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Original Research Article

Evaluate the effect of maternal obesity on fetal outcome: an observational study in tertiary health care centre

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ABSTRACT

Background: Excess weight gain during transitional period leads to an adolescent girl at increased risk of maintaining unhealthy levels of body fat in childbearing years. Prevalence of obesity increases among reproductive age group female and so in pregnant women also with current estimate 20 to 36%. Obesity during pregnancy affects its outcome. It puts mother as well as fetus into complication. Objectives were to find out the effect of obesity on fetal outcome and to study the demographic profile of obese women.
Methods: This observational cross-sectional study was conducted during January 2021 to April 2021 for four months in department of obstetrics and gynecology. As per convenient sampling technique 50 women were enrolled as study participants. Data regarding fetal outcome were collected like baby weight, NICU admission, indications for NICU and its outcome. Percentage was used to analyze data.
Results: The 16% newborn was having birth weight more than 3.5 kg. 26% new borne were needed NICU admission due to complications like fetal distress, jaundice, prematurity, IUGR, septicemia etc.
Conclusions: maternal obesity affects fetal outcome and also one of the risk factor for maternal complications. Pregnancy with high BMI is high risk pregnancy; these should be managed at tertiary health care center with well-equipped HDU and neonatal intensive care unit.

Keywords: Birth weight, Fetal outcome, NICU admission, Obesity, Pregnancy

INTRODUCTION

Obesity and overweight leads to more death worldwide than underweight. The prevalence of overweight and obesity among children and adolescents aged 5-19 has risen dramatically from just 4% in 1975 to just over 18% in 2016. It was similar among both boys and girls: in 2016 18% of girls and 19% of boys were overweight.[1] Excess weight gain during transitional period leads to an adolescent girl at increased risk of maintaining unhealthy levels of body fat in childbearing years.[2] Prevalence of obesity increases among reproductive age group female and so in pregnant women also with current estimate 20 to 36%.[3] Obesity during pregnancy affects its outcome. It puts mother as well as fetus into complication such as gestational diabetes mellitus (GDM), hypertensive disorders of pregnancy (HDP), preterm labour, dysfunctional labour, caesarean sections, postpartum infections and deep vein thrombosis. Also, neonates of obese women were large for gestational age, macrosomic and had high incidences of birth injuries, shoulder dystocia, prematurity, late fetal deaths and congenital malformations.[4-6] Overweight and obese women are more likely to be induced and require a caesarean section for delivery.[7,8]

Present study aims to explore fetal outcome in obese women with the objective of study is to find out the effect of obesity on fetal outcome and also to study the demographic profile of obese women.

METHODS

This observational cross-sectional study was conducted during January 2021 to April 2021 for four months in department of obstetrics and gynecology. As per convenient sampling technique 50 women were enrolled as study participants. Inclusion criteria for study participants were women in labour admitted to labour room and obstetric intensive care unit of tertiary care institute having over-weight and those who had given informed consent.

Socio demographic profile was taken such as age, parity, income, education, socioeconomic status, literacy etc. modified prasad classification was used for socio economic status.

Data regarding total ANC taken, weight gain during pregnancy, gestational age at delivery, pre-existing medical disorders, antenatal morbidity, progress of labour, intra and post-natal morbidity, stay in hospital and final maternal outcome were taken.

In this study data regarding fetal outcome were collected like baby weight, neonatal intensive care (NICU) admission, indications for NICU and its outcome. Percentage was used to analyze data. Analysis of data by using statistical tests chi square tests, T tests using SPSS software.

RESULTS

Majority of women (60%) were in the age group more than 25 years. No woman was having age 19 years or less and 40% had age between 20 to 25 years. 82% women were registered in same tertiary care hospital, 2% were referred from other hospital while 16% were admitted in emergency. When distribute study subject as per parity majority of women had primiparous (60%) followed by second para (24%), multipara (12%) and grand multi para (4%) maximum number of cases was from urban area (92%) followed by rural (6%) as well as migrant (2%). As per socio economic status, majority study subjects were from upper lower (30%) class, 24% from upper middle, 6% from lower and 4 percentages from lower middle class. 90% female were literate either up to primary (50%), secondary (22%), higher secondary (8%) or graduation (10%) while only 10 percentages were illiterate as shown in the Table 1.

