

THE EFFECT OF PRE- PREGNANCY HIGH BMI ON MATERNAL AND FETAL OUTCOMES- FROM NUTRITION PERSPECTIVE

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ABSTRACT

Aim : To understand the role of nutrition in Pre - pregnancy High BMI and its effect on maternal and fetal outcomes.

Objective : To study the dietary pattern of Pregnant women with high BMI and to determine the role of nutrition on prevalence of high BMI and its impact on maternal and fetal outcomes.

Materials & Methods : This study was conducted among Pregnant Women attending antenatal clinic of one of the reputed maternity Hospital in Hyderabad. It was carried out on 100 pregnant women who were randomly selected in the antenatal clinic over a period of 2-months from January 2019 to February 2019. A structured questionnaire, which consisted of questions on anthropometric measurements, knowledge, attitude, and practices was employed as a data collection tool and their most recent medical reports were referred to check their biochemical parameters .

Result : It has been found in many studies that women who were falling under the category of overweight & obese before pregnancy were at higher risk of complications, in view of this statement the survey was carried out with 100 women with pre-pregnancy High BMI. The survey concluded that out of 100 women with pre-pregnancy high BMI, 60 were overweight and 40 were obese.

Out of which, 27 had GDM, 12 had Hypothyroidism, 09 had Preeclampsia, 15 had anemia, 14 had other complications like AKI, PPH, G.HTN etc.,

It was also seen that most of the women were non-vegetarians (64%), had a sedentary lifestyle (62%) and underwent Elective and Emergency Cesarean Sections (66%). Also the survey concluded that women gained more weight than the ideal gestational weight gain suggested by IOM according to BMI. 30% of Women gained ideal gestational weight, 14% of them gained less and 56% of them gained more than the ideal recommendations. Fetal complications were FGR and LBW which accounted to 28% and 26% respectively.

From the nutrition perspective it was seen that food groups like cereals, other vegetables and fats & oils were consumed by all the pregnant women (100%) on a daily basis, where as other food groups like green leafy vegetables, meat/chicken/fish, and fruits consumption on a daily basis was 39%, 41%, 55% respectively which is comparatively low. Also Milk & milk products were taken by only 73% of them daily.

Conclusion : From the present study it is found that pre-pregnancy High BMI and the dietary pattern has an impact on both maternal and fetal outcomes. High incidence of Cesarean sections, Gestational Diabetes Mellitus, Anemia, Preeclampsia, Hypothyroidism and fetal complications like Low Birth Weight and Fetal Growth Restriction were observed in women with a poor dietary pattern, sedentary lifestyle and High Pre-pregnancy BMI.

Keywords : High BMI, Nutrition, Food Frequency, Dietary pattern, Maternal Complications, Fetal complications, Gestational weight Gain.

INTRODUCTION : The increasing rate of maternal obesity provides a major challenge to obstetric practice. Maternal obesity can result in negative outcomes for both women and fetuses. The maternal risks during pregnancy include gestational diabetes and preeclampsia. The fetus is at risk for stillbirth and congenital anomalies. Obesity in pregnancy can also affect health later in life for both mother and child. For women, these risks include heart disease and hypertension. Children have a risk of future obesity and heart disease. Women and their offspring are at increased risk for diabetes. Obstetrician-gynecologists are well positioned to prevent and treat this epidemic. [1]

Increased incidence of stillbirths, abnormal growth, cardiac defects, and neural tube defects has been reported in the offspring of obese women after adjustment for various factors including age, familial and lifestyle factors, and ethnicity and. Furthermore, children born to women who enter pregnancy in an obesogenic state are at higher risk for several adverse long-term health outcomes including increased incidence of obesity, cognitive development deficits and ADHD, type-2 diabetes, cardiovascular disease, cancer, and greater all-cause mortality in comparison to children born to lean mothers.[2]

In 2009, the Institute of Medicine (IOM) released new recommendations for gestational weight gain, including specific recommendations for rate of weight gain by pre-pregnancy body mass index (BMI). [3]

MATERIALS & METHOD : This study was conducted among pregnant Women attending antenatal clinic of one of the reputed maternity hospitals in Hyderabad. It was carried out on 100 pregnant women who were randomly selected in the antenatal clinic over a period of 2-months from January 2019 to February 2017. A structured questionnaire, which consisted of questions on anthropometric measurements, knowledge, attitude, and practices was employed as a data collection tool and their most recent medical reports were referred to check their biochemical parameters. A formal permission to conduct the study was obtained from the authorities of the hospital and a verbal consent was obtained from women attending antenatal clinic. A structured interview schedule was used to collect the required information and their most recent medical reports were referred to check their biochemical parameters. A total of 100 pregnant women attending ANC clinic were randomly selected and included in the Study. All the registered pregnant women, those are attending the antenatal clinics were included in the study The data was analyzed using Microsoft excel.

