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Research Article

**A STUDY OF BODY MASS INDEX IN PREGNANCY AND ITS
CORRELATION WITH MATERNAL AND PERINATAL
OUTCOME**¹Dr Nimra Naheed Malik,² Dr. Humna Uzair¹ Rawalpindi Medical University Rawalpindi² Khawaja Muhammad Safdar Medical College, Sialkot**Article Received:** October 2019 **Accepted:** November 2019 **Published:** December 2019**Abstract:**

Objective: The main objective is to observe pregnant women and their body mass index. The study includes the relationship of BMI in the women who are expecting along with the result of obstetrics. The relationship of BMI in pregnant women of perinatal results.

Materials and Method: Some ladies who are the part of the antenatal OPD for the treatment at the Mayo Hospital, Lahore and it was held in between February 2015 to the July 2016. The consent in the written form is also taken. The standard specified classifications of BMI are considered. The points evaluated are the results of obstetric and perinatal.

Results: there is a linear relationship of LSCS with the higher rate of BMI with a value of 41%. It is happened when the comparison was done with a value of 16%. There is also a linear relationship of hypothyroid with the higher rate of BMI with a value of 12%. It is happened when the comparison was done with a value of 2.87%. In comparison to the normalized value of 8%, there is an association of BMI (n=10) and GDM. Highly expanded range of GHTN has a relationship of increased rate of BMI with the percentage of 20% in comparison to the 8.76%. Expanded pace of in NICU confirmation was related with underweight gathering 37.5% (n=6) when contrasted with typical 8.34%, huge. Expanded pace of paleness was related with underweight gathering 56.25% when contrasted with ordinary 27.77%, critical.

Conclusion: In the worst results of pregnancy, BMI value has a vital role. There is a relation of higher rate of BMI and hypothyroid, gestational hypertension, caesarean delivery and instrumental delivery. An important relationship was observed in minimum birth weight and anaemia with underweight BMI.

Keywords: Underweight, BMI, Maternal outcome, Obesity, Perinatal outcome.

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INTRODUCTION:

In the prosperous communities, the main problem of damaged health is the excessive weight gain. In all the developed countries, the issue of obesity is increasing day by day. The rate of obesity in the whole world reached up to an alarming situation. This is totally independent of gender, age and race. No doubt, obesity is the more concerning problem in the modern era and replacing the existing reasons of diseases. Most important reason for the diseases is the infection in the body parts and the other reason is under nutrition 1. The chances of occurrence of the obesity in pregnant women is much higher 2. The doctors and lady doctors of the Jannah Hospital, Lahore has recommended that at the initial levels of the parental visits to the doctors, their BMI should be calculated. The information related to the maternal should also be gathered. The remedies of the risks related to the higher rate of BMI should also be facilitated.

In the 2009 year, an announcement by WHO is recorded which is about the obesity and pregnant women. They said that the obesity is main disease in pregnancy. Obesity also affects the health of the mother and child. The fatness of the mother resulted in so many perinatal issues. There are also many risks associated with the fat pregnant women such as diabetes of gestational, infections of pre-eclampsia, deliveries in both ways such as vaginal and caesarean 3. The risk of getting wounds and the infection of endometriosis is also expanded in them. There are also some risks related to their offspring. In the developed nations such as Pakistan, there are most chances of damaged health due to many reasons including premature breakdown of various membranes babies with the lower weight at the time of birth, incremented perinatal mortality 4. To diminish the commonness of overweight individuals to the value of 20% before twentieth century's over, National wellbeing objectives expressed objective of wellbeing approach 2000. Mostly people of the nation were the patient of obesity at the end of the 2000 so the purpose of the study is not accomplished. The need of another study is present. To connect BMI in pregnant ladies with the outcomes of maternal and perinatal is the reason of the following study.

MATERIALS AND TECHNIQUES:

A few ladies who are the part of the antenatal OPD for the surgery at the Mayo Hospital, Lahore and it was conducted in between February 2015 to the July 2016. The consent in the written form is also engaged. The patients involved in the experiment was 100. The following study is totally based on the hypothetical studies. The characteristics of the

patients selected are also demonstrated. They should be between the 18 and 35 years, should have singleton pregnancy, first trimester and spontaneous conception. These above specifications are for the exclusion criteria. The specifications for the inclusion criteria are somehow different. They include ladies with not singleton pregnancy, ladies who the patient of different extreme diseases such as diabetes, bronchial asthma, hypertension, Caesarean section women in previous case, worst congenital anomalies and thyroid disorders. The information for which the study is conducted is briefly explained to the all selected ladies. The record of the selected ladies included their age group, score of obstetric and their names are saved. On the basis of the date of their menstrual periods and the studies of their ultrasounds taken in the first trimester of the pregnancy, the age of the gestational are calculated. In the duration when the ladies visited in the 1st trimester of the pregnancy, their weight and height are measured and recorded. The index of body mass is calculated from the formula which is the ratio of the weight of the all women in kilograms and their height in the unit of meter square.

