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## A Prospective Observational Study On Gestational Diabetes Mellitus with Family History and Treatment.

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### ABSTRACT

Evaluate the gestational diabetes mellitus with family history and treatment. This study was undertaken to determine the prevalence of GDM and risk factors associated with in rural women of different family history. This study which includes prospective observational study with family history and treatment of gestational diabetes patients. The study was done in a gynecology department and carried out for a period of one year both in-patient and out-patients in gynecology department by using chi-square analysis for all statistical analysis. Total of 150 patients were screened. Out of 150 pregnant ladies being studied the patient with gestational diabetes was seen more in the age group from 18-25 (34.6%). Patients with a family history in which both mother and father are having diabetes are seen 57(38%) patients were affected with gestational diabetes. 139 (92.6%) patients are taking insulin, 11(7.3%) patients are taking metformin. Study suggest that patients who had a previous family history of diabetes mellitus should be cautious because the chances of developing diabetes during gestational period is high when compared to the other pregnant women. This study conclude that more number of patients were taking insulin compare with metformin.

**Keywords:** Gestational diabetes, insulin, metformin, family

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## INTRODUCTION

Gestational diabetes also known as gestational diabetes mellitus (GDM), is a condition in which women without previously diagnosed diabetes exhibit high blood glucose (blood sugar) levels during pregnancy (especially during their third trimester). Gestational diabetes is caused by improper insulin responses. This is likely due to pregnancy-related factors such as the presence of human placental lactogen that interferes with susceptible insulin receptors. This in turn causes inappropriately elevated blood sugar levels.[1] Gestational diabetes generally has few symptoms and it is most commonly diagnosed by screening during pregnancy. Diagnostic tests detect inappropriately high levels of glucose in blood samples. Gestational diabetes affects 3–10% of pregnancies, depending on the population studied Typically gestational diabetes will disappear after the baby is born.[2] As with diabetes mellitus in pregnancy in general, babies born to mothers with untreated gestational diabetes are typically at increased risk of problems such as being large for gestational age (which may lead to delivery complications), low blood sugar, and jaundice. If untreated, it can also cause seizures or stillbirth.[3] Gestational diabetes is a treatable condition and women who have adequate control of glucose levels can effectively decrease these risks. The food plan is often the first recommended target for strategic management of GDM.[4]

### Classification:

The two subtypes of gestational diabetes under this classification system are:

- Type A1: abnormal oral glucose tolerance test (OGTT), but normal blood glucose levels during fasting and two hours after meals; diet modification is sufficient to control glucose levels
- Type A2: abnormal OGTT compounded by abnormal glucose levels during fasting and/or after meals; additional therapy with insulin or other medications is required

Diabetes which existed prior to pregnancy is also split up into several subtypes under this system:

- Type B: onset at age 20 or older and duration of less than 10 years.
- Type C: onset at age 10–19 or duration of 10–19 years.
- Type D: onset before age 10 or duration greater than 20 years.
- Type E: overt diabetes mellitus with calcified pelvic vessels.
- Type F: diabetic nephropathy.
- Type R: proliferative retinopathy.
- Type RF: retinopathy and nephropathy.
- Type H: ischemic heart disease.
- Type T: prior kidney transplant. [5]

### CRITERIA FOR DIAGNOSIS OF GESTATIONAL DIABETES ACCORDING TO NATIONAL DIABETES DATA GROUP

- Fasting 105 mg/dl
- 1 hour 190 mg/dl
- 2 hours 165 mg/dl
- 3 hour 145 mg/dl<sup>3</sup>

During pregnancy, the placenta makes hormones that can lead to a buildup of sugar in your blood. Usually, your pancreas can make enough insulin to handle that. If not, your blood sugar levels will rise and can cause gestational diabetes.[6]

The amount of glucose in the blood is controlled by a hormone called insulin, which is produced by the pancreas (a gland behind the stomach). Diabetes is caused either by insufficient insulin being produced, or the body becoming resistant to insulin, which means the insulin doesn't work properly.[7]

Metformin has been used to treat pregnant women with GDM. A retrospective cohort study found an increased prevalence of preeclampsia and perinatal mortality in women treated with metformin. However, the women in the metformin group were more obese and older, and their treatment was begun later in

gestation.[8] Recent studies involving women with polycystic ovary syndrome or women with type 2 diabetes who continue metformin in pregnancy have found no adverse pregnancy outcomes. [9]

Although previous studies have been small, there is an ongoing prospective, randomized controlled trial in New Zealand and Australia comparing metformin with insulin in women with GDM. This study will help to answer questions about the safety of metformin during pregnancy. Metformin is listed as Pregnancy Category B by the FDA. [10]

