

# Assessment Body Mass Index Effect on Pregnancy Outcomes in Larian Women Referred to Health Center

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**Abstract-** Introduction& aims: Overweight and obesity in particular during pregnancy, should be considered as an abnormal situation. An overweight condition increase obstetric risk in a BMI depended manner. This study aim was assessment effects mother BMI on mother and neonate.

**Method:** In this cross sectional study main goal assessment relation between mother BMI and pregnancy outcome, through random sampling 272 pregnant mother referring health centers in Lar select.

**Result:** Result showed average of first BMI 23.4 and latest BMI 28.3.74.3% of women experienced first pregnancy. Higher BMI in mother caused low birth weight in newborn ( $P < 0.01$ ). 5.6 % ( 26) mother were overweight women in onset of research and 35.6(105) women in the pregnancy had a excessive weigh again.

**Conclusion:** Obese women and women with excessive weight gain during pregnancy need special fallow up and counseling during pregnancy and delivery. Health professionals working with pregnant women should be aware of overweight problem and education women about this problem.

**Keywords-** pregnancy complication, delivery complication, BMI, obesity, overweight.

## I. INTRODUCTION

Obesity is supposed to be a high risk situation during pregnancy due to the large accompanied complication. Obese patients have more chance of infertility comparing with patients having normal weight. The fertility power reduces in obese women due to resistance increase to Insulin. The results of the researches from different parts of the world have indicated the existence of several complications among mother and neonate due to the obesity or excess weight of mother. These complications include the relation between fertility disorder of women with BMI higher than 30, more diabetes mellitus and chronic hypertension in obese women, high risk of being affected to PIH and Preeclampsia, pregnancy diabetes, Thromboemboli, Macrosomia and spontaneous intrauterine dead fetus in second semester of pregnancy.

Obesity is accounted to be the constant risk factor of creating Preeclampsia [1]. In a study done on 1.4 million women, this result was obtained that; the risk of Preeclampsia becomes double in lieu of each 5-7 kg/m<sup>2</sup> increase of BMI before pregnancy [3].

Obese women need more cesarean and inductive delivery and also accessory devices like forceps and vacuum comparing with women having normal weight [2, 3, 6, 9 and 10]. In a nurse-midwifery study among women having a BMI above 29.0 kg/m<sup>2</sup>, two to four times increase in cesarean cases was observed. Also, in a study regarding private cases referred to physicians, the rate of cesarean cases resulted from Dystonia had 6 times increase among obese primiparous women (Boney et-al. 4).

There is more prevalent wound infection among obese women following the cesarean. Siega et-al. (2009) found that, obesity is accounted to be the independent risk factor of infectious complications after cesarean [8].

A high rate of congenital abnormalities like Neural Tube Defect (NTD) and stillbirth, Macrosomia followed by shoulder dystonia, fractures and injury to the humeral plexus and lacerations among born neonates from obese mothers are observed [2, 6, 9, 10 and 13]. The risk of birth of neonate with NTD among obese women increases by 2-3 times more [2, 3 and 4].

Chronic hypertension and diabetes mellitus are two important and connected common factors that result in the appearance of more prenatal complication and mortality and both are connected with obesity [1].

The incidence rate of Macrosomia is more among neonates of obese women [14]. Also, long-term complications are seen in Macrosomic neonates of such mothers. The neonates having low weight at the time of birth are facing with lesser affection to diabetes type 2, resistant to Insulin and metabolic syndrome while this risk increases among neonates with the weight of more than 4000 grams [1, 2, 4 and 6]. The increase of unjustifiable stillbirth incidence rate at the end of pregnancy is also connected with obesity.

Cho et-al. (2007) reported the increase of stillbirth rate among women having BMI of 25-29 kg/m<sup>2</sup> by 1.6 times. This rate had 2.6 times increase among women with the BMI of 30

kg/m<sup>2</sup> or more. In addition, the rate of early death of neonates is double among primiparous women having BMI equal to or above 30 kg/m<sup>2</sup>. Therefore, it seems that, studying the BMI of pregnant women as a potential risk factor to determine the maternal and neonatal complications be a health priority.

