

A Study of Association of Obesity with Maternal Complications

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ABSTRACT:

OBJECTIVE:

To determine the association of obesity with maternal complications .

METHODOLOGY:

A prospective cohort study was conducted at Gynae Unit III Jinnah Hospital Lahore, from 21st May 2011 to 20th Nov.2011 All women fulfilling the inclusion were included in this study .Two groups were made, Group I was allotted to obese pregnant women and Group II was allotted to non-obese pregnant women. Demographic data included age, parity, duration of pregnancy and maternal complications i-e urinary tract infection , instrumental vaginal delivery and post-partum haemorrhage were recorded and analyzed by SPSS –version 13.

RESULTS:

The results of this study revealed that demographics like age parity and duration of pregnancy were almost similar in both groups , common age was 25.21 ± 2.73 in group-A and 26.34 ± 3.56 years in group –B . Comparison of maternal complications revealed that 22.23 % in group-A and 10.70% in group –B had urinary tract infection, relative risk was 2.087, instrumental delivery in group –A was 14.42% and in group-B was 4.19% relative risk was 3.44 while post-partum haemorrhage was 9.77% in group –A and 3.26% in group –B , relative risk was 3.00.

CONCLUSIONS :

The frequency of maternal complications is higher among obese pregnant women so it is recommended that every pregnant woman who presents with increased BMI should be sort out for maternal complications.

KEY WORDS:

Obese and non- obese pregnant women, maternal complications

INTRODUCTION:

The prevalence of obesity has continued to increase in recent years , not only in the United States and Europe , but also in the developing countries. Obesity is a non-communicable disease that has reached epidemic proportions, and its prevalence in the UK has trebled since the 1980s¹.Body mass index (BMI) is used to measure obesity, and is defined as the ratio of body weight in kilogramme divided by the square of height in metres. ²The definition of obesity in pregnancy varies by author and includes women who are 110% to 120% of their ideal body weight or > 91 kg (200 lbs) or who have a BMI of > 30 kg/m² . Overweight and obese women are more likely to

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gain weight during pregnancy, and they are more likely to maintain excess weight after delivery. This weight gain also has implications for the child's future risk of being overweight^{3,4,5}. Maternal obesity in pregnancy is associated with a higher risk of adverse maternal and perinatal outcomes^{6,7,8,9}.

The health implications for mothers and babies resulting from obesity in pregnancy have important economic implications. Increased costs to healthcare providers, who manage obesity in pregnancy and its consequences are expected. Interventions that reduce the problems will be costly themselves, but may pay dividends from reduced future economic costs, and may increase health benefits for mothers and their infants^{10,11,12}. Changing lifestyles, increasing urbanization, high calorie food consumption and reduced physical activity are responsible for increasing obesity in developing countries^{10,11}. A local study shows that more women are obese than men and were more susceptible to complications¹³. Obesity has substantial implications for maternal fetal and neonatal health is a major problem in the delivery of obstetric and neonatal care^{14,15,16}.

Literature review from Pakistan shows very few studies are conducted on obese pregnant women which encourage me to plan this study with the view to determine the association of maternal complications in obese and non-obese pregnant women so that awareness may be created among populations regarding the hazards of maternal obesity in pregnancy.

MATERIALS AND METHODS :

This prospective cohort study was conducted at department of obstetrics and gynaecology unit III Jinnah hospital Lahore from 21-5-2011 to 20-11-2011, which is a tertiary care 1250 bedded hospital affiliated with Allama Iqbal Medical College.

All women fulfilling the inclusion criteria from outpatient department were included in the study. Non-probability purposive sampling technique was used. An informed consent was taken. Two groups were made, Group A was allotted to the obese pregnant women (as per operational definition) and Group-B was allotted to the non-obese pregnant women (as per operational definition). Women were included in the study from their antenatal visit (i.e 37th week of gestation) and followed (on regular antenatal

visits i.e on weekly basis) till delivery at term (42 completed weeks of pregnancy) and maternal complications i.e urinary tract infection, instrumental vaginal deliveries and post-partum haemorrhage was recorded on a predesigned proforma. The collected data was entered in computer software SPSS version 13. Frequency and percentages were calculated for maternal complications i.e UTI, PPH and instrumental delivery. Mean and Standard Deviation was calculated for age of the patients, relative risk was calculated to find out any significant differences. Relative Risk ≥ 2 was considered as significant.