The selected women are then categorized on the basis of their BMI and then the results of the variables of the obstetric are calculated. According to the committee of WHO, all the women are divided into the four groups on the basis of the index of body mass.

Group 1: $\leq 18.5 \text{KG/M}^2$ of BMI and called as underweight

Group 2: BMI is greater than 19.5-26.9 KG/M^2 and named as Normal group

Group 3: BMI is 26-28.9 Kg/m^2 and called as overweight

Group 4: The value of BMI is 30-35.9 Kg /m^2 and the group is obese

To diagnose the anomalies, it is suggested to scan the pregnant women in the 12th or 13th week of pregnancy. Women should also go to the routine examinations to their doctors in the 1st trimester. OGCT was done in the 2nd trimester and in the 25th to 28th week. The record of the blood pressure was saved on each check-up. Other important readings were also taken on every visit such as height of fundal, fetal rate of heart beat, fetus position. This is all done by the examination of the abdomen. After for weeks, urine test and hematology were performed. There was appointment of all the selected ladies after every four weeks for the first 28 weeks of pregnancy. There is also the appointment of each woman in every two months after the 28th week to the 36th week of

pregnancy. After the deliveries of the all women, they also visited to their doctors. General check-up and the obstetrical check-up were done in the 3rd trimester. OGCT is then again performed in the 34th week. If the doctors observed that there is any confusion or the complications related to the child and in abdomen, then an improvement check-up is performed by the health care center.

The results from the present study are stated as;

1. Development of disorders of hypertensive during pregnancy
2. Development of diabetes mellitus during gestational age
3. Development of the hypothyroidism
4. Development of the anemia and many other infections
5. Way of delivery
6. Birth weight of the new born baby, score of APGAR at 5 min and requirement of NICU admission
7. Complications in postpartum

Statistical Analysis:

For entering the gather information and data to the personal computer, the software used is SPSS. This software is used for analyzing the statistics 18. The version of given software is 17. The entered data is in the form of the numeric values. To reveal the distribution importance in various variables is done by test of normality of Chi-square test. Test of fisher's exact is used to reveal the connection between BMI and variables of outcomes.

RESULTS:

The age group of 20% women is between years of 18 and 22 as described in table 1. 66% ladies lie in between 23 and 29 years. And the remaining 13% ladies are in between the range of 30-36 years. Mostly women selected in the experiment which are 66 % lie in between 23-30 years. The average age of the ladies is 25 years.

Table 1: Distributed groups on the basis of age

Age group	18-23	24-30	31-34	Total
Under Weight	3	9	4	16
Normal	7	26	3	36
Over Weight	9	25	4	38
Obesity	2	6	2	10
Total	21	66	13	100

Table 2 indicates primi ladies are 67%. Para 1 ladies are 24%. Multiparous women are just 9%.

Table 2: Distributed groups on the basis of parity

Parity	Primi	P1	P2	Total
Under Weight	6	8	2	16
Normal	27	6	3	36
Over Weight	28	7	3	38
Obesity	7	2	1	10
Total	68	23	9	100

Table 3: Delivery mode with each category of BMI

Way of Delivery	VD	LSCS	INST	Total
Under Weight	14	2	-	16
Normal	29	6	1	36
Over Weight	22	14	2	38
Obesity	1	6	3	10
Total	66	28	6	100

The women who had their delivery through vagina in the experiment are 665. The percentages of the all

groups of Underweight, overweight, normal and obese are 86.5%, 56.7%, 80% and 10 respectively.

The percentage of the women who have LSCS is 28% and in them just 12% are related to the group of underweight. 16% are from normal group. 36% are from the overweight women group. The women who had delivery from the instruments from obese group are 60%. The percentage of all the women from the four above-mentioned groups are 6%, 2%, 5.2% and 30% respectively. With the passage of the time, the number of women who had delivery with instruments are continuously increasing. The chances of the operative delivery are also increasing with the increase in the BMI. The rate of LSCS is much incremented in the obese and overweight class of women. In the group of underweight ladies, the rate of the deliveries through vagina is 87%. With the increase in the value of BMI, there is a significant decrease in the normal mode of delivery.

31% infants with birth weight under 2.5 kg 82%

were in underweight gathering as indicated in table 4, 31% were in ordinary gathering, 16% were in over weight gathering. 41% infants with birth weight 2.6-3kg 20% were in underweight gathering 52, 77% were in ordinary gathering, 39.47% were in overweight gathering, 31% were in large gathering. 23% infants with birth weight 3.1-4kg 0% were in underweight gathering, 14% were in ordinary gathering, 37% were in over weight gathering, 41% were in large gathering. 7% babies with birth weight >3.6kg 0% were in underweight gathering, 3% were in typical gathering, 8% were in over weight gathering, 3% were in hefty gathering. Lion's share of infants' introduction to the world weight 41% were in the middle of 2.6-3.5kgs. Mean load of children in the investigations was 2.90kg. Likewise shows that greater part of underweight ladies altogether connected with low birth weight, as BMI builds birth weight increments.