This study has been carried out with the aim to survey the relation of BMI of mothers during pregnancy and its effect on mother and neonate.

## II. MATERIALS AND METHODS

This is a descriptive-analytical study carried out with the aim to survey the effects of BMI changes of pregnant mothers on the results of pregnancy during the second semester of 2008. The research population was consisting of 272 women who referred to the clinics of Lar city to receive health cares and delivered at Lar hospital. The samples were selected randomly on the basis of family file number at the clinic and were followed up till delivery time at the maternity hospital of Lar city.

The data collection tool was a two parts questionnaire which was completed in the form of interview. The first part of questionnaire was consisting of demographic information and the second part included some questions regarding the risk factors connected with excess weight of mothers. In the second part, the height, weight (in two stages) and blood pressure of mother was measured and her BMI was determined on the basis of height and weight at the beginning and end of pregnancy. The weight of neonates was also measured after birth at the hospital. Collected data were then analyzed using SPSS software and with the help of descriptive statistics and independent-t test.

## III. RESULTS

According to the results of the research, the age range of clients was 18-43 years with the mean of 26.6 years. Their first weight (before pregnancy) were varied from a minimum of 39 kg to a maximum of 109 kg with the mean of 95.5 kg and their last weight varied from a minimum of 47.5 kg to a maximum of 114 kg with the mean of 71.3 kg. The height of samples was between 142-184 centimeters with the mean of 159 centimeters. 5.6% (26 persons) suffered from excess weight from beginning. 92.3% (251 persons) of mothers were housewives and only 7.7% (21 cases) were employed. Among fathers, 15.1% (41 cases) were employee, 23.5% (64 cases) were workers and 61.4% (167 cases) had free occupations. From the view point of education of mothers, 48.7% (130 cases), 38.2% (104 cases) and 11.0% (30 cases) had primary, high school or diploma and university education respectively and 2.9% (8 cases) were illiterate. 74.3% (202 cases), 8.1% (22 cases) and 9.6% (26 cases) experienced their first, second and third or fourth pregnancy respectively and the remaining experienced their fifth and above pregnancy. Regarding the sex of neonates after birth, 44.1% (120 cases) were girls, 54.0% (147 cases) were boys and the sex of 5 neonates (1.8%) was

not determined in the questionnaire form. 39.7% (108 cases) practiced normal vaginal delivery and 58.8% (160 cases) delivered by cesarean, the matter which is of importance and 1.5% (4 cases) used accessory devices or inductive delivery.

Regarding delivery complications connected with mother, only 2.9% (8 cases) had some complications during delivery and 97.1% (264 cases) gave birth to their children without any complication. In respect of complications connected with neonate, 4.0% (11 cases) of neonates suffered the complications while birth and 96.0% (261 cases) of them had no complication. 26.1% (71 cases) had the history of giving birth to dead neonate in their previous deliveries which is questionable and 73.9% (201 cases) had no history in this respect. 4.0% (1 case) of the total samples gave birth to dead neonate and 99.6% (271 cases) of them gave birth to alive neonates. The weight of neonates in this pregnancy varied from 1.900-4.5 kg with the mean of 3.200 kg. Among the research variables, a statistical significant relation was obtained between birth weight of neonate and BMI of mother during pregnancy ( $P < 0.01$ ). In mothers with BMI above normal limit, this high BMI was also observed at pregnancy and gave birth to low birth weight neonate.

## IV. DISCUSSION

1) The increase of prevalence of obesity among young women is a health consideration problem. Considering that, such women are in the fertility ages; this process has important effects on the results of pregnancy in these women that has been largely discussed by researchers.

2) A research done by Satpati et-al. (2008) showed that, increase in BMI is accompanied by increase of high prevalence of Preeclampsia and blood pressure of pregnancy periods [9]. Also, Dicker et-al. (2009) proved that, blood pressure among women whose BMI is above 30 kg/m<sup>2</sup> increases significantly [3].