INCLUSION CRITERIA

GROUP – A

Age between 20—45 years

Pregnant women having BMI > 23 kg/m²

Singleton pregnancy (on USG)

Gestational age between 37—42 weeks of gestation assessed on first trimester (dating) scan.

Para upto 4

GROUP—B

Age between 20—45 years

Pregnant woman with BMI between 18.5 to 22.9 kg/m² (for control group)

Singleton pregnancy (on USG)

Gestational age between 37—42 weeks of gestation assessed on dating scan

Para upto 4

EXCLUSION CRITERIA

- All patients with known history of hypertension, diabetes mellitus, urinary tract infection and post-partum haemorrhage (confirmed on history and records)
- Patients with diabetes mellitus (during current pregnancy) on BSL ≥ 126 mg/dl
- Preterm delivery (< 37 weeks of gestation) on dating scan.

OPERATIONAL DEFINITIONS

OBESSE WOMEN

Pregnant women having BMI > 23kg/m² were considered as maternal obesity.

NON—OBESSE WOMEN

Pregnant women with BMI between 18.5 to 22.9 kg/m² were considered as non—obese

RESULTS

A total of 430 women fulfilling the inclusion/exclusion criteria were included in the study , they were divided into two groups (215 women in each group)

Age distribution of the women was done, age range was 20—45 years . Majority of the women were between 26—35 years in both groups , 45.12% (n=97) in group –A , 47.91 % (n=103) in group—B , 38.6%(n=83) in group—A and 34.42% (n=74) in group B were between 20—25 years , 16.28% (n=35) in group –A and 17.67% (n=38) in group—B were between 36-45 years . Mean and SD was calculated as 25.21% ± 2.73 in group –A and 26.34 ± 3.56 years in group B -- as shown in table I

Gestation age of the women showd 33.49% (n=72) in group—A , 34.88% (n=75) in group –B were between 39—40 weeks , 31.16% (n=67) in group—A and 27.44% (n=59) in group—B were

between 37—38 weeks , 35.35% (n=76) in group – A and 37.86% (n=81) in group—B were between 41—42 weeks of gestation as shown in table II . In group—A nulliparity was recorded in 20% (n=43) and in group –B it was 25.12% (n=54), 44.65% (n=96) in group—A and 40.47% (n=87) in group—B were between para 1—2 , 35.35% (n=76) in group—A and 34.41% (n=74) in group—B were between para 3—4 as shown in table III.

Comparison of maternal complications revealed that 22.33% (n=48) in group—A and 10.70% (n=23) in group –B had UTI , relative risk was 2.087 , Instrumental delivery in group—A was 14.42% (n=31) and 4.19% (n=9) in group—B relative risk was 3.44. Post-partum haemorrhage was 9.77% (n=21) in group—A and 3.26% (n=7) in group—B , relative risk was 3.00 as shown in table IV.

TABLE I: AGE DISTRIBUTION (n=430)

| AGE (YEARS) | GROUP—A n=215 | | GROUP—B n=215 | |
|--------------|---------------|-------|---------------|-------|
| | No. of women | %age | No. of women | %age |
| 20—25 | 83 | 38.60 | 74 | 34.42 |
| 26—35 | 97 | 45.12 | 103 | 47.91 |
| 36—45 | 35 | 16.28 | 38 | 17.67 |
| MEAN AND S.D | 25.21 ± 2.73 | | 26.34 ± 3.56 | |

TABLE II: GESTATIONAL AGE OF THE WOMEN (n=430)

| GESTATIONAL AGE (WEEKS) | GROUP—A n=215 | | GROUP—B n=215 | |
|-------------------------|---------------|-------|---------------|-------|
| | No.of women | %age | No.of women | %age |
| 37—38 | 67 | 31.16 | 59 | 27.44 |
| 39—40 | 72 | 33.49 | 75 | 34.88 |
| 41—42 | 76 | 35.35 | 81 | 37.68 |

