

Obesity as a Predictor of Adverse Maternal Outcomes among Pregnant Women of a rural community

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ABSTRACT

Background; Obese pregnant ladies are at increased risk of adverse maternal outcomes which leads to preeclampsia, preterm births, gestational age and cesarean section deliveries.

Aim: To determine maternal outcomes of pregnancy among women having increased body mass index.

Methods: A total of 150 women fulfilling inclusion and exclusion criteria of the study were enrolled in this research study. Informed consent for the participation was taken from each patient. All the relevant information and data were noted on pre-designed proforma. Data were entered and analyzed using SPSS-17.

Results: A total of 150 pregnant ladies were enrolled in this study. Mean ages of these study cases were 30.47±4.18 years. Mean parity of these study cases was 3.31±1.15. Mean BMI values of these study cases were 29.97±2.91 Kg/m². Maximum no. of study cases were from age groups 25-35 years i.e., 115(76.66%). Frequency of preterm births was 50(33.33%). Majority of our study cases i.e., 95(63.3%) had BMI in the range of 26-30 Kg/m². Very high frequencies 65(43.3%) of pre-eclampsia were observed while gestational diabetes mellitus was seen in 32(21.3%) of the study cases and post partum haemorrhage was noted in 70 (46.7%).

Conclusion: Our study results have indicated that obesity in pregnant women is linked to an increased risk of gestational diabetes, PPH, higher rates of c. section deliveries and pre-eclampsia. Obesity is significantly related with complications related to the mother and fetus. Well directed interventions regarding weight loss and avoidance to excessive weight gains during pregnancy prior to pre-conception period.

Keywords; BMI, Pre-eclampsia, Gestational diabetes, Parity.

INTRODUCTION

Obesity is a medical condition, as a result of accumulation of excessive fats, has become epidemic and major health problem all over the world. Asian people having body mass index (BMI) more than 27.5 kg/m² are categorized as obese persons as per World Health Organization (WHO) criteria. Global prevalence of obesity is approximately 15–20% which involves 2–7% total healthcare expenditures owing to its related morbidities². Increasing proportions of obesity among pregnant ladies poses extra challenge to the Gynecologists³. Obesity before and during the pregnancy is an independent predictor for perinatal outcomes while pre-pregnancy maternal weight is a major contributor towards birth weight in developed as well as developing countries. Similarly impact of gestational weight gain on adverse outcomes has also been documented. Obesity in pregnancy leads to specific array of complications and also increases the risk for congenital malformation. These complications may include “various antenatal,

intrapartum, postpartum and neonatal complications such as postdates, induction of labour, macrosomia, shoulder dystocia, prolonged duration of labour, increased blood loss, caesarean section rates and neonatal admissions^{4,5}.

Athukorala *et al.* reported in their study that frequency of pre-eclampsia was 11.4% and cesarean section was 36.4%⁶. Obese women are at greater risk of developing gestational diabetes mellitus and in one study it has been reported as 21.1%, cesarean section as 60.6%⁷ and hence the risk of large for gestational age infants is increased up to 1.4 to 1.8 folds than in lean mothers^{8,9}.

Delivery in obese women leads to high cesarean section rate and increased risk of anesthetic and post-operative complications¹⁰. A study published from UK reported 18% cesarean section surgeries among obese women¹¹. A study conducted in Australia to assess the prevalence and impact of obesity showed that hypertensive disorders of pregnancy and gestational diabetes as well as increased neonatal morbidity is more common in obese women¹². A study conducted in Liaquat National Hospital Karachi concluded that obesity is associated with higher cesarean section rate

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i.e., 39.8%¹³. Another case control study conducted in Sultan welfare Hospital Karachi reported that post partum hemorrhage occurred in 45% of obese women¹⁴.