Result : From the present study it was found that 62% of women were in 20-30 year age group and 38% of women were under 31-40 years of age group. Out of 100 respondents, it was seen that 60% of the women were overweight, 40% were obese even before conceiving and 16% of them were overweight, 84% were obese at the end of the pregnancy. The study revealed that 62% of them led a sedentary life while 38% of them had a active one and the diet preferred by 64% was non-vegetarian where as 36% of the pregnant women preferred vegetarian. From the nutrition perspective and food frequency recall it was seen that food groups like cereals, other vegetables and fats & oils were consumed by all the pregnant women (100%) on a daily basis, where as other food groups like green leafy vegetables, meat/chicken/fish, and fruits consumption on a daily basis was 39%, 41%, 55% respectively which is comparatively low. Also Milk & milk products were taken by only 73% of them daily.

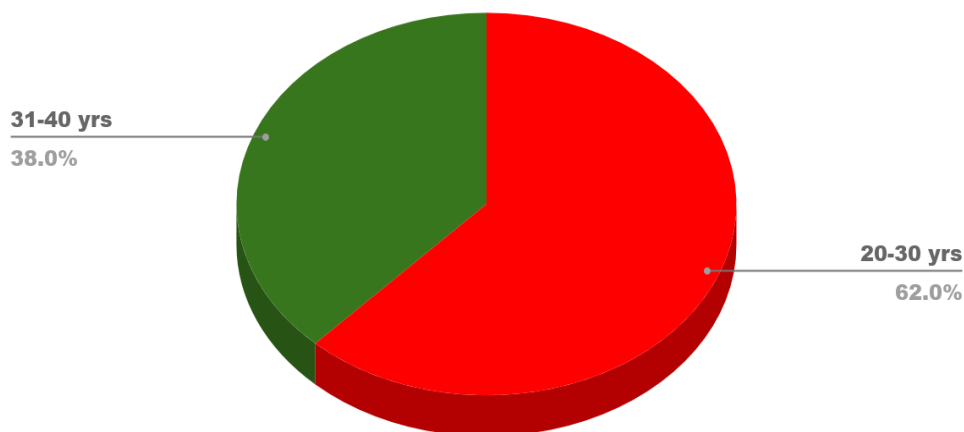
It was also found that 20% and 48% of pregnant women underwent Elective and Emergency Cesarean Sections respectively, where as 32.7% had normal vaginal delivery. Also the survey concluded that women gained more weight than the ideal gestational weight gain suggested by IOM according to BMI. 30% of Women gained ideal gestational weight, 14% of them gained less and 56% of them gained more than the ideal recommendations. Present study revealed that 27% had GDM, 12% had Hypothyroidism, 9% had Preeclampsia, 15% had anemia, 14% had other complications like AKI, PPH, G.HTN etc., Fetal complications were FGR, LBW and Preterm birth which accounted to 28% , 26% and 22% respectively.

Result :

1. AGE GROUP:

Upon analyses of the data, 62% of the respondents were in the age group 20-30 years and the rest of them were in the age group 31-40 years.

AGE GROUP



2. PRE-PREGNANCY WEIGHT:

PRE-PREGNANCY WEIGHT	NUMBER (n=100)	PERCENTAGE
50-60 kg	18	18%
61-70 kg	32	32%
71-80 kg	30	30%
81-90 kg	20	20%

The above table illustrates that 32% of the pregnant women weighed in between 61-70 kgs, 30% of them weighed 71-80 kgs, 20% of them weighed 81-90 kgs and the rest 18% of them weighed around 50-60 kgs.