3) Beginning of delivery spontaneous pains is less in women having BMI of 30 kg/m<sup>2</sup> and inductive delivery and use of accessory devices is more [3, 13]. In the present research also 1.5% (4 cases) used inductive delivery and accessory devices.

4) The prevalence of delivery by cesarean among obese women is also approximately 1.5 times more than that of women with normal weight [2, 10]. In the present study also 58.8% (160 cases) have delivered by cesarean which is of importance due to complications of cesarean.

5) Obesity prior to pregnancy is often accompanied by increase of death risk of neonate as pregnancy age increases and insufficient function of placenta may be one susceptible factor [12]. The stillbirth probability among women with excess weight is 4 times in obese women is 2.07 times more as compare to women having normal weight [10]. In the present study also 26.1% of samples had the history of stillbirth in previous deliveries that needs to be considered and also 4.0% (one case) of total present samples gave birth to dead neonate.

6) Obese women suffer more from post-partum bleedings [2]. Post-delivery blood loss is seen among obese women with BMI higher than 30 kg/m<sup>2</sup> or mean BMI lesser than 25 kg/m<sup>2</sup> [3].

7) Born neonates from obese mothers are more exposed to Macrosomia followed by shoulder dystonia [6, 9]. Fox et-al. found that, increase in BMI of mother is accompanied by weight reduction of neonate. In the present study also the weight rate of born neonates varied from 1900-4500 grams with the mean of 3200 grams and mothers whose BMI were above normal limit gave birth to low weight neonates that the statistical relation was significant (P<0.01).

8) Diabetes is also among connected diseases with obesity [1]. Women with BMI more than 30 kg/m<sup>2</sup> are more exposed to pregnancy diabetes [3]. Exposing to diabetes at fetal period and the size during birth are among risk factors of diabetes type 2. LAG children born from diabetic mothers are more exposed to risk of metabolic syndrome of childhood period [4].

9) Prevention is the best way of controlling such problems. Since pregnancy is the worst time to reduce weight, women with high BMI should be encouraged to reduce their weight before pregnancy. They should be educated about the complications of high BMI during pre-pregnancy consultations. Obese women should be screened for hypertension and diabetes mellitus [9, 10]. At the beginning of pregnancy in addition to observe them for abortion, the obese women should be screened at 18<sup>th</sup> and 22<sup>nd</sup> weeks for congenital anomalies by sonography. Sonography should be repeated near to delivery for guarantee of fetus weight and probable Macrosomia. Obese women are being screened at 24<sup>th</sup> and 28<sup>th</sup> weeks for pregnancy diabetes. They should be observed completely for signs and symptoms of PIH during 2<sup>nd</sup> half of pregnancy. As labour starts, an anesthesia consultation is suggested without considering the delivery method [9]. Comparing the obtained results from this research and mentioned researches show the similarity of studied risk factors and the important role of excess weight or obesity of mother in creating maternal and neonatal complication.

TABLE II. FREQUENCY DISTRIBUTION OF NEONATE ON SEX

Percent	Frequency	Sex
44.1	120	girl
54	147	boy
1.8	5	unknown
100	272	total

TABLE III. FREQUENCY DISTRIBUTION OF WOMEN ON THE KIND OF DELIVERY

Percent	Frequency	Kind of delivery
39.7	108	Normal vaginal delivery
58.8	160	C/S
1.5	4	Other method
100	272	total

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TABLE I. THE DESCRIPTION OF WEIGHT AND BMI IN 272 PREGNANT WOMEN REFERRED TO THE HEALTH CENTERS OF LAR CITY.

variable	maximum	minimum	mean
1 <sup>st</sup> weight (kg)	109	39	95.5
Last weight (kg)	114	47	71.3
Height (cm)	184	144	159
BMI <sub>1</sub> (kg/m <sup>2</sup> )	42	12	23.4
BMI <sub>2</sub> (kg/m <sup>2</sup> )	47	16	28.3
Neonate weight (gm)	4500	1900	3200

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