Original Article

Adverse Pregnancy Outcomes in Overweight and Obese Women : A Cross Sectional Study

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ABSTRACT

Objective: To determine maternal outcomes of pregnancy among women having increased body mass index (more than 25).

Study Design: Descriptive cross-sectional study

Place and Duration of Study: This study was conducted at the Out-patient Department of Obstetrics and Gynaecology, Nishtar Hospital Multan from 03-07-2014 to 03-01-2015.

Materials and Methods: 150 pregnant women were enrolled for the research after informed consent. A proforma was filled encompassing the patients data which was analysed by SPSS -17.

Results: Pre-eclampsia, Diabetes and Post partum hemorrhage was seen in 43.3 %, 21.3% and 46.7% % of the cases respectively.

Conclusion: Obesity confers a high risk of gestational PPH, pre-eclampsia and gestational diabetes in pregnant women.

Key Words: BMI, Pre-eclampsia, Gestational diabetes.

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INTRODUCTION

WHO defines BMI of more than 25 as overweight and more than 30 as obese [1].Obesity is effecting health of mankind across the globe in form of epidemic, showing a prevalence of 15 -20% and effecting health care system by costing 2-7% of total health expenditure. Obesity is more common in women than men as shown by study in PIMS Pakistan making women more susceptible to complications related to obesity. Maternal obesity worldwide posses a major challenge to obstetricians.[3]

Pre-pregnancy weight of the mother and gain in pregnancy effect both maternal and fetal outcome. Pre-pregnancy weight has a significant relation with birth weight not only in industrialized as well as developing countries. Similarly, increase in weight because of pregnancy has an independent correlation. Maternal obesity challenges maternal and neonatal health by imposing complications such as postdates hence artificial initiation of labour, macrosomic fetus, shoulder dystocia, prolonged labour, heavy blood loss, abdominal delivery rates and neonatal hospitalisation.

Maternal obesity is also linked with congenital malformations[4-5]

Athukorala et al. found pre-eclampsia and cesarean section in 11.4% and 36.4% in obese women respectively.[6] Similarly gestational diabetes mellitus has been reported as 21.1% in obese pregnant women in a study.[8, 9]

The risk of post partum hemorrhage due to atony increases rapidly with increasing BMI as much as two fold higher risk seen in obesity class III.[10,11] Correlation of obesity and hypertensive disorders in pregnancy have been found in a study carried out in Australia.[12] Researches conducted in Pakistan have also narrated higher cesarean section rate as much as 39.8% [13] and post partum hemorrhage as about 45% among obese mothers[14].

Humankind is exposed to calamity of obesity because of changes in lifestyle including high fat diet and lack of physical activity. Owing to the possible prevention and lack of research in this part of world regarding effect of obesity on pregnancy outcomes this study was planned so that we can understand the effect of raised BMI which is a modifiable anthropometric risk factor could be acquired and a management plan could be established, as it will help in devising a management plan starting well before pregnancy to prevent and cater for these complications hence improving maternal and neonatal outcome. In addition the results of this study have generated practical and beneficial database helping healthcare professionals to pre-empt these

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outcomes and improving their antenatal, intra partum and post partum care.

MATERIALS AND METHODS

This descriptive cross sectional study was conducted at the Out-patient Department of Obstetrics and Gynecology, Nishtar Hospital Multan for six months from 03-07-2014 to 03-01-2015. Total of 150 patients were enlisted in study group. Non-Probability consecutive sampling technique was used.

Inclusion Criteria

- Any gestational age.
- Women with BMI >25.
- Age 15 to 39 years.

Exclusion Criteria

- Chronic hypertensive patients.
- Type 1 and 2 diabetes mellitus.
- Low lying placenta.
- History of recurrent pregnancy loss.
- Previous abdominal deliveries.
- Those who didn't give consent of participation.

Data Collection Procedure: Pregnant ladies attending obstetric clinics of Nishtar hospital Multan with BMI > 25 kg/m^{2}were registered in the study after informed consent.

Ethical considerations were taken care of and formal approval was taken from the Ethical Committee of the Institution. Detailed history and physical examination including BMI was done and relevant information was filled in a specifically designed proforma. Patients were followed throughout their pregnancy for development of pre-eclampsia, gestational diabetes mellitus and during delivery for occurrence of post-partum hemorrhage. These developments were also noted in the respective proforma by the researcher.

Data Analysis Procedure: Data analysis was done by using SPSS version17. Mean and standard deviation was calculated for age and gestational age of the patients. Forpre-eclampsia, gestational diabetes mellitus and post-partum haemorrhage frequencies and percentages were calculated.

Stratification was done for effect modifiers like age and gestational age. Post stratification chi-square test was applied. P value equal or less than 0.05 was considered as significant.