Obesity is becoming a serious challenge to health services mostly because of life style modifications, less exercise, sedentary life, and high cholesterol diet. It has a more serious impact on pregnancy outcomes but no such study has been conducted in our population which could document pregnancy outcomes among obese women of this region. The rationale of this study was to understand the consequences of obesity on maternal morbidity and mortality so that a multi-disciplinary approach could be acquired and a management plan could be established starting from pre-pregnancy up to puerperium. The results of this study have generated useful database of our local population which will help healthcare professionals to pre-empt these outcomes which will lead to the proper management of such cases.

MATERIAL AND METHODS

A total of 150 women fulfilling inclusion and exclusion criteria of the study were enrolled in this research study. Inclusion criteria were age ranging from 18 – 40 years presenting at the OPD of rural health centre of Ayazabad Maral, Multan, having body mass index more than 27.5 kg/m² with any gestational age while known cases of hypertension, diabetes, placenta previa and those with previous history of recurrent miscarriages were not included. Informed consent for the participation was taken from each patient. The demographic information like name, age and address were obtained. Patient's BMI was measured by obtaining height and weight in the outpatient department. Patients were followed till delivery. The outcome variable such as pre-eclampsia defined as "Blood pressure more than 140/90mmHg with proteinuria >300mg/dl after 20 weeks of gestation" gestational diabetes mellitus defined as "It is diabetes developing during course of pregnancy, which were previously normal, measured by Oral glucose tolerance test. Test is positive when blood sugar level after 1 hour is 10 mmol/Liter" and post-partum haemorrhage defined as "Heavy bleeding per vaginum after delivery, more than 500ml after normal vaginal delivery and more than 1000ml after Cesarean section" were noted. Data were entered and analyzed using SPSS-17.

RESULTS

A total of 150 pregnant ladies meeting inclusion criteria were enrolled in this study. Mean ages of

these study cases were 30.47±4.18 years (minimum 22 years while maximum 39 years of age). Mean gestational ages of these study cases were 35.63±3.91 weeks (minimum 27 while maximum 39 weeks of gestation). Mean parity of these study cases was 3.31±1.15 (minimum parity was 1 to maximum parity was 7). Mean BMI values of these study cases were 29.97±2.91Kg/m² (minimum BMI was 27.5 while maximum was 35 Kg/m²). The study results have indicated that maximum number of study cases were from age groups 25-35 years i.e., 115 (76.66%). Frequency of preterm births was high in our study cases as 50 (33.33 %) of these ladies completed gestation before 36 weeks of gestation. Majority of the study cases i.e. 98(65.33%) had parity between 1-3 while only 8(5.3%) had parity more than 6 (Table 3). Majority of our study cases i.e., 95 (63.3%) had BMI in the range of 27.5-30 Kg/m² while none of our study cases presented with BMI more than 36Kg/m². Very high frequencies 65(43.3%) of pre-eclampsia were observed in our study cases while gestational diabetes mellitus was seen in 32(21.3 %) of the study cases and post partum haemorrhage was noted in 70(46.7%).

Outcome variables like pre-eclampsia, gestational diabetes mellitus and PPH were stratified with regards to age and it was observed that p-values were 0.001, 0.000 and 0.334 respectively. Pre-eclampsia, gestational diabetes mellitus and post-partum haemorrhage were also stratified with respect to the gestational age. The study results have indicated that pre-eclampsia, gestational diabetes mellitus were not significantly associated with that of gestational age (p values 0.796 & 0.952 respectively) and PPH was associated with gestational age as p-value was 0.009. Similarly, these outcome variables i.e. pre-eclampsia, gestational diabetes mellitus and post-partum haemorrhage were also stratified with respect to the parity. The study results have indicated that parity did not have significant impact on pre-eclampsia, gestational diabetes mellitus and PPH as p-values calculated were 0.905, 0.921 & 0.706 respectively. The study results have also shown that BMI was significantly more seen in the pre-eclamptic women with BMI 27.5 -30 kg/m² as calculated p-value was 0.003. Gestational diabetes mellitus and post-partum haemorrhage were both insignificantly associated with BMI as p-values calculated were 0.063 for each.