TABLE III: PARITY DISTRIBUTION (n=430)

| PARITY | GROUP—A n=215 | | GROUP –B n=215 | |
|-------------|---------------|-------|----------------|-------|
| | No. of women | %age | No. of women | %age |
| NULLIPARITY | 43 | 20 | 54 | 25.12 |
| PARA 1--2 | 96 | 44.65 | 87 | 40.47 |
| PARA 3--4 | 76 | 35.35 | 74 | 34.41 |

TABLE IV: COMPARISON OF MATERNAL COMPLICATIONS (n=430)

| MATERNAL COMPLICATIONS | GROUP—A (n=215) | | GROUP—B (n=213) | | RELATIVE RISK | 95 % Confidence Interval |
|-------------------------|-----------------|-------|-----------------|-------|---------------|--------------------------|
| | No. of women | %age | No. of women | %age | | |
| URINARY TRACT INFECTION | 48 | 22.33 | 23 | 10.70 | 2.087 | 0.29-14.30 |
| INSTRUMENTAL DELIVERY | 31 | 14.42 | 9 | 4.19 | 3.444 | 0.62-11.15 |
| POST PARTUM HAEMORRHAGE | 21 | 9.77 | 7 | 3.26 | 3.000 | 0.88-16.33 |

DISCUSSION:

Obesity has been recognized by the World Health Organization as a pandemic nutritional disorder which represents a rapidly growing threat to the health of population of an increasing number of countries worldwide¹⁷. In the United States approximately 34% of the population are now overweight and the prevalence of obesity is over 20% in nearly all states and exceeds 30% in the majority of mid-western and Southern States¹⁸. In the United Kingdom a department of health survey reported that 32% of women age 16–64 years of age are overweight and 20% are obese¹⁹. Thus almost two out of every three people in the United States and more than half of the adults in United Kingdom population are now either overweight or obese¹⁹.

The precipitous rise in the prevalence of obesity is mirrored in the antenatal population and the number of women entering pregnancy obese is at an all time high. A recent study showed that 1 in 5 women booking for antenatal care in 2002/2004 in Scotland were obese more than twice the incidence of a decade previously¹⁹. A similar study in the United States reported that the percentage of obese women in the antenatal population rose from 16% in 1980 to 36% in 1999²⁰.

In our cohort age was almost similar in both groups. Common age was 25.21±2.73 in group—A and 26.34 ± 3.56 years in group-B. This finding tallies with other studies^{21,22,23}. In this study regarding the gestational age both groups showed similarities at the time of presentations. Common duration of pregnancy was 41–42 weeks, 35.35%

was present in group—A and 37.86% was present in group—B, this finding mimics with other studies^{22,23,24}.

The study showed similar parity in both groups. Majority of the women were having two kids 44.65% were from group—A and 40.47% were from group—B and this is similar with other studies^{22,23,24}. In this cohort comparison of maternal complications revealed that 22.33% (n=48) in group—A and 10.70% (n=23) in group—B had UTI, relative risk was 2.087, Instrumental delivery in group—A was 14.42% (n=31) and 4.19% (n=9) in group—B, relative risk was 3.44 while post partum haemorrhage was 9.77% (n=21) in group—A and 3.26% (n=7) in group—B, relative risk was 3.00. All above findings are significantly higher in group—A. These findings are supported by other studies^{21,25,26,27,28}. Bhattacharya S and Lederman S A found that postpartum haemorrhage was more frequently in obese women, reason could be that women with increased BMI would generally bleed more and secondly increased number of operative deliveries could partly be responsible for the greater blood loss^{26,29}.

Our results highlight that overweight and obesity are important public health issues in Pakistan. Owing to the increasing prevalence of childhood and adolescent obesity, large number of obese pregnant women are likely to be encountered. Larger studies are therefore required to further investigate the results.

CONCLUSION :

The frequency of maternal complications is higher among obese pregnant women as compare to normal weight women. So it is recommended that every pregnant woman who presents with increased BMI , should be sort out for maternal complications .However it is also required that every set-up should have their surveillance in order to know the frequency of the problem.

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