3. PRE-PREGNANCY BMI:

Among the 100 pregnant women, 60% of the women were overweight at the time of conception and 40% of them were obese.

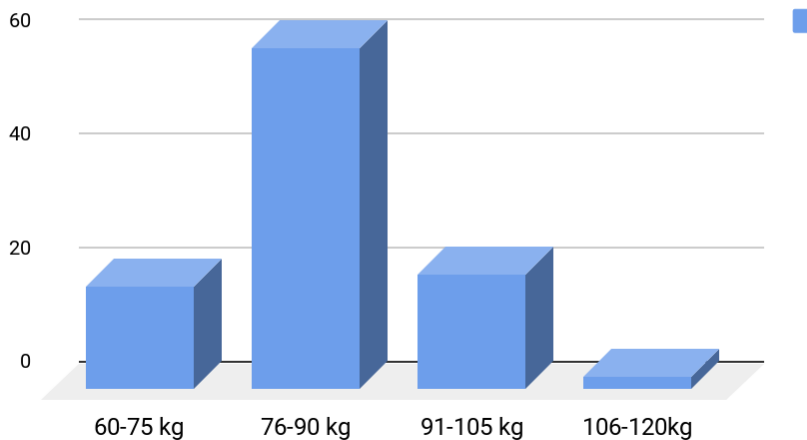
BMI	NUMBER (n=100)	PERCENTAGE
OVERWEIGHT (>25-29.9)	60	60%
OBESE (≥ 30)	40	40%

4. POSTNATAL WEIGHT:

Upon analysis of data, 60% of the women had postnatal weight in between 76-90 kgs, 20% of them were in between 91-105 kgs, 18% of them were in between 60-75 kgs and the rest 2% were around 106-120 kgs.

PRESENT WEIGHT	NUMBER(n=100)	PERCENTAGE
60-75 kg	18	18%
76-90 kg	60	60%
91-105 kg	20	20%
106-120kg	2	2%

PRESENT WEIGHT

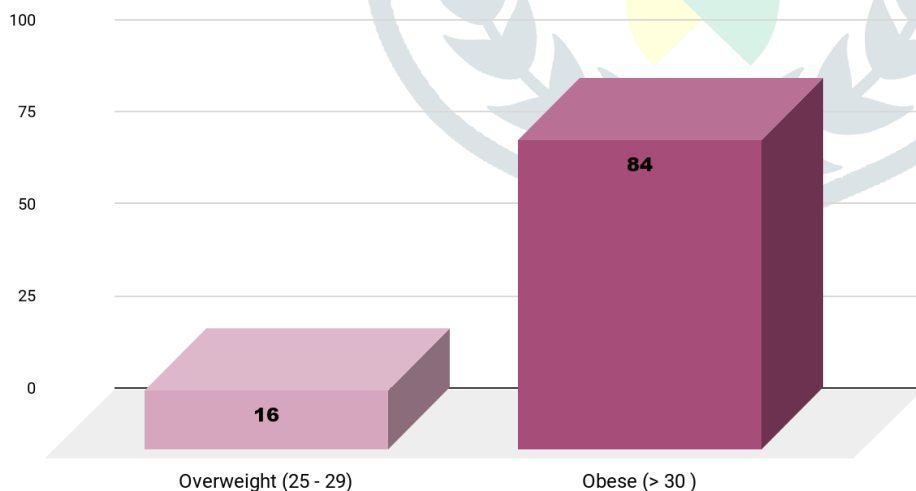


5. POST-NATAL BMI :

Among the 100 respondents,84 % of the women were obese and 16% of them were overweight.