Outcome of pregnancy was 49 live births out of 50 deliveries.82% neonates had more than normal birth weight while only 18% were having low birth weight that is less than 2.5 kg. 26% new borne were needed NICU admission due to complications but after treatment successful discharge of all new borne from tertiary care hospital. Indications for NICU admission were fetal distress (14%), jaundice (6%), prematurity (2%), IUGR (2%) and septicemia (2%) (Table 2).

Table 1: Baseline maternal parameters of study participants (n=50).

Variables	N	Percentage (%)
Type of admission		
Registered	41	82
Referred	1	2
Emergency	8	16
Age of pregnant women (Years)		
≤19	0	0
20-25	20	40
>25	30	60
Parity		
Primi para	30	60
second para	12	24
Multi para	6	12
Grand multi para	2	4
Residence		
Rural	3	6
Urban	46	92
Migrant	1	2
Socioeconomic status		
Upper	0	0
Upper middle	12	24
Lower middle	20	4
Upper lower	15	30
Lower	3	6
Education		
Illiterate	5	10
Primary	25	50
Secondary	11	22
Higher secondary	4	8
Degree	5	10

Table 2: Fetal outcome among study participants.

Fetal outcome	N	Percentage (%)
Neonatal outcome		
Stillbirth	1	2
Live birth	49	98
Baby weight (Kg)		
<1.5	0	0
1.5-2.5	9	18
2.5-3.5	33	66
>3.5	8	16
NICU stay		
Yes	13	26
No	37	74
Indication of NICU		
Jaundice	3	6
Prematurity	1	2
RDS	7	14
Septicemia	1	2
IUGR	1	2
Treatment outcome		
Discharge	100	100
DAMA	00	00
Death	00	00

DISCUSSION

Factors related to lifestyle like sedentary lifestyle, maternal smoking/alcoholism and late age pregnancies are on rise in present era that adversely affect the pregnancy outcome., among them obesity is very much common that complicates the process of child bearing and child birth with its long-term implications. Although with proper antenatal and intra natal care, good outcome can be achieved in obese patients. Present study supports this statement that effective obstetric interventions do pose a risk to the mother and fetus.

In this study found that increasing maternal BMI associated with adverse health outcome of fetus and mother also. These findings are consistent with those of previous studies conducted by Glatiere-Dereure et al, Kabiru et al that showing an association between increasing maternal BMI and an increased risk of maternal morbidity and preterm birth.[9,10] In this study majority of participants were around the age of 25, similar finding was observed in a study conducted by Vanlalfeli et al.[11] birth weight of new borne was on higher side than normal birth weight it may leads to delay birth process and may be the reason for caesarian section. Other studies have found out similar higher incidence of macrosomia.[12-16] NICU admission was needed for stabilization in 26% of total new borne babies and majority of this admission was due to fetal distress. This finding is consistent with the study conducted by John et al.[17] it indicates that maternal obesity leads to fetal distress and subsequently increase NICU admission. Obesity during pregnancy was significantly associated with elevated neonatal unconjugated bilirubin, concluded by Rougee et al.[18] Neonatal hyperbilirubinemia (Jaundice) was also reported in 6% cases and in 2% cases IUGR, septicemia and prematurity each. Similar finding was observed by Radhakrishnan et al.[19]

Limitation of the study is small sample size because women delivered outside institute and antenatal overweight women which were not in labor were excluded from the study.

CONCLUSION

It was clearly evident from the present study that maternal obesity affects fetal outcome and also one of the risk factor for maternal complications. Therefore, it is necessary to promote physical exercise to reduce the pro-inflammatory effects of adipose tissue. Diet and exercise therapies improve metabolic fitness (body composition) in obese mothers, even during lactation. Pre pregnancy counseling, imparting knowledge regarding complications of obesity during pregnancy through various national health programme should be done to create awareness among adolescent girls as well as antenatal women. Pregnancy with high BMI is high risk pregnancy; these should be managed at tertiary health care center with well-equipped HDU and neonatal intensive care unit.

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