## MATERIALS AND METHODS

The study was designed to be a prospective observational study and carried over a period of one year. Total of 150 patients observed in this study. The present study was conducted in Gynecology department of a Tertiary Care Hospital. The hospital is having capacity of 2000 beds for in-patient hospitalization along with supported qualified staff. The hospital is well equipped, and service provided to patients including all the biochemical, clinical pathology and microbiology investigations facilities are available. Expert guidance of clinical pharmacy professionals, senior and junior physicians of the departments selected for the study in the hospital. It was permitted to utilize the hospital facilities to make a follow-up prescription, in the selected departments. Patients were intimated about use of patient records, and all the health care professional were also informed about the project work. In this study all the data were recorded in proforma which includes the information's regarding patients detail patients detail such as name, age, sex, height, weight, B.M.I, IP number, social history, past medical and medication history, family history, treatment The pregnant ladies are routinely screened for diabetes with fasting blood sugar test (FBS) and if the value is more than 140 mg/dl, post prandial blood sugar test (PPBS) if two or more than two value are increase, they are managed as gestational diabetes . these case are enrolled for study. The following data were collected: age, prior macrosomia, prior GDM, parity, history of type 2 diabetes in first-degree relatives, weight before pregnancy, weight gain during pregnancy, glucose level at the first obstetric visit and method for treatment of GDM. The study on gestational diabetes mellitus with family history and treatment was done by using chi-square analysis for all statistical analysis.

## RESULTS AND DISCUSSION

Total of 150 pregnant ladies being studied with gestational diabetes was seen more in the age group from 18-25(34.6%) of the population was seen less from the group from 36-40(10%). (Table 1)

Distribution Based on child It was also seen that in most of the cases the chances of gestational diabetes was seen during the delivery time of the first child as compared to the 2 and 3. Gestational diabetes population were first child 83 (55.3%), second child 55(36.6%), Third child 12 (8%). (Table 2)

Distribution Based on family history Patients with a family history in which both mother and father are having diabetes are seen to have diabetes during their pregnancy period 57(38%). Father alone 49(32.6%). Mother alone 25(16.6%). (Table 3)

Distribution Based on trimester the patients rate of gestational diabetes was more during the first trimester than the second or third. Its indicating they should be more careful during the Pregnancy time. The population were from the 1 trimester 85(56.6%), 2 trimester 57(38%), 3 trimester 8 (5.3%) (Table 4)

Distribution Based On Comorbidities When patients was PCOD with gestational diabetes 124 (82.6%), Non PCOD with gestational diabetes 26 (17.3%) (Table 5)

Distribution Based On Drug When patients are using insulin or metformin, the more number of patients using insulin 139 (92.6%), compared with metformin 11(7.3%). (Table 6)

**TABLE NO 1: DISTRIBUTION BASED ON AGE**

AGE	NO.OF PATIENT N=150	% OF PATIENTS	P VALUE
18-25	52	34.6	<0.0001
26-30	48	32	
31-35	35	23.3	
36-40	15	10	

**TABLE NO 2: DISTRIBUTION BASED ON CHILD**

CHILD	NO.OF.PATIENTS N=150	% OF PATIENTS	P VALUE
1	83	55.3	<0.0001
2	55	36.6	
3	12	08	

**TABLE NO 3: DISTRIBUTION BASED ON FAMILY HISTORY**

FAMILY HISORY	NO.OF.PATIENTS	% OF .PATIENTS	P VALUE
FAMILY HISTORY OF FATHER(FHF)	49	32.6	<0.0001
FAMILY HISTORY OF MOTHER(FHM)	25	16.6	
FAMILY HISTORY OF FATHER AND MOTHER(FHFM)	57	38	
WITH OUT FAMILY HISTORY(WOFH)	08	5.3	
WITH FAMILY HISTORY NO GDM(WFH NO GDM)	11	7.3	

**TABLE NO 4: DISTRIBUTION BASED ON TRIMISTER**

TRIMISTER	NO.OF PATIENTS	% OF PATIENTS	P VALUE
1	85	56.6	<0.0001
2	57	38	
3	08	5.3	

**TABLE NO 5: DISTRIBUTION BASED ON COMORBIDITIES**

PCOD	NO.OF.PATIENTS N=150	% OF PATIENTS	P VALUE
PCOD Patients	124	82.6	<0.0001
NON PCOD Patients	26	17.3	

**TABLE NO 6: DISTRIBUTION BASED ON DRUG**

DRUG	NO.OF.PATIENTS N=150	% OF PATIENTS	P VALUE
INSULIN	139	92.6	<0.0001
METFORMIN	11	7.3	

**CONCLUSION**

This study suggest that clinical and historical risk factors for GDM are valid in patients. Patients who had a previous family history of diabetes mellitus should be cautious because the chances of developing diabetes during gestational period is high when compared to the other pregnant women. Macrosomia, cesarean section and fetal metabolic complications can be minimized by taking precautions during pregnancy. In this study conclude that more number of patients were taking insulin compare with metformin.

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