



# ASSESSMENT ON EFFECTIVENESS OF LIFESTYLE MODIFICATION INTERVENTION ON RECURRENCE OF GDM AMONG ANTENATAL MOTHERS IN EXPERIMENTAL GROUP

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## Abstract

A high level of insulin and a lack of insulin (IR) are associated with childbirth, which may increase certain women's risk of developing diabetes. Any degree of glucose aversion with beginning or early detection throughout pregnancy is referred to as gestational diabetes mellitus, or GDM. The aim of the study is to assess the affect of lifestyle modification intervention on recurrence of GDM in antenatal mothers. Methodology was based on the sampling technique. The randomly selected as an experimental and control setting. The experimental group at Maternity and Tertiary Hospital were administered lifestyle modification intervention focused on Group walking, Diet modification, Monitoring body weight & Maintaining BMI and Modifying the sleeping pattern. Results depicted are the lifestyle modification intervention was effective to reduce signs of polyhydramnios, symptoms of preeclampsia, UTI, number of caesarean sections among antenatal mothers in the experimental group. It ought to deliver the necessary nutrients and calories to suit pregnancy-related nutritional demands is not the ideal time for obesity correction. Antenatal mothers should be encouraged to practice group walking, thereby increase the chance for normal delivery and a healthy mother and baby.

**Keywords:** *Lifestyle modification, gestational diabetes mellitus, antenatal mothers, Hospital*

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## Introduction

The development of Gestational Diabetes Mellitus (GDM), which includes difficulty in maintaining a normal level of glucose, is known as the most common metabolism issue of pregnant and has a negative impact on the health of both the mother and the unborn child (Boath et al., 2023). GDM include complications like foetal GDM significantly increases woman's risk of later acquiring type 2 diabetes (T2D) and coronary artery disease (CAD) (Paulsen et al., 2023). Death, macrosomia, the newborn hypoglycaemia, a state of hyper and respiratory distress in the newborn are some of

the complications that may occur during pregnancy (Mishra and Kishore, 2018).

"Gestational diabetes mellitus" (GDM) is a common metabolic disorder during childbirth that resembles type 2 diabetes mellitus (T2DM) in many ways. The oxidative strain brought on by T2DM and GDM triggers stress response signals (Choudhury et al., 2017). Additionally, the mother and baby may have a number of difficulties as a consequence of the likelihood of developing Type 2 diabetes during labor. Physical exercise has been shown to be an essential tool not merely for reducing the negative effects from diabetes



nevertheless for halting its development and even undoing the changes already done by the disease by regulating the body's immune system (Dieberger et al., 2023; Bennette et al., 2023). Being active has a substantial impact on the health of an individual's immune response (Yang et al., 2023). Multiple research investigations have shown that regular exercise causes changes in the amounts of systemic antibodies, their stimulation, synthesis, and release of cytokines, along with shifts in microRNA, all of that have had a favorable impact on the general well-being of diabetes patients, pregnant women, and neonates (Zakaria et al., 2023). The aim of the investigation is to evaluate the effect of lifestyle modifications on recurrence of GDM.

### Material and method

The sampling technique used was purposive sampling method. The setting was randomly selected as an experimental and control setting. Antenatal mothers with GDM in previous pregnancy, who were attending the outpatient department of the selected hospitals, were selected based on sampling criteria.

Permission was obtained from the concerned Authorities of the hospital to conduct the study. Based on the screening form and the previous records a total of 84 antenatal mothers were selected by purposive sampling method from two settings (40 each in both experimental group and control group). The purpose of the study was explained to them and their willingness to participate in the study was obtained. They had the right to leave the study at any time during the study. Informed consent was obtained. Data regarding their past pregnancy were collected. Baseline information and GDM status were assessed on the day of the first visit.

Antenatal mothers in the experimental group at Maternity and Tertiary Hospital were administered lifestyle modification intervention in the form of a video teaching which focused on: - Group walking, Diet modification, Monitoring body weight & Maintaining BMI and Modifying the sleeping pattern. They were also provided

with a booklet on the same topic. They were asked to maintain a diet chart for 3 days in a trimester and a daily walking chart. Antenatal mothers in control group at Maternity and second Tertiary Hospital were not administered with the planned intervention. Both groups received the routine health care advice from the respective hospitals. Mothers in the experimental group were called up over the phone once in a week and encouraged to walk daily and follow the diet regimen. Mothers in the control group received the routine advice from the midwives and the doctors. The data were edited for completion.

### Inclusion Criteria

1. Antenatal mothers with a history of GDM.
2. Antenatal mothers in the first trimester. (< 12 weeks)
3. Antenatal mothers who can comply with the intervention (willing to participate in the group walk)
4. Antenatal mothers within the age group of 20-40 years

### Exclusion Criteria

1. Antenatal mothers with cardiac problems, renal problems, and psychiatric illness previous pregnancies and IVF pregnancies, pre-existing diabetes /diagnosed having GDM at 6-12 weeks and physical disabilities as listed in the screening form.
2. Mothers who were not able to follow the exercise and dietary pattern continuously for more than three days.
3. Mothers who were already doing exercise for more than 30 minutes per day.
4. Mothers without the record of their previous pregnancy.

