

Association of pregnancy outcome with Body Mass Index

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Abstract:

Objective: This study aims to valuation the effects of pre pregnancy Body Mass Index on harmful pregnancy outcomes.

Methods: - A cross sectional study conducted in the third primary health center in Al-adhamia during the years 2018-2019. The sample consisted of a (650) pregnant women before their 12th week of pregnancy. The subjects were followed up until the end of pregnancy and child birth. Data collection was conducted through researchers 'check lists, which consist of three parts: demographic characteristics, date of birth, and subsequent pregnancy outcomes.

Results: - The result display that the rate of overweight was highest in the age group lower than 20 years. As for education found that secondary school women have high percentage of BMI 25-29.9 followed by women with illiteracy , also this study shows the assembly of parity and BMI in this study, the risk of induced over weight significantly in 5 parity (72.5) % , while (4.1) % normal weight in parity.

Conclusions: This factors that have found an important combination with many outcomes of pregnancy, including a low level of births at a young age, a short period of births lower than two years, and a low antenatal visit

.Key words: factors, pregnancy, body mass index, Baghdad, outcomes

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Introduction

"World Health Organization" defines obesity as an accumulation of abnormal or excessive fat pose a risk to health, using body mass index ≥ 30 as a crude estimate (1). Obesity contributes to the morbidity and mortality worldwide because of many diseases, including heart disease, diabetes and cancer (2).

The percentage of women with overweight and obese pregnant women, and these women, compared with women with normal "body mass index" (BMI), increases the risk of occurrence of many complications of pregnancy (3-9), however, confront to the prevalence of pregnancy complications between BMI groups different body does not allow for accurate risk estimation of the patient requiring treatment of the body mass index as a continuous variable. Additionally, there were great differences between studies reporting on the association between body mass index and pregnancy complications (3-9). Worldwide, obesity "(BMI > 30)", exists at a prevalence of 15-20 % and accounts for 2-7% of total healthcare costs (10). In UK , 28 % of the pregnant women are overweight "(BMI 25 – 29.5 kg/m²)" and 11 % are obese (11). In U S incidence of pregnant obese varies from 18.5 % - 38.3%. 2. Study using perinatal all new born from different counties in New York showed an increase of 11% in the pre pregnancy weight and 8 % increase in obesity before pregnancy between 1999 and 2003 (12).

Objectives

The current study aims to define the relation between body mass index, and the results of obstetric results perinatal

Subjects and methods

The preparation of a cross-sectional study in third place primary health in Al-adhamia during the years 2018-2019. The sample consisted of a (650) women. The sample was chosen by non-probability convenient sampling. Data collected by using a special structured questionnaire and the following variables were included in the questionnaire: age of mother, age at marriage, no. of pregnancies and children, type of delivery, contraception and prenatal visit and pacifier use and the type of feeding for her last child.

The maternal height and maternal weight were measured during the ante natal visit , and body mass index of the subjects was calculated. Thereafter, women were classified into the following five groups depend on their body mass index: 1) " Underweight: BMI-19.9 kg / m²; 2)

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Normal weight: $20 \leq \text{BMI} \leq 24.9 \text{ kg / m}^2$; 3) Overweight: $25 \leq \text{BMI} \leq 29.9 \text{ kg / m}^2$; 4) Obesity: $30 \leq \text{BMI} \leq 34.9 \text{ kg / m}^2$; 5) Obesity: $\text{BMI} \geq 35 \text{ kg / m}^2$. The group with a normal body mass index (" $20 \leq \text{BMI} \leq 24.9 \text{ kg / m}^2$ ") was selected as the reference group.

Analysis of data was done by the "SPSS" statistical system version 16 to extract frequency tables and cross tabulation for different variable's-value of less than 0.05 was considered significant.

Discussions:

In this study found the rate of overweight was highest in the less than 20 years the finding of the current study is agreement with findings reported in Iran [14], and in Nigeria [15], who reported a five folds increase in prevalence of obesity between women age (15-19)years and (40-49) years at the end of their reproductive years. Clearly, the high fertility rates and by extension parity appears to be major determinants of obesity among women in the reproductive age group in Nigeria.

The significant association between low education level and maternal overweight in pregnancy they finding of the present study is an agreement with finding reported in Iran [14], and in Bushehr [16], This may be caused by no awareness of pregnant women about obesity..