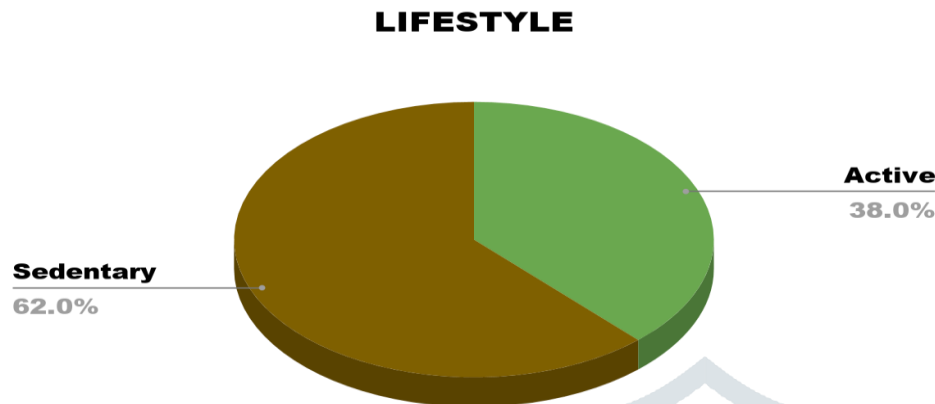
BMI	NUMBER (n = 100)	PERCENTAGE (%)
Overweight	16	16%
Obese	84	84%

PRESENT BMI



6. MODE OF LIFESTYLE

Upon analysis of data, the study conducted among 100 respondents 38% of the respondents were Active and 62% were sedentary.



7. DIET PREFERENCE

The patients were grouped into two types, based on the diet pattern and preference.

DIET PREFERENCE	NUMBER (n=100)	PERCENTAGE
Vegetarian	36	36%
Non-vegetarian	64	64%

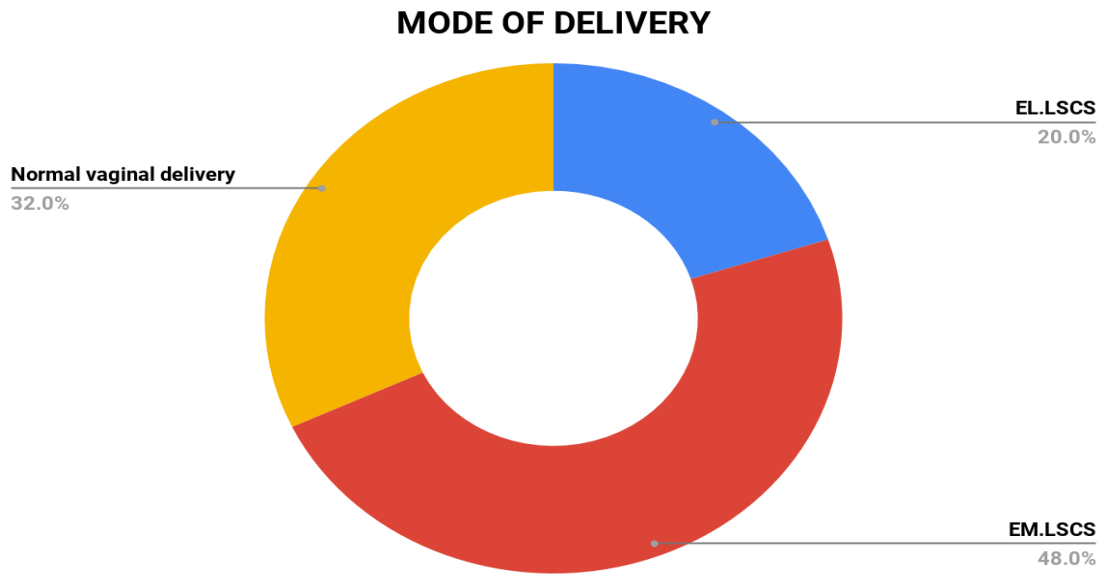
Above table illustrates that most of the high BMI patients were non-vegetarian i.e., 64% and only about 36% women were vegetarians.

8. FOOD FREQUENCY :

The table below illustrates that most of the pregnant women (100%) consume cereals, other vegetables and fats & oils on a daily basis, whereas, the consumption of pulses, Green leafy vegetables, fruits, milk & milk products and high biological value protein sources i.e., meat/chicken/fish daily is 47%, 39%, 55%, 73% and 41% respectively which is comparatively low.