### Result and Discussion

There will be no significant difference in the maternal outcome (signs of UTI, signs of polyhydramnios, signs of pre-eclampsia, mode of delivery weeks of gestation at delivery) among the antenatal mothers between previous pregnancy and present pregnancy in the experimental group.

**Table-1: Maternal outcome before and after lifestyle modification among antenatal mothers in experimental group (signs of UTI, signs of polyhydramnios, signs of pre-eclampsia) (N=40)**

Maternal outcome	Previous pregnancy		Present pregnancy		χ <sup>2</sup> (p)
	n	%	n	%	
<b>Signs of UTI</b>					
Yes	5	12.5	3	7.5	14.4 (p < 0.05)
No	35	87.5	37	92.5	
<b>Signs of polyhydramnios</b>					
Yes	5	12.5	-	-	5.3 (p < 0.05)
No	35	87.5	40	100	
<b>Signs of preeclampsia</b>					
No signs of preeclampsia		28 70	40	100	
Mild hypertension		3 7.5	-	-	14.1 (p < 0.01)
Gestational hypertension		5 12.5	-	-	
Signs of preeclampsia		4 10	-	-	

Compared to the previous pregnancy majority of antenatal mothers in the present pregnancy had no signs of UTI 37(92.5%) There was a significant association in the signs of UTI between previous pregnancy and present pregnancy relation to lifestyle modification intervention in the experimental group  $\chi^2 = 14.4(p < 0.05)$ . The lifestyle modification intervention was effective to reduce signs of UTI among antenatal mothers in the experimental group.

Antenatal mothers with signs of polyhydramnios were absent in the present pregnancy, whereas; 5(12.5%) antenatal mothers had signs of polyhydramnios in the previous pregnancy. There was a significant association in the signs of polyhydramnios between previous pregnancy and present pregnancy relation to lifestyle modification intervention in the experimental group  $\chi^2 = 5.3 (p < 0.05)$ . The lifestyle modification intervention was effective to reduce signs of polyhydramnios among antenatal mothers in the experimental group.

Antenatal mothers with signs of preeclampsia were absent in the present pregnancy, whereas; 3(7.5%) antenatal mothers had signs of mild hypertension, 5(12.5%) antenatal mothers had signs of gestational hypertension 4(10%) antenatal mothers had signs of preeclampsia in the previous pregnancy. There was significant association in the signs of preeclampsia between previous pregnancy and present pregnancy relation to lifestyle modification intervention in the experimental group  $\chi^2 = 14.1 (p < 0.01)$ . The lifestyle modification intervention was effective to reduce signs of preeclampsia among antenatal mothers in the experimental group.

In the present pregnancy 5(12.5%) antenatal mothers had normal vaginal delivery than the previous pregnancy 0 (0%).There was a significant association in the mode of delivery between previous pregnancy and present pregnancy in relation to lifestyle modification intervention in the experimental group  $\chi^2 = 5.3 (p < 0.05)$ .



**Table-2: Maternal outcome before and after lifestyle modification among antenatal mothers in experimental group (mode of delivery, weeks of gestation at delivery)(N=40)**

Maternal outcome	Previous pregnancy		Present pregnancy		$\chi^2(p)$	
	n	%	n	%		
<b>Mode of delivery</b>						
Normal delivery	vaginal	-	-	5	12.5	5.3 (p < 0.05)
L.S.C.S		40	100	35	87.5	
<b>Weeks of gestation at delivery</b>						
37- 40 weeks		38	95	39	97.5	0.35 (p > 0.05)
< 37 weeks		2	5	1	2.5	

In the present pregnancy 5(12.5%) antenatal mothers had normal vaginal delivery than the previous pregnancy 0 (0%). There was a significant association in the mode of delivery between previous pregnancy and present pregnancy in relation to lifestyle modification intervention in the experimental group  $\chi^2 = 5.3$  (p < 0.05). The lifestyle modification intervention was effective to reduce the number of caesarean sections among antenatal mothers in the experimental group.

Majority of mothers 39(97.5%) had their delivery at 37-40 weeks in the present pregnancy. Similarly, majority of mothers 38(95%) had their delivery at 37-40 weeks in the previous pregnancy. There was no significant association in weeks of delivery between previous pregnancy and present pregnancy in relation to lifestyle modification intervention in the experimental group  $\chi^2 = 0.35$  (p > 0.05). Brown J et al., (2017) utilising 11 studies including 638 pregnant women having GDM who were given various exercise regimens. In analysis, compared the efficacy of GDM therapy to standard prenatal care and found that treatment lowers the risk of preeclampsia and hypertension in pregnancy. An investigation into whether brisk walking increases the insulin sensitivity of several organs (liver, muscle, and adipose tissue) in older women found that a single session of brisk walking for less an hour increases muscle insulin sensitivities (Wang et al., 2023)

**Conclusion**

The lifestyle modification intervention was effective to reduce signs of polyhydramnios, symptoms of preeclampsia, UTI, number of caesarean sections among antenatal mothers in the experimental group. Lifestyle modification intervention was highly effective in reducing OGTT, insulin demand and urine sugar. Therefore, mothers with GDM during their second pregnancy can be encouraged to practice group walking and follow the dietary regimens.

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