In this study, it was determined to increase parity as a risk factor for obesity mother in the finding agreement this reached by the study conducted in Nigeria [17], and can be explained by the fact that it is not lost all the weight gained in every pregnancy after birth, and this cumulatively prepares women who enjoy high equality and come forward in the age of the mother to obesity. Indeed, available data from the most recent "Nigerian" National Demographic and Health survey estimates that the Nigerian women will give birth to 5.7 children by the end of her childbearing years [18], Clearly, the high fertility rates and by extension parity appears to be major determinants of obesity among women in the reproductive age group.

The significant association between short birth space and maternal overweight in pregnancy they finding of the present study is an agreement with finding reported in Nigeria [15], and in Bushehr [16], this is may be explained by Effective family planning services to space child bearing appropriately and limit family size maybe important strategies to limit the effect of increasing parity as etiological factor for maternal obesity in our environment.

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Emphasizes the important relationship between "GDM" and hypertension resulting from pregnancy and obesity during pregnancy, maternal this result in Iran [14] In Nigeria [15] In the United Kingdom [19], it showed that obesity during pregnancy, maternal risk factor for medical disorders of pregnancy. In addition, the high rates of acceptance of mothers during the prenatal period between obese women can be partially explained by the increase in these medical disorders that usually require maternal fetal monitor and generate birth interventional indicators of the fetus or the mother occurs. Pregnancy induced hypertension and its sequelae have been recognized as a leading cause of maternal mortality worldwide. [20,21], Therefore, a reduction in the prevalence of obesity among pregnant women may reduce the occurrence of these complications with their attendant maternal morbidity and mortality ultimately promoting safe motherhood.

Confirms the important relationship between the decline in the previous visit to the birth and obesity motherly during pregnancy this result in Nigeria [15], and in the United Kingdom [19], it showed that early assessment of the risks of these complications of pregnancy can improve pregnancy outcomes by shifting antenatal care from a series of visits routine approach to the patient and more disease specific individual in terms of schedule and content of these visits.

In this study no significant association between gestational weeks and maternal overweight in pregnancy they finding of the present study is an agreement with finding reported in Ghana[22].

Conclusions :

1-Pre-Pregnancy overweight and obesity is strongly associated with certain pregnancy outcomes.

2-Obstetric history to estimate risk for many pregnancy outcomes including young age, low educational level, high parity, short birth space interval less than 2 years, and low antenatal visit.

Recommendations

1-Physicians providing care for obese pregnant women should anticipate these conditions and appropriately manage these women in order to improve the outcome of pregnancy and promote safe motherhood.

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2-Pre pregnancy counseling of obese patients on weight reduction before the next pregnancy, lifestyle modification and effective family planning services are also important interventions that will help to reduce obesity related morbidity in pregnancy.

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Table (1) Relationship of age mothers group with BMI during early pregnancy

Age	BMI				Total
	18 – 24.9	25 – 29.9	30 – 35.9	36	
<20	0	44	15	3	62
	.0%	71%	24.2%	4.8%	100.0%
20-24	11	92	40	57	200
	5.5%	46.0%	20.0%	28.5%	100.0%
25-29	16	152	50	16	234
	6.8%	65.0%	21.4%	6.8%	100.0%
30-34	4	59	30	10	103
	3.9%	57.3%	29.1%	9.7%	100.0%
35-40	15	28	7	1	51
	29.4%	54.9%	13.7%	2.0%	100.0%
Total	46	375	142	87	650
	7.1%	57.7%	21.8%	13.4%	100.0%
X²=1.069		p-value<0.05			HS

Analysis of data revealed that most women with BMI 25-29.9 was among age group >20 years (71 %) and the lowest rate was (2%) in age group 35-40years with BMI 36 as shown in table (1). The result was statistically high significant as p-value was <0.05. According to mothers' pregnancy BMI, 46(7.1%) were classified as normal weight, 375 (57.7%) were overweight, 124 (21.8%) were obese, and 87 (13.4%) were extremely obese .

