

A Study to Assess the Effective Way of Life Intervention for Overweight Women Throughout Being Pregnant with Maternal Metabolic and Inflammatory Markers.

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Abstract

Back Ground: Maternal weight problems and immoderate gestational weight advantage (GWG) are main brief- and long-term hazard factors for maternal and fetal headaches. The objective became to observe whether a lifestyle intervention based totally on a brochure or on lively schooling can enhance nutritional habits, boom physical hobby (PA), and decrease GWG in overweight pregnant girls. methodology on this experimental examine 60 samples were taken (30 experimental institution and 30 control institution) and experimental group received the intervention like bodily pastime and eating regimen sample and control institution obtained the habitual health center care. Results: It shows that inside the pretest, 54(90%) had excessive effect and six(10%) had mild effect .while inside the put up test, fifty three(88.33%) had mild effect and seven(11.sixty seven%) had slight effect. The results out of facts indicates that, the pretest mean rating was 7.72 ± 2.43 and the publish test imply rating changed into $17.eighty five \pm 2.29$. The Calculated paired 't' take a look at price of $t=21.547$ changed into found to be statistically fairly tremendous at $p < 0.001$ degree. Conclusion: This simply infers that huge impact of life-style intervention amongst pregnant girls Demographic variables which includes body mass index and kind of food suggests substantial association with submit take a look at level of maternal metabolic and inflammatory markers.

KeyWords: Gestational diabetes mellitus, Oral glucose tolerance test. Maternal weight problems. life-style intervention

1. Introduction

Worldwide More than 1.46 billion adults are overweight or obese. Not only has the prevalence of obesity increased significantly over the last 30 years, but no country in the world seems to have been able to stop or reverse this trend. [1]. If there is a significant deviation from physiological gestational levels of pregnancy, this can lead to unwanted pregnancies, the perinatal period, and long-term consequences for the mother and/or offspring. Overweight or obese women make up about one-third of all women of reproductive age.

Pregnancy in these women puts the mother and fetus at increased risk. A normal pregnancy involves significant changes in maternal metabolism, many of which are necessary for healthy growth and development of the fetus. Obesity is the most common disease in women of childbearing age (2, 10, 12). A metabolically unfavorable intrauterine environment may explain why obesity during pregnancy increases the likelihood of serious health outcomes in children, including macrosomia and childhood body mass index (PP-BMI). obesity is known to have many negative pregnancy outcomes. Obesity has been shown to be associated with many

adverse pregnancy outcomes, including pre-eclampsia, gestational diabetes, macrosomia, stillbirth, postpartum pregnancy, and increased caesarean section rates (3, 9, 15). Maternal obesity is a growing public health concern because nutrition and metabolism are important for both maternal and fetal health and well-being.

Especially in the United States, obesity rates among women aged 20 to 39 have increased from 28.4% in 1999 to 34% in 2008, it has decreased slightly since then to 31.9%, and maternal obesity is approaching epidemic proportions. Children born to mothers who were obese prior to conception are more likely to be hospitalized during the first five years of life, in addition to difficult pregnancy. Maternal obesity during pregnancy is associated with subsequent chronic diseases such as cardiovascular disease, metabolic syndrome, and type 2 diabetes. (5).

The recent epidemic of non-communicable diseases is primarily due to changes in diet, physical inactivity, smoking, and what is known as New World Syndrome or lifestyle. For pregnant women who are not pregnant, 30 minutes of moderate PA is recommended on most, if not all, days of the week. Improves general health and reduces the risk of GDM in pregnant women. Pregnant women

with a high BMI are usually undernourished, so this should be the focus of intervention. However, few studies have been conducted aimed at improving food intake and increasing PA in pregnant women, and even fewer have focused on overweight or obese mothers(7).

Obese women who make lifestyle changes during pregnancy may benefit their fetus in the long term. Maternal obesity and weight gain during pregnancy are associated with unfavorable metabolic profiles of offspring. Despite the well-established relationship between birth weight and subsequent metabolic outcomes, the prognostic value of birth waist circumference is also poorly understood (8).

2. Methods and Materials

Study Design

In the current study, a quantitative approach with a pre-experimental study design was chosen to assess maternal metabolic and inflammatory markers in obese pregnant women [1].

Study Setting

The study was conducted for one month from December 20, 2021 to January 20, 2022 at the Prenatal Outpatient Clinic at Saveetha Medical College and Hospital.

Ethical Approval

This study was conducted after obtaining ethical clearance from the Institutional Ethical Committee (IEC) of the Saveetha Institute of Medical and Technical Sciences and formal approval from the departmental head of obstetrics and gynecology.

Study Participants

A total of 60 prenatal mothers who met the including criteria were recruited as study participants. Inclusion criteria included willingness to participate,

ability to engage in physical activity, confirmed oral glucose tolerance test checks in the second trimester of pregnancy, literacy in Tamil and English, maternal metabolic markers and including prenatal obese mothers with inflammatory markers. Exclusion criteria were pregnant obese women without maternal markers of metabolism and inflammation, non-pregnant obese women, women unable to exercise, women unwilling to participate in exercise, and women with other chronic diseases.