Food Group	Daily	Weekly once	Weekly twice	Monthly
CEREALS	100 %	-	-	-
PULSES	47%	32%	15%	6%
GREEN LEAFY VEGETABLES	39%	43%	10%	8%
OTHER VEGETABLES	100%	-	-	-
FRUITS	55%	30%	8%	8%
MILK & MILK PRODUCTS	73%	10%	15%	2%
MEAT / CHICKEN/FISH	41%	28%	10%	21%
FATS & OILS	100%	-	-	-

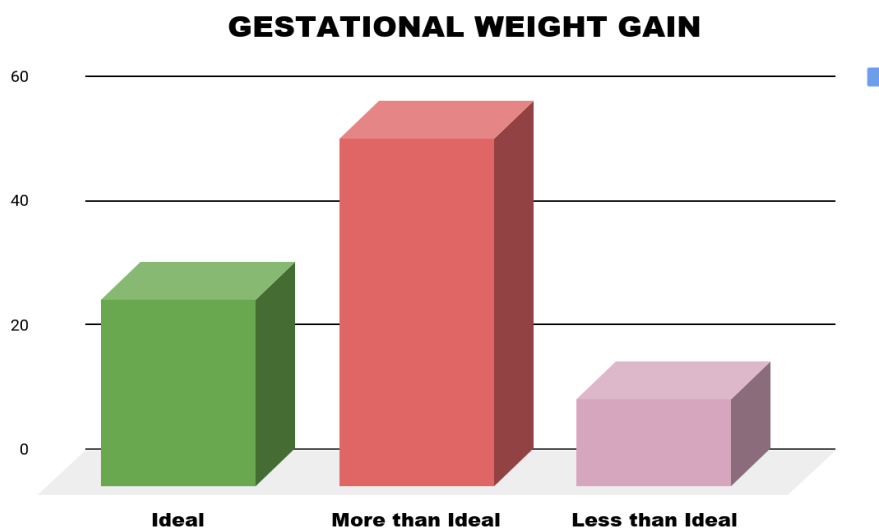
9. MODE OF DELIVERY



Above diagram illustrates that very few of the high BMI patients had a normal vaginal delivery i.e., 32% and most of them underwent Em.LSCS & El.LSCS i.e., 48% and 20% respectively.

10. GESTATIONAL WEIGHT GAIN :

Among the 100 respondents, 56% of the women weight gain was more than ideal, 30% of the women gained ideal weight and 14% of them gained less than ideal weight.



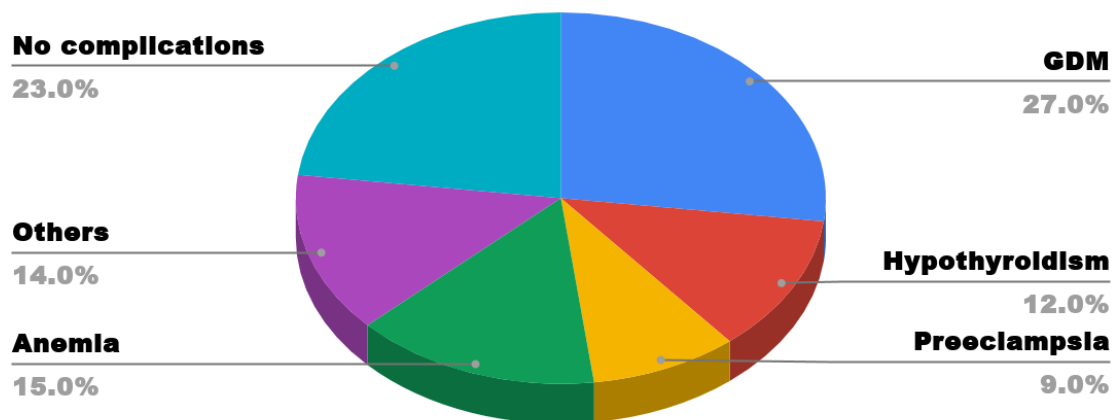
11. MATERNAL COMPLICATIONS :

Among the 100 respondents, 27% of them had GDM, 12% had Hypothyroidism, 9% had Preeclampsia and 15% had anemia.

