

A Prospective Observational Study of Maternal Outcome in Pregnancy with BMI 25 - 29.9 Kg/M² (Overweight Pregnant Women) in Tertiary Health Care Center of South Gujarat

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Abstract: *Background:* Obesity and overweight in a pregnant state, is a worldwide problem with significant consequences. It is not only increases incidence of chronic diseases in mother and child but also increases risk of intra natal complications like postdated pregnancy, labor induction, failure of induction, non progression of labor, increases the incidence of instrumental delivery, increases incidence of cesarean delivery, shoulder dystocia, perineal tear, meconium stained liquor. *Method:* This prospective study was carried out in department of obstetrics and gynecology. 50 consecutive subjects fulfilling inclusion criteria admitted to labor room, enrolled period of 4 months after HREC approval. *Results:* Majority of the subjects (44%) belonged to age group of 26 - 35 years, according to modified kuppup - swamiclassification, majority of subjects were belongs to lower middle class (40%), majority of pregnant subjects were primipara (60%), majority of subjects had hypothyroidism (14%), 80% were admitted to hospital with gestational age at 37 - 40 weeks., majority of subjects had hypertensive disorder (22% - gestational hypertension - 16%, pre eclampsia - 6%), anaemia (14%), post datism (8%), oligohydramnios (6%), preterm labor (4%), IUGR (2%), IUFD (2%), PROM (2%), gestational diabetes (2%). majority of subjects (70%) had spontaneous onset of labour, 30% had required induction of labour. Majority of subjects had induction of labour due to hypertensive disorders (12%) out of which 52% subjects had vaginal delivery, 42% subjects undergone LSCS, 6% subjects had instrumental delivery. Majority of LSCS were due to fetal distress (18%), majority of subjects had perineal tear (40% in which 6% due to 1st degree perineal tear and 34% due to 2nd degree perineal tear), 22% subjects had postpartum complication. *Conclusion:* From this study we conclude that, increasing weight influence the health of pregnant women and also poses critical risk complications to maternal and fetal healthcare. As it is modifiable and preventable, enhance preconception counselling and creating awareness regarding associated health risks are highly desirable and become more vigilance during delivery.

Keywords: High BMI, Maternal outcome, labor outcome, postnatal morbidity

1. Introduction

- In general, pregnancy in women is considered unique, physiologically normal episode in women's life. However preexisting morbidity of mother or fetus can complicate pregnancy and as well as those arising during pregnancy and intrapartum make it a high risk one. "A pregnancy is defined as high risk, when the probability of an adverse outcome for mother or child is increased over the base line risk of that outcome among the general population by the presence of one or more ascertainable risk factors". (1)
- "One such preexisting maternal morbidity that makes pregnancy high risk is overweight". The magnitude of overweight prevalence has been increasing in developed as well in developing nations, though varying degrees. The latest report of WHO indicate that in 2005, approximately 1.6 billion people were overweight, a major contributor to global burden of chronic disease and disability. (1)
- The NFHS 4 (2015 - 2016) of INDIA reports an increasing prevalence (20.7%) of overweight among women aged 15 - 49 years compared to 12.6% in 2005. NFHS has defined malnutrition as a state of being either underweight or overweight or obese. Taking this

definition regard, 28.9 % of malnutrition in urban area is due to overweight or obesity and only 14.6% in rural areas. (2)

- General complications related to overweight like diabetes mellitus, heart disease, hypertension, stroke, osteoarthritis are increased. Complications related to pregnancy like gestational diabetes, preeclampsia, preterm birth, labor induction, elective cesarean delivery, shoulder dystocia, postpartum haemorrhage and pelvic infection, wound infection, large for gestational age, macrosomia, stillbirth, prolong hospital stay etc. Although routine weighing of pregnant women is being carried out in most of antenatal clinics, not much of importance is given to the weight of the women as such. In fact prenatal counseling plays a vital role in identifying women who are overweight.

Aims and Objectives

To study maternal morbidity and mortality in overweight Pregnant women.

