ORIGINAL ARTICLE

Effects Of High Body Mass Index On Fetomaternal Outcome

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ABSTRACT

Background: In our country increasing prevalence of obesity among fertile women is growing public health concern, women with BMI more than 30 are at greater risk adverse reproductive health outcome, this study will provide over view of complications related to high BMI.

Objective: To identify the effects of high body mass index (BMI) on feto-maternal outcome

Material and Methods: 100 patients were selected randomly from OPD who matched inclusion criteria, their BMI checked at booking and at term, Study design was Case series conducted at Ziauddin University and hospitals Karachi, in 9 month of time duration. Then patients were followed for any complications

Results: in our study, results showed PIH developed to 38% of patients, gestational diabetes mellitus to 15%, pre-eclampsia to 15%, PPH to 13%, Threatened miscarriage occurred to 5 %, wound infection developed to 5%, and 37% babies admitted to NCU of patients who followed for complication with high BMI. According to calculations 55% patients with high BMI delivered spontaneously,28% ended up in emergency LSCS, 11% were elective LSCS and 1 delivered by instrumental delivery .

Conclusion: High BMI has adverse effect on PIH,GDM, pre eclampsia, mode of delivery, and threatened miscarriage, whereas, there is no effect of high BMI on wound infection, elective LSCS, instrumental delivery and congenital anomaly which may be due to other factors . More work is required.

Key Words: *BMI, PIH, GDM, Wound Infection.*

INTRODUCTION

High maternal BMI has become one of the most common risk factor in obstetric practice. High BMI in pregnancy is usually defined as body mass index (BMI) more than 25 kg / m2 or more at 1st antenatal consultation. BMI is simple index weight for height and is calculated by dividing a person's weight in Kg by the square of their height in meters (Kg/m2).High BMI in pregnancy has implication for mortality and morbidity in both mother and baby.

The prevalence of high BMI in pregnancy has been rising from 9-10 % in early 1990's to 16-19% in 2000[1,2] It is associated with an increased risk of number of serious adverse outcomes including miscarriage[3], fetal congenital anomaly[4], thromboembolism[5,6],gestational diabetes[7], pre-eclampsia[8], dysfunctional labour[9], postpartum hemorrhage[7], wound infections[7], stillbirth[10], and neonatal death[11].Reported are also cases of epidural resite[3], higher caesarean section rate[12] and lower breast feeding rate[13] in this group of women compared to women with healthy BMI.Unfortunately in our society data on complications of high BMI is not sufficient to identify the most frequent and serious complications of increasing weight.

This study highlights the scientific data on complications of high BMI in our society so that the most frequent complications of high BMI can be brought to the attention of obstetrician for better management and counseling of women.

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METHODOLOGY

After approval from ethical committee of Ziauddin University, all eligible females fulfilling the inclusion criteria were provided necessary information about the protocol of study and Informed consent was taken. BMI was calculated at their 1st booking visit then they were followed during their antenatal visit for any complication on basis of history, examination and investigations. Patient was also followed for mode of delivery, fetal outcome and any complication during delivery or post partum period.

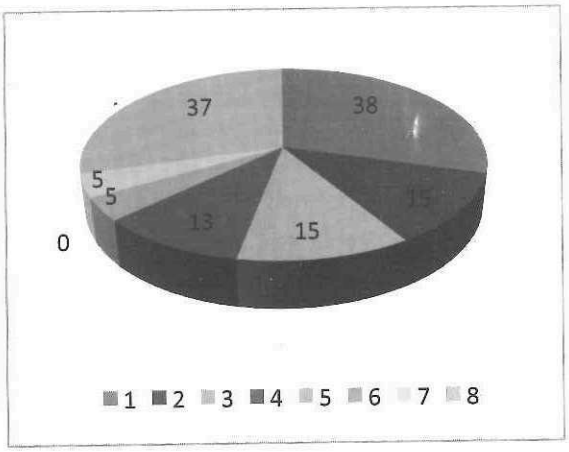
Data analyzed using SPSS version 17.0.A descriptive analysis of categorical variables performed. Data on

categorical variables (miscarriage, fetal congenital anomaly, Thromboembolism, gestational diabetes, pre-eclampsia, dysfunctional labor, postpartum hemorrhage, wound infections, stillbirth, neonatal death, epidural resite and caesarean section) will be presented as percentages.

