



STUDY ON THE EFFECT OF BLOOD PRESSURE IN GESTATIONAL DIABETES MELLITUS WOMEN AND ITS ADVERSE MATERNAL OUTCOME IN GWALIOR DISTRICT MADHYA PRADESH

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ABSTRACT Gestational diabetes mellitus (GDM) and preeclampsia (PE) are most common pregnancy complications with similar risk factors and path physiological changes. When a pregnant woman has high blood pressure, protein in her urine, and often swelling in fingers and toes that doesn't go away, she might have preeclampsia .it is a serious problem that needs to be watched closely and managed by her doctor .high blood pressure can cause harm to both the woman and her unborn baby.it might lead to the baby being born early and also could cause seizures or a stroke in the women with diabetes have high blood pressure more often than women without diabetes From previous studies suggests that the incidence of PE commonly increased in women with GDM. and GDM complicated by PE further increases the adverse effect on maternal and new born babies health. This study provides the prevalence of PE in GDM and its adverse maternal outcomes

KEYWORDS : gestational diabetes mellitus, preeclampsia, post partum haemorrhage

INTRODUCTION

GDM and high blood pressure are closely linked to each other. Preeclampsia is the medical term for abnormally high blood pressure that typically happens after 20 weeks in to pregnancy. pre-eclampsia is dangerous for both mother and child. it can prevent the baby from getting enough blood, resulting in low birth weight and preterm birth. it may also cause the placenta to separate from the uterus before birth, cause damage to other organs, or increase cardiovascular disease risks. if it develops in to eclampsia, the mother may undergo life-threatening seizures.

A recent study of initially healthy middle-aged women found that blood pressure (BP) predicted the development of incident type 2 diabetes independent of BMI and other known diabetes risk factors (1). Several studies have shown that women with a history of gestational diabetes mellitus (GDM) are more likely to have features of the metabolic syndrome, including high BP, in the years after delivery (2-5)

LITERATURE REVIEW

Preeclampsia and gestational diabetes mellitus (GDM) are two diseases that affect the perinatal outcomes of both the mother and child [6-9]. Although preeclampsia and GDM may appear to be unrelated disease entities because their clinical manifestation and diagnostic criteria do not overlap, many studies have shown a correlation between preeclampsia and GDM. Miyakoshi et al. [10] described the perinatal outcomes of pregnant women with mild glucose intolerance or GDM and noted significantly higher rates of preeclampsia. Similarly, preeclampsia is thought to be linked to the degree of glucose intolerance [11-13]. Schneider et al. [14] recognized common risk factors between the two conditions, including increased maternal age, nulliparity, multiple gestation pregnancies, and an increased pre-pregnancy body mass index. The underlying pathophysiology of the conditions share is assumed to be vascular endothelial dysfunction [15-17]. Clinical manifestation of these diseases may disappear early with the termination of pregnancy, however, due to systemic pathological changes, women with a history of GDM or preeclampsia are at high risk for developing type 2 diabetes or chronic hypertension [18]. These conditions both affect maternal health and any subsequent pregnancy as a corollary consequence.

The majority of researchers who have studied the long term consequences of these two conditions have focused on the effect that GDM has on the risk for preeclampsia, and they have determined that GDM itself is an independent risk factor for preeclampsia [19,20,21]

Gestational diabetes mellitus (GDM) and preeclampsia (PE) are common complications in pregnancy with similar risk factors, including obesity, advanced age, and multiple pregnancy (22,23). Moreover, in both GDM and PE, the pathophysiological processes involve oxidative stress, pro-inflammatory factor release, vascular endothelial dysfunction (24,25), which all increase the risk of future maternal diabetes and cardiovascular disease (26-28); thus, a correlation between GDM and PE may exist.

GDM is associated with adverse pregnancy outcomes. Studies have found that the incidence of PE is significantly increased in GDM (29, 30). However, whether GDM is independently associated with the occurrence of PE or because of the effects of their common risk factors, especially obesity, remains controversial.

PE refers to new hypertension (systolic or diastolic blood pressure ≥ 140 or ≥ 90 mmHg, respectively) diagnosed at or after 20 weeks of gestation with proteinuria, or at least one other organ (kidney, liver, nervous system, blood system, and uteroplacenta) dysfunction (31). PE is the main cause of maternal and fetal mortality and morbidity (32,33). GDM complicated by PE further increases perinatal adverse events (34-37), future maternal risk of chronic hypertension, cardiovascular disease, and diabetes (38-40); offspring body mass index (BMI) also steadily increases over time (41).

Some studies shows the significant association between GDM and postpartum haemorrhage(PPH) (42,43).

AIMS AND OBJECTIVE;

To study the prevalence of high blood pressure in gestational diabetes mellitus and its effect on maternal outcomes.

1. MATERIALS AND METHODS: SELECTION OF THE SUBJECTS

The study was a hospital based conducted over a period of 1 year from august 2021 TO may 2022. 200 pregnant women who had been diagnosed with GDM and receiving prenatal care at the department of obstetrics and gynecology department were selected from the district hospital maternity wing Morar, Gwalior district (Madhya Pradesh).