2. Materials and Methodology

This prospective observational study was done at Obstetrics and Gynecology department of New Civil Hospital Surat for

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4 months period after official approval from Ethical Committee. All pregnant overweight women admitted in labour room in our hospital over a period of 4 months (Approx.50 subjects) after permission from ethical committee at tertiary health care centre of south Gujarat. All subjects were followed up until discharged from hospital.

Inclusion Criteria:

All consenting overweight pregnant women (BMI - 25 - 29.9 KG/M² - according to 1st trimester weight) with cephalic presentation admitted in labor room of tertiary health care center of south Gujarat.

Exclusion Criteria

- 1) Mother with BMI <25kg/mt²
- 2) Women with BMI ≥30kg/mt²
- 3) Non consenting subjects.
- 4) Women with multiple pregnancy, abnormal presentation
- 5) Women without 1st trimester weight.

3. Results and Observations

This observational cross sectional study was carried out in department of obstetrics and gynaecology, in our institute, enrolling 50 consecutive labouring women, admitted to labour room and obstetric intensive care unit of our institute, fulfilling inclusion criteria with pregnant overweight women and after obtaining informed consent, over a period of 4 months from January 2021 to April 2021.

Table 1: Baseline Variable

Age		
Age of participants	No of subjects	Percentage
≤19 years	0	0%
20 - 25 years	20	40%
26 - 35 years	22	44%
>35 years	8	16%
Socioeconomic status		
Socioeconomic status	No of subjects	Percentage
Upper	0	00
Upper middle	12	24%
Lower middle	20	40%
Upper lower	15	30%
Lower	3	6%
Parity		
Parity	No of subjects	Percentage
Primipara	30	60%
2 ND Para	12	24%
Multipara	6	12%
Grand multipara	2	4%
Pre - existing medical disorder		
Pre - existing medical disorder	No of subjects	Percentage
Diabetes mellitus	1	2%
Chronic hypertension	1	2%
Hypothyroidism	7	14%
Mental disorder	1	2%
Others (asthma)	1	2%

Baseline characteristics of all women were noted as shown in table no: 1. Majority of the subjects (44%) belonged to age group of 26 - 35 years, 40% subjects were belongs to 26 - 35 years, only 16% of subjects are belongs to age group of >35 years (6 subjects were multipara and 2 subjects were

grand multipara). In our study, according to modified kuppup - swami classification, majority of subjects were belongs to lower middle class (40%), upper lower class (30%), upper middle class (24%) and lower class (6%). In our study, majority of pregnant subjects were primipara (60%), 2nd para (24%), multipara (12%), grand multipara (4%). In our study, majority of subjects had hypothyroidism (14%), 2% subjects had history of chronic hypertension, diabetes mellitus, psychiatric disorder and asthma.

Table 2: Antenatal Variable

Gestational age at delivery		
Gestational age at delivery	No of subjects	Percentage
<34 weeks	1	2%
34 - 36 weeks	1	2%
37 - 40 weeks	40	80%
>40 weeks	8	16%
Haemoglobin Level On Admission		
HB level	No of subjects	Percentage
>11 gm%	43	86%
9 - 11gm%	4	8%
7 - 9gm%	3	6%
Antenatal Morbidity		
Ante natal morbidity	No of subjects	Percentage
Anaemia	7	14%
Hypertensive disorders	11	22%
Post datism	4	8%
IUGR	1	2%
IUFD	1	2%
PROM	1	2%
Gestational diabetes	1	2%
Preterm labour	2	4%
Oligo hydramnios	3	6%

Our of 50 subjects, majority 80% were admitted to hospital with gestational age at 37 - 40 weeks, 16 % subjects were admitted at >40 weeks (out of 8 subjects 4 were admitted >41 weeks of gestation), 2% subjects were admitted at < 34 weeks, 2% subjects were admitted at 34 - 36 weeks.