RESULTS

Mean ages of patients of my study were 30.47 ± 4.18 years. Mean gestational ages of these study cases were 35.63 ± 3.91 weeks. Mean parity of these study cases was 3.31 ± 1.15. Mean BMI values of these study cases were 29.97 ± 2.91 Kg/m^2.Majority of our study cases i.e. 95 (63.3%) had BMI in the range of 26-30 Kg/m^2 while none of our study cases presented with BMI more than 36 Kg/m^2 (Table-1).

65 out of 150 cases amounting 43.3% had pre-eclampsia in our study cases which is quite high, while gestational diabetes mellitus was seen in 32 out of 150 ladies accounting for 21.3 % of the study cases . 70 out of 150 pregnant ladies making 46.7% of total ended having post partum hemorrhage during delivery. (Table 2).

The study results have also shown that pre-eclampsia was significantly more seen in the women with BMI 25-30 kg/m^2 as calculated p-value was 0.003 (Table-3). Gestational diabetes mellitus and post-partum hemorrhage were both insignificantly associated with BMI as p-values calculated were 0.063 for each (Table-3).

Table No.1: Distribution of BMI among study cases. (n=150)

BMI (kg/m^2)	**Frequency**	**Percentage**
26-30	95	63.3
31-35	55	36.7
Total	**150**	**100**

Table No.2: Frequency of pre-eclampsia, Gestational Diabetes and Post Partum Haemorrhage among study cases. (n=150)

		Yes	%age	No	%age
1.	Pre- eclampsia	65	43.3	85	56.7
2.	Gestational diabetes	32	21.3	118	78.7
3.	Post Partum Haemorrhage	70	46.7	80	53.3

Table No.3: Stratification of Pre-eclampsia, Gestational Diabetesand Postpartum Hemorrhage with respect to BMI. (n=150)

BMI (kg/m^2)	**Pre-eclampsia**		**p-value**	**Gestational Diabetes**		**p-value**	**Postpartum Hemorrhage**		**p-value**
	Yes (n=65)	**No** (n=85)		**Yes** (n=32)	**No** (n=118)		**Yes** (n=70)	**No** (n=80)	
25-30 (n=95)	50	45	0.003	25	70	0.063	50	45	0.063
31-35 (n=55)	15	40		7	48		20	35	

DISCUSSION

Adverse health hazards related to certain medical disorders such as heart diseases, diabetes mellitus and cancer are augmented by increase in body weight. During pregnancy obesity puts mother and fetus at risk of certain problems like pre eclampsia, diabetes, preterm birth and abdominal delivery. All these effects

on maternal and fetal health make the mother and fetus vulnerable to adverse outcome.

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.

Pre-eclampsia was found in 43.3% of cases in our study higher than results of studies done in Karachi by Jaleel et al and Ali et al, in which 30.3% 23.3 % of cases had preeclampsia[15,16].

Worldwide variable frequency of pre eclampsia has been reported for example,32.4% in Egypt[17], 34% in Australia[18],30% in USA[19] and as low as 15.3% in Saudi Arabia[20] and 11.4% reported by Athukorala et al[6].This wide variation may be explained by variable propensity of different ethnic societies for hypertension.

Gestational diabetes, in our study, was seen in 21.3% of the study cases while Mehar-un-Nisa[18] 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 al[16]. Lu et al has reported 30% rate of gestational diabetes mellitus in obese pregnant females[21]This wide variation in prevalence may partly be explained by increase propensity of diabetes among some ethnic populations.

Our study results have indicated that post partum hemorrhage (PPH)occurred in 46.7% of the cases comparable to a study done by Fatima et al [14] who reported45 % occurrence rate among obese women. Occurrence rate as high as 70 %for post partum hemorrhage in obese women have also been reported in literature as in a study by Sibre et al.[22]

Limitations of our study included small sample size for generalization of result. Pre-pregnancy weight should ideally be taken to quantify the relation of obesity to complications separately from the excessive weight gain during pregnancy which is an independent risk for these complications.

CONCLUSION

Obesity places a pregnant women at risk of development of gestational diabetes, PPH, pre-eclampsia. Weight loss programs prepregnacy directing obese women attending prepregnancy clinics and avoidance of excessive weight gain during pregnancy can help to avoid certain percentage of these complication thus decreasing associated morbidity and mortality as well as health cost.

Author's Contribution:

Concept & Design of Study:	Sana Iqbal
Drafting:	Nargis Shabana
Data Analysis:	Fatima Chaudhry Inayat
Revisiting Critically:	Sana Iqbal, Nargis Shabana
Final Approval of version:	Sana Iqbal

Conflict of Interest: The study has no conflict of interest to declare by any author.

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