RESULTS

In our study results were calculated of all 100 patients, results showed PIH developed to 38% of patents, gestational diabetes mellitus to 15%, pre- eclampsia to 15%, PPH to 13%, Threatened miscarriage occurred to 5 %, wound infection developed to 5%, and 37% babies admitted to NCU of patients who followed for complication with high BMI. According to calculations 55% patients with high BMI delivered spontaneously,28% ended up in emergency LSCS, 11% were elective LSCS and 1 delivered by instrumental delivery .

Figure 1: BMI and Complications



Key:

1. PIH
2. DM
3. Pre eclampsia
4. PPH
5. Wound infection
6. Thrombo embolism + congenital anomaly
7. Threatened miscarriage
8. NCU Admission

When we analyzed effects of high BMI on different complications it was observed that who developed pregnancy induced hypertension had mean BMI of 38.76, while who did not developed had 37.0 indicating high BMI in group who developed PIH, Patients who developed gestational diabetes mellitus their mean BMI was 38.07, while who did not developed had mean BMI 37.60 it also indicates that Patients developed GDM who were having more BMI. Patients who developed pre eclampsia had mean BMI of 39.67, while who did not developed had mean BMI of 37.32 again indicating noticeable higher BMI in group of patients who developed pre eclampsia. Regarding mode of delivery patients who delivered by emergency LSCS their mean BMI was 38.61, while who did not had mean BMI of 37.30 it also indicate that emergency LSCS was needed in more in patients with high BMI. While who delivered by elective LSCS had mean BMI of 36.91, and who did not their mean BMI was 37.76 so it shows that elective lscs was done more in patients with less BMI may be due to other factors. Patients who delivered by spontaneous vaginal delivery their mean BMI was 37.32, while who did not had mean BMI of 38.09 , indicating patients with high BMI did not delivered spontaneously. Patient who delivered by instrumental vaginal delivery their mean BMI was 36.00, while who did not had mean BMI of 37.68, this indicates that who delivered with help of instruments had less BMI other factors may be involved. Patients who developed PPH their mean BMI was 37.54, while who did not developed their mean BMI was 37.69, again there is slight increased BMI of that group who did not develop PPH. Patients who developed wound infection their mean BMI was 35.0, while who did not developed their mean BMI was 37.81 it indicates that patients developed wound infection with less BMI.

Those who had threatened miscarriage their mean BMI was 37.80, while who did not had their mean BMI was 37.66.it shows that slight increase of BMI in group who had Threatened miscarriage Patients who's babies admitted to NICU their mean BMI was 37.51, while who's did not their mean BMI was 37.77. It represents that slight increase of BMI in group who's babies were not admitted to NICU. Over all according to our study high BMI has adverse effect on PIH,GDM, pre eclampsia, mode of delivery, threatened miscarriage, while according to our study there is no effect of high BMI on wound infection, elective LSCS, instrumental delivery and congenital anomaly may be due to other factors involved for that more research work is required.

DISCUSSION

High BMI is an increasing problem globally; populations in developing countries as well as affluent ones are at risk. High BMI has a major impact on pregnancy outcome. It is an important medical problem effecting both mother and baby. The epidemic rise in obesity helped bring the issue to the forefront.

Factors responsible for high BMI in South Asia and developing countries may include poor dietary habits and lack of knowledge about the nutritional values of food. Carbohydrate based food is cheap and the most commonly used diet in our population. Moreover, large quantities of fat are used to add taste to the food. During pregnancy, improper dietary habits are further accentuated with a customary ideology of food for two. Excessive eating of a diet with poor nutritional and caloric value puts a pregnant woman at an exaggerated risk of obesity during pregnancy.

Several studies in western world have shown that high BMI is associated with adverse pregnancy outcomes.[14,15] among pregnancy complications, gestational diabetes mellitus and pregnancy induced hyper-tension are significantly more common in obese women. These facts are also supported by a population-based study conducted in Canada comparing pre-pregnant BMI categories with obstetrical and neonatal outcomes.[16] In this study increasing pre-pregnancy BMI category was associated with an increasing risk of adverse pregnancy outcomes such as gestational hypertension, gestational diabetes, caesarian section, shoulder dystocia, birth injuries and macrosomia. The results of our study match with the above international studies, we observe the factors which were pregnancy induced hypertension, gestational diabetes, caesarian section, pre-eclampsia, threatened miscarriages, PPH , weight of baby, NICU admission and Post operative infection

A study conducted in Australia[17] to assess the prevalence and impact of overweight and obesity shows that hypertensive disorders of pregnancy and gestational diabetes as well as increased neonatal morbidity is more common in obese women. It was concluded that increasing BMI was associated with maternal and neonatal outcomes that may increase the cost of obstetric care. A cohort study was conducted in USA from 1999 to 2002[18] It concluded that women with high BMI are more prone to develop hypertension during pregnancy. These findings are also consistent with this study in which increased maternal weight increases the risk of PIH.