High maternal BMI associated with longer gestation and increased rate of induction of labour. Pregnancies which progress beyond 42 weeks had significantly increased adverse outcomes including perinatal mortality. Majority of subjects (80%) were delivered at gestational age of 37 - 40 weeks. In our study, majority of subjects (86%) regularly taking haematinics, while 14 % of subjects not taking haematinics regularly, 4 subjects were due to non - compliance and 3 subjects were due to side effects like gastritis. out of 7 subjects 3 subjects were took parantal iron during antenatal period. Majority of subjects (86%) had normal range haemoglobin level, mild anaemia (8%) and moderate anaemia (6%). In our study, majority of subjects had hypertensive disorder (22% - gestational hypertension - 16%, pre eclampsia - 6%), anaemia (14%), post datism (8%), oligohydramnios (6%), preterm labor (4%), IUGR (2%), IUFD (2%), PROM (2%), gestational diabetes (2%).

Table 3: Intra natal variables

ONSET OF LABOUR		
Onset of labour	No of subjects	Percentage
Spontaneous	35	70%
Induction	15	30%
INDUCTION		
Successful		12 (80%)
Failed		3 (20%)
INDICATION OF INDUCTION		
INDICATION OF INDUCTION	No of subjects	Percentage
PROM	1	2%
PET/gestational HTN	6	12%
Post datism	4	8%
Oligohydramnios	3	6%
Prolong latent phase of labour	1	2%
LABOUR OUTCOME		
Labour outcome	No of subjects	Percentage
Vaginal delivery	26	52%
Instrumental delivery	3	6%
LSCS	21	42%
INDICATION OF INSTRUMENTAL DELIVERY		
Indication of instrumental delivery	No of subjects	Percentage
Poor maternal beardown	2	66.66%
Fetal distress	1	33.33%
Others	0	0
INDICATION OF LSCS		
Indication of LSCS	No of subjects	Percentage
Fetal distress	9	18%
Failed induction	3	6%
Severe PET/eclampsia	2	4%
MSL in early stage of labour	3	6%
2 nd stage CPD	2	4%
Obstructed labour	1	2%
Others	1	2%

In our study, majority of subjects (70%) had spontaneous onset of labour, 30% had required induction of labour. Out of 15 induced labour, 12 (80%) were successful, 3 (20%) were failed.

Majority of subjects had induction of labour due to hypertensive disorders (12%), post datism (8%), oligohydramnios (6%), PROM (2%) and prolong latent phase of labour (2%).

Analysing mode of delivery, majority of subjects had vaginal delivery (52%), 42% undergone LSCS, 6% had instrumental delivery. During study period total 1309 deliveries (852 vaginal deliveries and 457 LSCS). so overall LSCS rate in our hospital was 34%.

Majority of LSCS were due to fetal distress (18%), failed induction (6%) and MSL in latent phase of labour (6%), severe PET (4%), 2nd stage CPD (4%), obstructed labour (2%) and cord prolapse (2%).

Table 4: Post natal morbidity

Post natal morbidity	No of subjects	Percentage
Atonic PPH	3	6% (3 cases - treated by medical management)
Difficulty in initiation of lactation	3	6%
Fever	2	4%
CS wound infection	2	4%
Episiotomy wound	1	2%

In our study, majority of subjects had atonic PPH (3 cases), all managed by medical management. 3 subjects had difficulty in initiation of breast feeding, 2 were due to large breast leads to difficulty in proper positioning of baby. Other post natal morbidity is episiotomy wound gap which is treated by episiotomy re suturing, and 2 cases have wound infection after LSCS in which 1 is managed by secondary wound healing and 1 case required re suturing.

4. Discussion

This observational cross sectional study was carried out in department of obstetrics and gynaecology, in our institute, enrolling 50 consecutive labouring women, admitted to labour room and obstetric intensive care unit of our institute, fulfilling inclusion criteria with pregnant overweight mother and after obtaining informed consent, over a period of 4 months from January 2021 to April 2021.

Various studies have shown that health risk associated with obesity occur at lower BMI in Asian than compared to the west. Obesity now considering as epidemic (3). The main objective if this study was to analyse the maternal outcome in overweight pregnant women. Management should include pre- pregnancy counselling to reduce the weight, With proper antenatal, intranatal and post natal care, good outcome can achieved in overweight women. (4)

During this period, Majority of the subjects, 44% belonged to age group of 26 - 35 years, On comparing with Dr. tejal at el study (reference study), in our study majority of subjects were belongs to age group of >25 year but in Dr. Tejal at el study and Jindal S at el study majority of subjects were belongs to 20 - 25 of age.