Sampling Technique

Generally, sixty prenatal mothers were recruited based on inclusion criteria using targeted sampling techniques.

Informed Consent

The purpose of the study was clearly and completely explained to each study participant, and written informed consent was obtained from them.

Pre- Assessment

Demographic and clinical information was collected using a self-designed questionnaire after blood test estimation.

Intervention

Physical activity and dietary patterns were encouraged for 1 month.

Post Assessment

Blood tests and an oral glucose tolerance test were performed.

3. Results And Discussion

Section A

Description of maternal demographic variables
Table 1: Frequency and percentage distributions of demographic variables, N=60

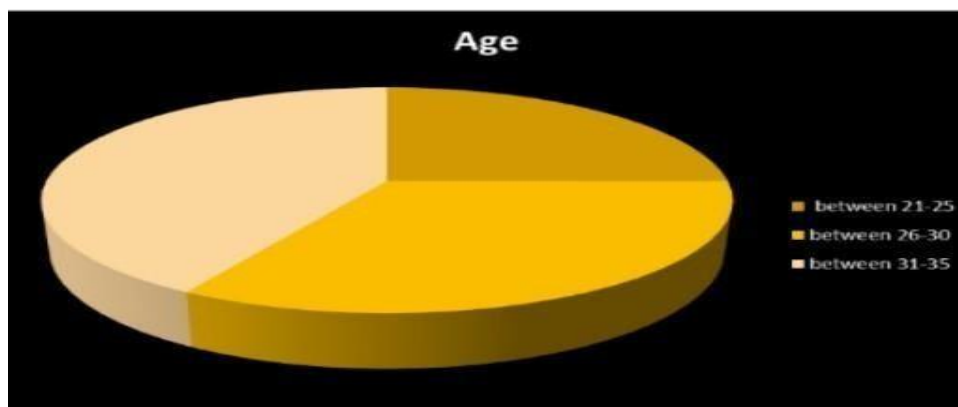
Demographic Variables	Frequency (f)	Percentage (%)
Age		
Between 21-25	15	25
Between 26-30	20	33.3
Between 31-35	25	41.6
Body mass index		
18-20	3	5
21-26	22	36.7
27-35	35	58.3
Type of marriage		
Consanguineous	15	25
Non – consanguineous	35	58.3
Not married	10	6.7
Type of working		
Heavy	53	88.3
Moderate	2	3.3
Sedentary	5	8.3
Gestational month		
1to 3 months	56	93.3
4-6 months	2	3.3
7-9 months	2	3.3
Family history of systemic disorders		
DM	17	95
Hypertension	40	66.7
None or others	3	5
Habits		
Chewing tobacco	26	43.3

Demographic Variables	Frequency (f)	Percentage (%)
More than 3 caffeine per day	31	51.6
Smoking	3	5
Type of food		
Non veg	27	45.0
Veg	30	50.0
mixed	3	5
Hours of rest		
<8 hrs /day	16	26.7
8-12 hrs	41	68.3
>8 hrs /day	3	5

Table shows that about maximum of them were in the age group between 26-30 , 58.3% maximum of them were in body mass index of 27-35, maximum of them were of non consanguineous marriage .88.3% heavy type of working ,93.3% of them were of 1-3 month of gestational age,66.7% of the mother were

of family history of hypertension , about 51.6% them had more than 3 caffes per day , about 50% of them had non veg foods and 68.3% had 8-12 hrs of rest per day .

Figure 1



SECTION B: ASSESSMENT OF PRE TEST AND POSTTEST LEVEL OF MATERNAL METABOLIC AND INFLAMMATORY MARKERS

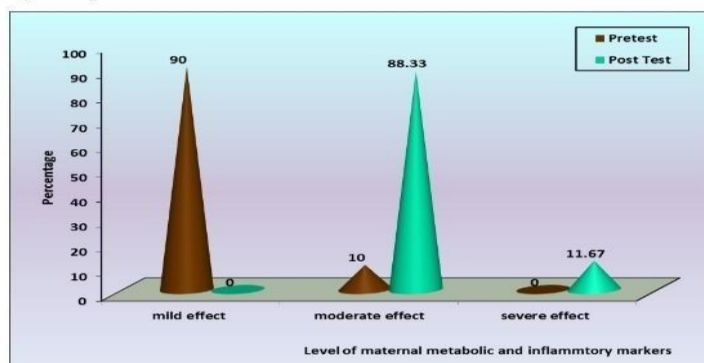
Table 2 : Frequency and percentage distribution of pre test and post test level of maternal metabolic and inflammatory markers

N=60

Knowledge	Mild effect (1-14)		Moderate effect (15-22)		Severe effect (23-30)	
	No.	%	No.	%	No.	%
Pretest	0	0	6	10.0	54	90.0

Post Test	7	11.67	53	88.33	0	0
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The above table 2 shows that in the pretest, 54(90%) had severe effect and 6(10%) had moderate effect . Whereas in the post test, 53(88.33%) had moderate effect and 7(11.67%) had mild effect



Pictorial representation

Demographic variables such as body mass index and type of food shows significant association with post test level of maternal metabolic and inflammatory.