Table 4: BMI & birth weight

Birth Weight	<2.5	2.7-3.1	3.2-3.6	>3.6	Total
Under Weight	13	3	-	-	16
Normal	11	19	5	1	36
Over Weight	6	15	14	3	38
Obesity	-	3	4	3	10
Total	30	40	23	7	100

Table 5 indicates the relation of different scores and various ranges of score with APGAR.

Table 5: APGAR at 5 min along with BMI

APGAR	5-7	>8	Total
Under Weight	12	4	16
Normal	1	35	36
Over Weight	2	36	38
Obesity	2	8	10
Total	17	83	100

Table 6 indicates; expanded pace of LSCS was related with High BMI bunch 41.67% when contrasted with ordinary 17%, Noteworthy. Expanded pace of Hypothyroid was related with High BMI bunch 13% when contrasted with typical 2.77%, Critical. Expanded pace of GDM was related with High BMI bunch 21% when contrasted with typical 9%, Critical. Expanded pace of GHTN was related with high BMI bunch 21% when contrasted with typical 9%, Huge. Expanded pace of NICU Confirmation was related with underweight gathering 38% when contrasted with typical 9%, Noteworthy. Expanded pace of Paleness was related with Underweight gathering 57% when contrasted with ordinary 28%, Noteworthy.

Table 6: Comparison of variables of study between different BMI Groups

Variables	Normal	Under Weight	High BMI	P-Value
Way of Delivery				0.013
VD	30	14	28	
LSCS	6	2	20	
Hypothyroid				0.109
Yes	1	0	6	
No	35	16	42	
GDM				0.058
Yes	3	0	10	
No	33	16	38	
GHTN				0.058
Yes	3	0	10	
No	33	16	38	
Anemia				0.04
Yes	10	9	7	
No	26	7	41	
Instrumental				0.187
Yes	1	0	5	
No	35	16	43	
NICU				0.000214
Yes	3	6	1	
No	33	10	47	

DISCUSSION:

In this examination ladies were partitioned into 4 BMI gathering, out of 100 ladies 17% in present investigation were in underweight gathering with BMI under 19 kg for each meter square, 37% were in ordinary gathering with BMI 19 to 25 KG for every meter square. Overweight gathering was 39% with BMI 25 - 30 KG for each meter square and large were 10% with BMI>30kg/sq m. Anjana Sharma (5) et al study 16% were underweight and 52% had a place with the ordinary weight class, while 21.04%, 11% ladies were from the overweight, corpulent classifications individually. Yazdani et al study 13% were underweight, 42% were typical, 36% were overweight and 10% were stout.

In present investigation Hypothyroid is found in 8%, which associates with 7% of Sahu et al, 8% of Taghari (6) et al, with 9% of Sapna C Shah et al. Present examination shows factually huge increment of Hypothyroid as BMI increments. In present examination GDM is found in 13% connects with 16.5% of Seshiah V (7) et al gestational diabetes in Pakistan. Concentrate done in TN with 19% GDM in urban, 14% in semi-urban, 10% in country territories. In present investigation GHTN is found in 14%, 31% in large, 19% in over weight and 9% in

typical BMI gathering. Kumari (8) et al study 29% of GHTN in corpulent with 3% in the non-large. Huge connection of high BMI with GHTN. In present investigation paleness is found in 27%. Present examination associates with 21.7% of Emmanuel (9) et al study iron deficiency in connection to BMI.

In present examination 57% in underweight, 17% in overweight and 11% in fat ladies had iron deficiency. Qin Yu et al in study says in Chinese ladies' backwards affiliation was found between overweight, stout, and iron deficiency. in 100 ladies, 67% of ladies had ordinary vaginal conveyance, 29% of ladies had LSCS with 7% ladies had instrumental conveyance. Factually huge increment in LSCS as BMI increments with P esteem 0.01131. Poobalon et al metanalysis found that danger of LSCS was higher in overweight or fat ladies then with ordinary BMI.

CONCLUSION:

In the worst consequences of pregnancy, BMI value has a vibrant role. The following article included the relationship of index of body mass with the various results of pregnancy. There is a strong connection observed from the study in between the maternal index of body mass and a number of difficulties

faced during pregnancy duration.

There is a relation of higher rate of BMI and hypothyroid, gestational hypertension, caesarean delivery and instrumental delivery. An imperative relationship was experimental in minimum birth weight and anaemia with underweight BMI. Most of the studies involving the current investigation and by reviewing the previous studies of various authors, it can be concluded that the complications faced at the time of pregnancy can be diagnosed by the value of the BMI.

Revelation of interest:

None proclaimed. To see online as supporting data, finished divulgence of interests from accessible.

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