60% women were the primipara. majority of subjects had hypothyroidism (14%), only 2% subjects had history of chronic hypertension, diabetes mellitus, psychiatric disorder and asthma. Hypothyroidism is associated with decreased thermogenesis, decreased basal metabolic rate and has also been correlate with higher body mass index. There is positive relationship between leptin and serum. TSH (thyroid stimulating hormone) level in women with high BMI. on comparison with Z yang et al, in our study as preexisting medical disorder diabetes mellitus accounts for 2% and in Z yangei alit accounts for 1.1%.

Out of 50 subjects, majority 80% were admitted to hospital with gestational age at 37 - 40 weeks. High maternal BMI associated with longer gestation and increased rate of induction of labour. Pregnancies which progress beyond 42 weeks had significantly increased adverse outcomes including perinatal mortality

6% cases have moderate anaemia, 8% cases have mild anaemia, 86% cases have haemoglobin in normal range. Central obesity was inversely associated with anaemia. Women with overweight or obesity were less likely to be anaemic as compared to normal weight women. (5)

Out of which, majority of subjects (86%) regularly taking haematinics, while 14 % of subjects not taking haematinics regularly, 4 subjects were due to non compliance, and 3

subjects were due to side effects like gastritis. out of 7 subjects 3 subjects were took parantal iron during antenatal period.

We studied various antenatal, intra natal and postnatal variables in overweight pregnant women majority of subjects had hypertensive disorder (22% - 16% due to gestational hyper tension, 6% were due to pre eclampsia), 10 % had anaemia 8% had post datism, 4% had and preterm labour, 6% had oligo hydramnios, 2% had IUGR, IUFD, PROM, gestational diabetes. NO subjects had antepartum haemorrhage and eclampsia. If women BMI 30 or above there is three times more likely to develop gestational diabetes compared the women with a BMI under 25. (6)

If women have BMI of 30 or above, there is risk of pre - eclampsia increases 2 - 4 times than those with BMI under 25. (7)

In our study, majority of subjects (70%) had spontaneous onset of labour, 30% had required induction of labour. Out of 15 induced labour, 12 (80%) were successful, 3 (20%) were failed. High maternal BMI associated with longer gestation and increased rate of induction of labour. (8)

Our study is comparable with Dr. Tejal at el and Jindal S at el study, where majority of subjects were spontaneous onset of labour.

Majority of subjects had induction of labour due to hypertensive disorders (12%), 8% due to post datism,, 6% due to oligohydramnios, 2% were due to PROM and prolong latent phase of labour.

Analysing mode of delivery, majority of subjects had vaginal delivery (52%), 42% undergone LSCS, 6% had instrumental delivery. Majority of LSCS were due to fetal distress (18%). In our study and Dr. Tejal at el study, majority of subjects had for fetal distress (23.46%).

Majority of subjects had atonic PPH (3 cases), all managed by medical management.3 subjects had difficulty in initiation of breast feeding, 2 were due to large breast leads to difficulty in proper positioning of baby.

From our study we found overweight women to be at a greater risk of postoperative wound infection and wound dehiscence. The > 25 BMI omen had 2.59 fold increased risk for wound infection and wound dehiscence. this was possibly because increased amount of subcutaneous fat, increased association with comorbidities like diabetes, prolong duration of surgical procedures, reduced immunity and inflammatory reactions in adipose tissue. (9)

Other post natal morbidity is episiotomy wound gap which is treated by episiotomy re suturing, and 2 cases have wound infection after LSCS in which 1 is managed by secondary wound healing and 1 case required re suturing. In our study and Dr. Tejal at elstudy, most common intra natal morbidity was perineal tear, in Jindal at el study most common morbidity was PPH.

5. Conclusion

From this study we conclude that, increasing weight influence the health of pregnant women and also posses critical risk complications to maternal and fetal healthcare.

As it is modifiable and preventable, enhance preconception counselling and creating awareness regarding associated health risks are highly desirable and become more vigilance during delivery.

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.

6. Limitations

- Small sample size due to migration of people to their native places.
- Exclusion of outside delivery in our study.
- Present study not include antenatal overweight women which was not in labor.

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