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The Outcome of Obesity in Pregnancy: A Cross-Sectional Study

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ABSTRACT

Objective: To find out fetal and maternal outcomes among obese pregnant females.

Study Design: Cross-sectional study.

Place and Duration of Study: Department of Gynaecology and Obstetrics, Combined Military Hospital Rawalpindi, from Jun 2020 to Jun 2021.

Methodology: A total of 124 pregnant obese women (BMI more than 30kg/m^2), gestational age between 13-24 months, having fasting blood glucose and blood pressure within normal limits were enrolled in the study and were subsequently followed throughout pregnancy upon antenatal visits scheduled as per guidelines. Participants with diabetes mellitus or hypertension, above 40 years of age, family or previous history of gestational diabetes, and pre-eclampsia were also excluded from the study. Fetal and maternal outcomes were noted.

Results: One hundred and twenty-four (124) pregnant obese women were enrolled in the study with a mean age of 33.7±4.1 years (21 -38 years). Out of which, 86(69.4%) had cesarean section primarily due to pre-eclampsia, prolonged or dysfunctional labour causing fetal distress. There were 8 cases of miscarriage and 3 cases of stillbirth. 26(21.0%) women presented with gestational diabetes mellitus, 31(25.0%) with pre-eclampsia and 12(9.7%) developed both conditions. There were 7(5.6%) participants who delivered babies with macrosomia, 1(0.8%) anencephaly, 3(2.4%) congenital deafness and 1(0.8%) cleft lip.

Conclusion: Obesity in pregnancy can lead to serious maternal and fetal outcomes ranging from abortions to neonatal anomalies and fetal death. A high index of suspicion is required to diagnose and manage these difficult conditions.

Keywords: Diabetes mellitus, Hypertension, Obesity, Pregnancy, Pre-eclampsia.

How to Cite This Article: *Muzaffar T, Abbas S, Sheraz S, Bano I, Sohail A, Wasim Z. The outcome of Obesity in Pregnancy: A Cross-Sectional Study. Pak Armed Forces Med J 2022; 72(6): 2135-2138. DOI: https://doi.org/10.51253/pafmj.v72i6.8594*

INTRODUCTION

The World Health Organization (WHO) classifies obesity as an epidemic. Obesity can be defined as an excessive amount of body fat. Relevant literature enlists several measures to quantify obesity.[1,2] As per WHO, a BMI value of 25Kg/m^2 and above labels an individual overweight, while a BMI of 30 Kg/m^2 indicates obesity.[3] Obesity is not merely a cosmetic concern but a disease associated with various complications, including ischaemic heart disease, hypertension, diabetes mellitus, thromboembolic phenomenon, hyperlipidemia, and certain cancers. Similarly, obesity in pregnancy is also associated with higher maternal and fetal complications risks.[4,5] A pregnant obese woman is more likely to develop gestational diabetes, pre-eclampsia, risk of miscarriages, and thromboembolism. There are more chances of prolonged or obstructed labour leading to more chances of having a cesarean section. The fetal complications in obese mothers include stillbirth, congenital anomalies like spina bifida and heart defects, and macrosomia. There is also an increased risk of anaesthesia-related complica-tions in obese women, including epidural failure, difficulty in endotracheal intubation, aspiration due to large stomach size, and atelectasis.[6,7]

Pakistan finds itself in a unique position where it is posed with both the issues of widespread undernourishment and alarmingly increasing levels of obesity. Another pressing issue for Pakistan is the lack of updated statistics regarding obesity and its awareness among the public. Local data from Pakistan in the "Pakistan Panel Household Survey (PPHS)" concluded that 5.1% of Pakistan's population was shown to be either overweight or obese, whereas 63% of the entire population in England is either overweight or obese.[8,9]

The objective of this study in our hospital was the increasing trend of weight gain among women of childbearing age, which can lead to several maternal and fetal complications. The obstetricians should be aware of these complications and have a high index of suspicion in diagnosis and management. Therefore, this study was conducted to determine fetal and maternal outcomes among obese pregnant females.

METHODOLOGY

This cross-sectional study was conducted at the

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Received: 19 Apr 2022; revision received: 10 Sep 2022; accepted: 15 Sep 2022

Department of Gynaecology and Obstetrics, Combined Military Hospital Rawalpindi from June 2020 to June 2021 after the approval of the Ethical research committee (Letter number: 236/01/22). The consecu-tive non-probability sampling technique was adopted.

Inclusion criteria: Pregnant obese women (BMI more than 30 kg/m^2), gestational age between 13-24 weeks, and normotensive and normoglycemic women were included in the study.

Exclusion Criteria: Pregnant women with diabetes, hypertensive disorders, endocrine disorders or women over 40 years of age, with a family history of diabetes and hypertension or those with a previous history of diabetes and/or hypertension were excluded from the study.

During the study duration, a total of 124 pregnant obese women (BMI more than 30kg/m^2), having fasting blood glucose and blood pressure within normal limits, were enrolled in the study and were subsequently followed throughout pregnancy upon antenatal visits scheduled as per guidelines. In addition to outcome evaluation, a statistical survey was employed to evaluate the awareness of obesity among the participants. The selected patients were examined in detail, and performed all baseline investigations, like fasting blood sugar and proteinuria. All the patients were followed on four weekly visits. During each visit, a complete physical examination, BP monitoring and USG were done. In addition, the fetal and maternal outcomes of pregnancy were noted.

Statistical Package for Social Sciences (SPSS) version 23.0 was used for the data analysis. Quantitative variables were summarized as Mean±SD and qualitative variables were summarized as frequency and percentages.