DISCUSSION

Obesity remains major contributor towards increased morbidity and mortality from different conditions such as those of heart diseases, diabetes mellitus and cancer. During pregnancy obesity is strongly co-

related with higher risks of pre-eclampsia, preterm births, gestational diabetes and cesarean delivery. Major factors related with these perinatal complications are not amenable to available interventions. Latest epidemiologic reports have indicated that weight control particularly in those women who are planning their first pregnancy, have the potential to affect these gestational outcomes. The results of our study have confirmed that obesity is strong risk factor for adverse outcomes and complications related with pregnancy. Obese women had highly increased risks for gestational diabetes, preterm births, early neonatal deaths and pre-eclampsia compared with those women having pre-pregnancy BMI < 25. Consistent increase was observed in the risk of gestational diabetes, preeclampsia, preterm births, higher frequencies of cesarean delivery and PPH as compared with those women observed as having BMI within normal range prior to pregnancy.

Obese women were found to have an increased risk to deliver at or before 32 weeks of gestation and were more likely to deliver before 37 weeks. The possible mechanism regarding strong association between obesity and that of risks to deliver prematurely is not yet completely explored. It may, however, be noted that these heavy individuals (obese) usually exhibit sedentary lifestyles, which in turn has been implicated with increased risk of preterm births.

Pre-eclampsia was observed in 65 (43.3%) of our study cases, a study conducted in Karachi by Jaleel et al reported 30.3% preeclampsia¹⁵. Another study conducted by Ali et al at Karachi reported 23.3% pre-eclampsia among obese pregnant women. Ahmed et al from Egypt reported 32.4% preeclampsia among obese pregnant ladies^{16,17}.

Frequency of pre-eclampsia in both studies conducted at Karachi was lower than that of our study results. A study conducted in Saudi Arabia reported by 15.3% frequency of pre-eclampsia among obese pregnant women¹⁸ while Athukorala et al reported 11.4% preeclampsia among obese women⁶. A study conducted in Australia reported 34% rate of pre-eclampsia among obese women¹⁹. Preeclampsia has been reported to be 30% associated with obesity related pregnancies in USA²⁰.

Gestational diabetes, in our study, was seen in 32 (21.3%) of the study cases while Mehar-un-Nisa¹⁸ reported 12.8% gestational diabetes mellitus among Saudi women. Gestational diabetes among obese women of Egypt has been reported to be 11.8% by Ahmed et al¹⁶. Lu et al has reported 30% rate of gestational diabetes mellitus in obese pregnant females. Jaleel et al¹⁵ reported as low as 4% gestational diabetes at Karachi. Our study results

have indicated that post partum hemorrhage (PPH) occurred in 70 (46.7%) of the study cases. Fatima et al¹⁴ reported 45% occurrence rate among obese women. The results of Fatima et al are close to that of our findings. A study conducted by Sibire et al reported as high as 70% post partum hemorrhage in obese women²¹.

Our study results have concluded that obese women are at increased risk of pregnancy related complications like pre-eclampsia, gestational diabetes and PPH. Our study results are in compliance with that of the other studies which have also reported obesity being a major culprit regarding these complications. Effective preventative strategies are urgently needed.

CONCLUSION

Our study results have indicated that obesity in pregnant women is linked to an increased risk of gestational diabetes, PPH, higher rates of c. section deliveries and pre-eclampsia. Obesity is significantly related with complications related to the mother and fetus. Well directed interventions regarding weight loss and avoidance to excessive weight gains during pregnancy prior to pre-conception period. The gynecologists and other healthcare providers must inform their obese patients regarding complications and risks posed by obesity and should counsel the merits of weight loss. Not only in pregnancy, obesity can lead to the certain health issues for the mother (heart diseases and hypertension) and baby (heart diseases and obesity) in later times of their life. Such complications are also linked to the higher investments both by family and health authorities which is an additional burden in our societies like ours.

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