Maternal obesity, a reflection of obesity in general population, is emerging as a public health problem in developed as well as developing countries. Worldwide, obesity (BMI >30), exists at a prevalence of 15-20%and accounts for 2-7% of total health care costs.[19] In UK, 28% of the pregnant women are overweight (BMI 25 – 29.5 kg/m2) and 11% are obese.[20] In US incidence of obesity in pregnancy varies from 18.5%-38.3%.Astudy using perinatal data of all live births from various counties of New York shows 11% increase in pre-pregnancy weight and 8% increase in pre pregnancy obesity between 1999 to 2003.[21] Changing lifestyles, increasing urbanization, high calorie food consumption and reduced physical activity are responsible for increasing obesity in developing countries.

Prevalence of obesity is reported to be 36.7% in urban regions ofIran.[22] A study from Islamabad showed that more women were obese than men and were more susceptible to complications.[23] High pre-pregnancy BMI is associated with adverse obstetric outcome. Maternal complications include early miscarriage, pregnancy induced hypertension and pre-eclampsia, gestational diabetes, thrombo-embolic disease, infections, sleep apnoea, prolonged labour, increased risk of interventions like induction of labour and operative delivery, shoulder dystocia and post-partum hemorrhage. Perinatal complications include birth defects (mainly neural tube defects), macrosomia, in-utero growth restriction, sti'l births, preterm birth and need for intensive care admission. [23'24'25] Data on maternal overweight and obesity in our local population is lacking. We therefore conducted this study to compare our results with international research.

The results of our study also indicate that frequencies of PIH, GDM, pre-eclampsia are higher in patients who were obese. Our findings are consistent with this and the other above mentioned international studies but population based local studies in our country are lacking, and therefore the magnitude of this problem in our country is unfortunately not known. There were certain limitations in this study such as the single hospital could not represent the entire population. Large multi-centric trials are required for better estimation of the risks of obesity in our country. In short, time has come for a population based research program to identify high BMI as a pre-pregnancy antecedent of high risk pregnancy in Pakistani women also. This will provide opportunity to screen population at risk so that timely anticipation of antenatal complications can be done. It will prevent and reduce both maternal and fetal complications.

COUNSELING

Obese women are at increased risk of several pregnancy complications; therefore, preconception assessment and counseling are strongly encouraged. Obstetricians should provide education about the possible complications and should encourage obese patients to undertake a weight-reduction program, including diet, exercise, and behavior modification, before attempting pregnancy. Specific medical clearance may be indicated for some patients. At the initial prenatal visit, height and weight should be recorded for all women to allow calculation of BMI, and recommendations for appropriate weight gain should be reviewed both at the initial visit and periodically throughout pregnancy.[26] The 2009 IO guidelines recommend a total weight gain of 15–25 lb (6.8–11.3 kg) for overweight women (BMI=25–29.9) and 11–20 lb (5.0–9.1 kg) for all obese women (BMI ≥ 30).

CONCLUSION

This study concluded that pregnancy with obesity is associated with increased risk of PIH, gestational diabetes, Pre-eclampsia and mode of delivery. In view of the results of this study, best practices at obesity prevention, treatment and optimal weight maintenance must be identified to provide practitioners with an array of strategies to help curb the consequent epidemic. The health professionals, who can target obese women of childbearing age, need greater awareness..

Interventions should be targeted to ad-dress obesity during adolescence, pregnancy and the postpartum or inter conceptional periods. It is concluded from our study that high BMI has adverse effect on PIH,GDM, pre eclampsia, mode of delivery, threatened miscarriage, while according to our study there is no effect of high BMI on wound infection, elective LSCS, instrumental delivery and congenital anomaly may be due to other factors involved for that more research work is required.

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