Informed consent was taken from all the patients. Study participants were divided in to two groups according to convenience ,group A and group B. Detailed history was taken including age, gestational age, Socio economic status like types of family, earning family members, types of work, financial status, pre pregnancy weight ,BMI, blood pressure of all three trimester were also collected from the selected subjects.

Then the complications during delivery recorded from the hospital records of the participants.

INCLUSION AND EXCLUSION CRITERIA

INCUSION CRITERIA

All pregnant women with gestational diabetes mellitus visiting OBG department, who are willing to participate in the study were included in the present study.

EXCLUSION CRITERIA

All pregnant women without gestational diabetes, a patient with pre-existing diabetes mellitus, and patients who are not willing to participate in the study were excluded from the study.

SAMPLING TECHNIQUE

1) A case-control descriptive and analytical study was conducted between August 2021 to May 2022 in district hospital maternity wing Morar, Gwalior district (Madhya Pradesh). A total of 200 pregnant women were included for the study based on the willingness to participate. The study consists of all pregnant women aged 20-35 years.

2) A one step screening and diagnostic procedure with 75 gm of oral glucose is advocated during the first antenatal care visit, irrespective of the last meal. (DIPSI TEST-National guidelines for diagnosis and management of gestational diabetes mellitus. New Delhi. Maternal health division ,ministry of health and family welfare. New Delhi ; Government of India ;2015)

3) First antenatal test positive subjects that is above 140mg/dl declared as Gestational diabetes mellitus .And these subjects were included in the study.

4) Subjects were divided in to two groups GROUP A and GROUP B according to convenience . In group A 100 subjects and in group B 100 subjects were included. A pretested questionnaire was used to interview the subjects to elicit information for data collection . Maternal details were collected and documented from the direct interview includes maternal name ,age, sex, education, income, physical activity, family health history, past medical history, anthropometric data like height, weight, bmi, of the respondents were recorded . For measuring body weight, weighing machine were used and BMI were calculated according to height and weight. And for measuring blood pressure standard measuring instruments was used.

5) Data of pregnancy complications of the participants were recorded from hospital records.

STATISTICAL ANALYSIS:

Statistical analysis was done using SPSS software. Data collected from the study was tabulated in Microsoft Excel 2010 and were keyed into the SPSS and analyzed by appropriate statistical methods.

OBSERVATION AND RESULTS :

**Table 1
Comparison of Vitals between Group A and B**

Group Statistics	A	B	P
	Mean ± SD	Mean ± SD	
SBP 1st Trimester	120.59±12.68	118.4±15.09	0.268
SBP 2nd Trimester	126.56±17.6	121.13±16.4	0.025
SBP 3rd Trimester	118.17±11.78	116.83±12.42	0.435
DBP 1st Trimester	78.41±10.68	75.52±11.67	0.069
DBP 2nd Trimester	79.65±11.93	76.76±12.52	0.096
DBP 3rd Trimester	75.83±8.36	73.84±11.61	0.166

No significant difference was observed in systolic and diastolic blood pressure between group A and B at all time intervals (trimesters) except Systolic Blood pressure in second trimester where systolic blood pressure was significantly higher A group

Table 2 PREGNANCY COMPLICATION

Pregnancy Complication	Group A		Group B		P Value
	N	%	N	%	
Preeclampsia	1	1.0%	12	12.0%	<0.001

In this above table one percent in Group A and twelve percent in B had Pre-Eclampsia.

Table 3 PREGNANCY COMPLICATION

Pregnancy Complication	Group A		Group B		P Value
	N	%	N	%	
Post-Partum Hemorrhage	2	2.0%	3	3.0%	0.241

In this above table two percent in Group A and three percent in group B had Post-Partum Hemorrhage.

DISCUSSION:

This study shows that how women with GDM and PE experience complications during delivery. It reveals the support they want and the important motivating factors for lifestyle change. Our study involved

GDM and PE ,both of them affect the maternal outcomes.From table 1 we can analyse that No significant difference was observed in systolic and diastolic blood pressure between group A and B at all time intervals (trimesters) except Systolic Blood pressure in second trimester where systolic blood pressure was significantly higher in A group.

GDM and gestational hypertension have been long associated with each other as they share several common risk factors (44,45,46,47,48,49).

From table 2 and table 3 pregnancy complications were analysed and 1 % in Group A and 12% in B had Pre-Eclampsia. And from table 3 ,2% in Group A and 3% in group B had Post-Partum Hemorrhage. Worldwide, obstetric hemorrhage is a leading cause of maternal mortality and severe maternal morbidity, accounting for 25% of all maternal deaths (50,51).Severe maternal morbidity caused by PPH includes adult respiratory distress syndrome, coagulopathy, shock, loss of fertility, and Sheehan syndrome (52,53). So hypertensive disease of pregnancy as well as PPH contributes significantly to maternal mortality and severe morbidity.

Other studies have also found a significant association between preeclampsia and PPH (54-57) .

The study suggested that special attention should be given to the management of obstetric hemorrhage among women with GDM.

CONCLUSION:

According to the findings of this study, optimizing the treatment and management of GDM can reduce the incidence of PE .The controllable factors affecting PE of GDM is important for improving pregnancy outcomes. Understanding the pathophysiological mechanism of GDM affecting the incidence of PE is helpful to find supportive markers and preventive measures, which needs further studies.

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