RESULTS

One hundred and twenty-four pregnant obese women were enrolled in the study with a mean age of 33.7±4.1 years (21-38 years). Out of 124 women, 86 (69.4%) had cesarean section primarily due to preeclampsia-pronged or dysfunctional labour causing fetal distress, warranting the need for general anaesthesia. In contrast, 38(30.6%) gave birth with spontaneous vaginal delivery. Evaluation of educational profile showed that 33(26.6%) women were under matriculation, 33(26.6%) matriculation, 38(30.6%) intermediate, while the remaining 20(16.1%) women were graduate level or above.

There were 8(6.5%) cases of miscarriage and 3(2.4%) cases of stillbirth. A total of 26(21.0%) women had gestational diabetes mellitus, 31(25.0%) with preeclampsia and 12(9.7%) developed both conditions. Seven (5.6%) women delivered babies with macrosomia, 1(0.8%) anencephaly, 3(2.4%) congenital deaf ness and 1(0.8%) cleft lip. DVT developed in 3(2.4%) cases after surgery, and 12(9.7%) cases developed wound infection after C- the section. There were 7 (5.6%) women who were having breech pregnancies. Six(4.8%) patients did not respond to oral hypoglycemic, and insulin was used (Figure).

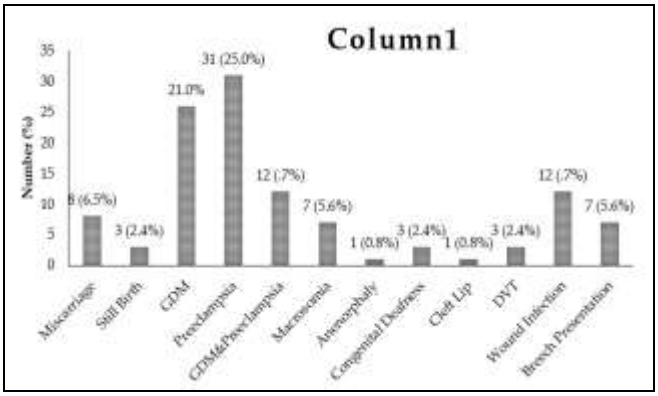

Figure: Frequency of Fetal and Maternal Outcomes Among Pregnant Obesity Women (n=124)

DISCUSSION

A vast majority were under the age of thirty-nine, while married respondents outnumbered single or divorced individuals. Researchers have shown that there is a possibility of an inaccurate representation of obesity in the general public.[10] It has been recorded that a significant percentage of the female population is either unaware of the health effects of obesity or does not consider it detrimental to health.[11] A majority of the female population does indeed consider obesity to be a detriment to overall health and considers walking, exercising, and a monitored diet as necessary preventive measures. A similar study was conducted by Agrawal *et al.* in India regarding the awareness of obesity among married women residing in urban areas of India. They concluded that most of the respondents were aware of the consequences or effects of obesity.[12] This was particularly observed by the work of Sabageh *et al.* They concluded that with increasing education levels among the women surveyed, the awareness regarding obesity and its effects increased proportionately.[13]

Preconception counselling plays a pivotal role in obese ladies planning for pregnancy. Ladies should be advised to reduce weight before getting pregnant

Preconception weight loss either because of lifestyle change, or bariatric surgery improves the outcome.[14] Exercise during pregnancy in obese patients decreases the chances of developing diabetes and C-section. Daily 30 minutes of moderate-intensity exercise is recommended. These patients should also be offered dietitian support & a lowglycemic Mediterranean diet.[15,16]

The prevalence of obesity in pregnancy is highest in Europe, which is 1 in 5 women of childbearing age.[17] Anesthetic complications are also known in obese pregnant ladies. Pre-anaesthetic assessment should be done in all these patients because these cases can land in emergency C-sections at any time. The difficulty in administering spinal anaesthesia due to obesity, difficult airway, DVT, and wound infection must be kept in mind.[18] In this study of 6 of our patients, there was difficulty in giving spinal anaesthesia due to a large amount of fat in the lumbar area and oedema. These patients were given general anaesthesia for C-sections. Six of our cases had a miscarriage during the first trimester and two in the second trimester. Dilatation and curettage (D&C) were performed in all these cases, and products of conception were sent for chromosomal analyses, but the cause could not be ascertained. All miscarriage patients in the second trimester had gestational diabetes. There were three cases of stillbirth in our study. Both had gestational diabetes. Emergency C-sections were performed in both cases, but babies could not be saved. In a meta-analysis, the prevalence rates of fetal macrosomia were 13.3% and 14.6% for obese and morbidly obese women, respectively, compared with 8.3% for the normal weight control group.[19] Another study done by Vernini *et al.* revealed that obesity increased the risk of developing hypertension (OR=7.0; 3.1-15.9), hyperglycemic disturbances (OR=5.5; 2.9-10.6) and HbA1c ≥6.5% (OR=3.7; 1.2-11.1). The infants born to obese mothers had longer hospital stays (3.9±3.9days) (p= 0.005).[20] Obese pregnant ladies should be properly counselled and motivated to reduce weight to avoid complications during their pregnancy. The results of the present study prove otherwise.

ACKNOWLEDGEMENT

The authors would like to gratefully acknowledge of hospital staff & the registrar for collecting the statistical data.

CONCLUSION

Obesity in pregnancy can lead to serious maternal and fetal outcomes ranging from abortions to neonatal anomalies and fetal death. Therefore, a high index of suspicion is required to diagnose and manage these pregnancies to achieve a favourable outcome.

Conflict of Interest: None.

Author's Contribution

Following authors have made substantial contributions to the manuscript as under:

TM & SA: Conception, study design, drafting the manuscript, approval of the final version to be published.

SS & IB: Data acquisition, data analysis, data interpretation, critical review, approval of the final version to be published.

AS & ZW: Critical review, drafting the manuscript, approval of the final version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved.

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