It was also seen that 14% of them had other complications like AKI, G.HTN, PPH etc.,

COMPLICATION	NUMBER (n=100)	PERCENTAGE
Gestational Diabetes mellitus	27	27
Hypothyroidism	12	12
Preeclampsia	9	9
Anemia	15	15
Other complications	14	14
No complications	23	23

Maternal Complications



FETAL COMPLICATIONS :

12. FETAL GROWTH RESTRICTION / STEROID COVER

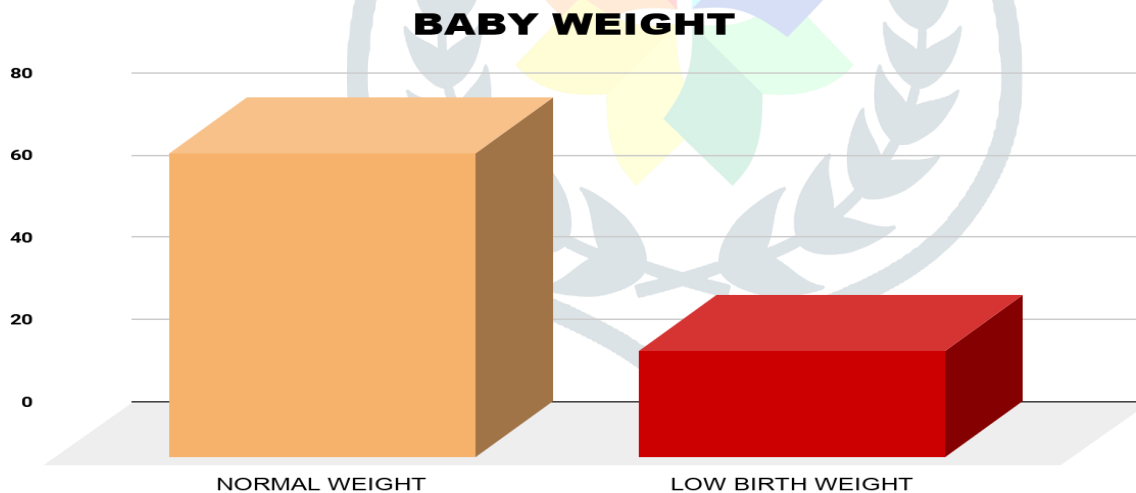
It was also seen in the study that 28% of newborn had fetal growth restriction and were given steroid cover.

FGR/ STEROID COVER	NUMBER (n = 100)	PERCENTAGE (%)
FGR/ Steroid covered	28	28%
No FGR	72	72%

13. BIRTH WEIGHT

From the study conducted, it was seen that 26% of the newborn had low birth weight and 74% had normal weight.

BIRTH WEIGHT	NUMBER (n = 100)	PERCENTAGE (%)
Normal weight (>2.5 - 3)	74	74%
Low birth weight (< 2.5)	26	26%



14. PRETERM BIRTH

Upon the analysis of the data collected from the case files it was found that 22% neonates were preterm and 78% neonates were full term.

TERM/ PRETERM	NUMBER (n=100)	PERCENTAGE (%)
Full term babies	78	78%
Preterm babies	22	22%

Discussion & Conclusion: The health of women, throughout their childbearing ages, should be addressed, to improve their obstetrical and perinatal outcomes. Also, the high risk groups should be managed at tertiary centers.

During the last two decades, there has been an alarming rise in the incidence of obesity all over the world. India is now facing a double burden of this disease with under nutrition and underweight on one side, and a rapid upsurge in obesity and overweight, particularly in the urban settings on the other side. [4]

Maternal obesity is now considered one of the most commonly occurring risk factors seen in obstetric practice. Compared with women with a healthy pre-pregnancy weight, women with obesity are at increased risk of miscarriage, gestational diabetes, preeclampsia, venous thromboembolism, induced labour, caesarean section, anaesthetic complications and wound infections, and they are less likely to initiate or maintain breastfeeding. [5]

The worldwide prevalence of obesity has increased substantially over the past few decades. Economic, technologic, and lifestyle changes have created an abundance of cheap, high-calorie food coupled with decreased required physical activity. We are eating more and moving less. [6]

The present study found that 60% of the women were overweight and 40% of them were obese even before pregnancy due to false dietary habits and low dietary intake of certain food groups which had its impact on maternal outcome as majority of them had Cesarean sections(68%) and other complications like GDM(27%), Hypothyroidism(12%),Preeclampsia(9%), Anemia(15%) etc., Thus Results of the present study indicate that knowledge, attitude, food habits & practices of the pregnant women on healthy eating and nutrition should be improved and that health and nutrition education of the pregnant women is necessary for a healthy & safe motherhood. Awareness among women on starting a pregnancy with a normal BMI should be widespread.

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