4. Majority of Findings

1. The results show that those maximally 58.3% heavier in the 26–30-year-old group, 27–35 maximum body mass index, and 88.3% heavier from non-consanguineous marriages. By type of work, 93.3% were 1–3 months pregnant and 66.7% of mothers had a family history of hypertension, of which approximately 51.6% had hypertension. About 50% of them drank 3 or more cups of coffee a day, ate non-vegetarian food, and 68.3% took 8–12 hours of rest per day.

2. The above results show that 54 (90%) showed severe effect and 6 (10%) showed moderate effect in the pre-test. In the post test, 53 (88.33%) had a moderate effect and 7 (11.67%) had a mild effect.

3. The data results show a pre-test mean of 7.72 ± 2.43 and a post-test mean of 17.85 ± 2.29 . The calculated paired test value of $t = 21.547$ was found to be highly statistically significant with $p < 0.001$ levels. This clearly demonstrates the important effect of lifestyle interventions on pregnant women.

4. Demographic variables such as BMI and diet type show significant associations with levels of post-test maternal metabolic and inflammatory markers. Santamaria A. conducted her 2021 study on the effects of combined interventions (docosahexaenoic acid supplementation and home nutrition counseling) on metabolic control in obese and overweight pregnant women. Results from her MIGHT study, which used a 2x2 factorial randomized controlled trial, included women who were overweight or obese during early pregnancy. This combined intervention is at risk for maternal gestational diabetes or macrosomia and insulin resistance is not a neonatal reduction.

Ferrari et al., Conducted a study related to lifestyle interventions during pregnancy in 2020, conducting a randomized, multicenter trial in Germany that included twice-weekly aerobic and resistance training and nutritional counseling during pregnancy. Compared with usual care. With 30 women enrolled, a better understanding of how lifestyle changes in the fetal environment affect outcomes in 2-year-old infants could have a major impact on the prevention and development of infant obesity.

Mona Hashim was conducted a study in 2020 related to dietary patterns and their association with gestational weight gain in the United Arab Emirates: results from the MISC cohort using a prospective cohort study of pregnant women during face-to-face interviews, dietary intake was assessed using an 89 item culture specific semi-quantitative food frequency questionnaires that related to usually intake during pregnancy and so the diverse pattern reduced the risk of insufficient gestational weight

gain. Harriet L. Mills conducted a study on 2019 related to the effect of a lifestyle intervention in obese pregnant women on gestational metabolic profiles: findings from the UK pregnancy better eating and activity trial randomized controlled trial by using 1158 obese pregnant women ($\geq 30 \text{ kg} / \text{m}^2$), it has been shown to improve diet and physical activity during pregnancy and up to 6 months postnatal in obese women and to reduce offspring adiposity at 6 months to improve the metabolic measures and so there are marked changes in lipids and lipoproteins and more modest changes in other metabolites across pregnancy in obese women, with some evidence that this is more marked than in unselected pregnant women.

Maria Luisa Garmendia, conducted a study in 2018, related to the effectiveness of maternal and offspring metabolic control of a home-based dietary counseling intervention and DHA supplementation in obese / overweight pregnant women (MIGHT study) randomized control trial- study protocol. These interventions have shown limited effectiveness Omega 3 polyunsaturated fatty acids intake shown beneficial effects on glucose metabolism, lipid fraction and inflammatory factors in women who already have GDM. The results expect the present study to contribute to the understanding of potential effectiveness of Omega 3 supplementation on the risk of developing GDM in overweight or obese pregnant women. We will also test whether a combination of dietary habits and omega-3 supplementation can improve insulin sensitivity and, as a result, achieve modest increases in glucose levels.

Maria H. Christensen conducted a 2018 lifestyle intervention study in obese Danish pregnant women with early gestational diabetes. According to the WHO 2013 criteria, a randomized controlled trial was conducted in 304 pregnant women whose BMI was $30 \text{ kg} / \text{m}^2$ or less, followed by a 75-gram oral glucose tolerance test, resulting in varying pregnancy outcomes. A lifestyle intervention in an obese woman meeting her 2013 World Health Organization GDM criteria in early pregnancy was ineffective in improving obstetrics or metabolic Outcomes.

5. Conclusion

This study was conducted by researchers with the primary aim of influencing lifestyle interventions in pregnant obese women for maternal metabolic and inflammatory markers. A total of 60 samples were recruited using a non-probability purposive sampling technique. A pre-experimental study design was adopted. Data was collected and analyzed using inferential statistics. The results of this study have implications for nursing management, nursing practice, nursing research, and nursing education related to nutritional status, food intake, physical activity, and lifestyle interventions for obese pregnant women.

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