatal and intra natal care as seen in our study. Although eradication of GDM is impossible, we can definitely prevent its adverse effects on pregnancy outcome. Treatment of GDM prevents future DM in the mother and also acts as prevention for future DM in the unborn child.
- With effective diagnosis and management of GDM, from "the diabetes capital of the world," we (INDIA) can lay claim to be the "diabetes care capital of world."

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