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Table (2) Relationship of education mothers group with BMI

Education	BMI				Total
	18 – 24.9	25 – 29.9	30 – 35.9	36	
illiterate	13	4	4	0	21
	61.9%	19.0%	19.0%	.0%	100.0%
read and write	0	21	0	18	39
	.0%	53.8%	.0%	46.2%	100.0%
primary school	0	45	25	27	97
	.0%	46.4%	25.8%	27.8%	100.0%
secondary school	7	203	55	31	296
	2.4%	68.6%	18.6%	10.5%	100.0%
college	26	102	58	11	197
	13.2%	51.8%	29.4%	5.6%	100.0%
Total	46	375	142	87	650
	7.1%	57.7%	21.8%	13.4%	100.0%
X²=2.095					
p-value<0.05					
HS					

Table (2) shows that secondary school women have higher rate of BMI 25-29.9 followed by women with illiteracy education. The result was statistically high significant as p-value was < 0.05.

Table (3) Relationship of occupation with BMI

occupation	BMI				Total
	18 – 24.9	25 – 29.9	30 – 35.9	36	
employment	11	120	44	23	198
	5.6%	60.6%	22.2%	11.6%	100.0%
Un employment	35	255	98	64	452
	7.7%	56.4%	21.7%	14.2%	100.0%
Total	46	375	142	87	650
	7.1%	57.7%	21.8%	13.4%	100.0%
X²=2.034					
p-value>0.05					
NS					

Table (3) shows that employment women have higher rate of BMI 25-29.9 followed by women with Un employment. The result was non statistically significant as p-value was >0.05.

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Table (4) Relationship of parity with BMI

Parity	BMI				Total
	18 – 24.9	25 – 29.9	30 – 35.9	36	
1	3	42	19	10	73
	4.1%	57.5%	24.7%	13.7%	100.0%
2	14	102	54	32	202
	6.9%	50.5%	26.7%	15.8%	100.0%
3	12	88	29	33	162
	7.4%	54.3%	17.9%	20.4%	100.0%
4	6	40	19	5	70
	8.6%	57.1%	27.1%	7.1%	100.0%
5	11	103	21	7	142
	7.7%	72.5%	14.8%	4.9%	100.0%
Total	46	375	142	87	650
	7.1%	57.7%	21.8%	13.4%	100.0%
X²=36.59		p-value<0.05		HS	

Table (4) Parity correlation and BMI are shown in this study, the risk of induced over weight significantly in 5 parity (72.5) %, while (4.1) % normal weight in parity

Table (5) Relationship of abortion with BMI

Abortion	BMI				Total
	18 – 24.9	25 – 29.9	30 – 35.9	36	
0	30	214	82	54	380
	7.9%	56.3%	21.6%	14.2%	100.0%
1	15	126	48	27	216
	6.9%	58.3%	22.2%	12.5%	100.0%
2	1	32	10	6	49
	2.0%	65.3%	20.4%	12.2%	100.0%
3	0	3	2	0	5
	.0%	60.0%	50.0%	.0%	100.0%
Total	46	375	142	87	650
	7.1%	57.7%	21.8%	13.4%	100.0%
X²=6.238		p-value>0.05		NS	

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Table (5) abortion non correlation with BMI are shown in this study The result was non statistically significant as p-value was >0.05

Table (6) Relationship of BSI with BMI

BSI	BMI				Total
	18 – 24.9	25 – 29.9	30 – 35.9	36	
less than 6 months	0	14	7	4	25
	.0%	56.0%	28.0%	16.0%	100.0%
6-12 months	31	221	72	47	371
	8.4%	59.6%	19.4%	12.7%	100.0%
13-18 months	0	69	22	17	108
	.0%	63.9%	20.4%	15.7%	100.0%
19-24 months	2	66	31	8	107
	1.9%	61.7%	29.0%	7.5%	100.0%
more than 24 moths	13	5	10	11	39
	33.3%	12.8%	25.6%	28.2%	100.0%
Total	46	375	142	87	650
	7.1%	57.7%	21.8%	13.4%	100.0%
X²=81.430	p-value<0.05				HS

Table 6 shows that 63.1% with BSI 13-18 months followed by 61.7% in 19-24 months in the BMI between 25-29.9.

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Table (7) Outcomes of pregnancy and their relationship with "BMI" during early pregnancy

Types of diseases	BMI				Total
	18 – 24.9	25 – 29.9	30 – 35.9	36	
No	24	143	57	38	262
	9.2%	54.6%	21.8%	14.5%	100.0%
Pregnancy Induced Hypertension	7	54	19	8	88
	8.0%	61.4%	21.6%	9.1%	100.0%
Gestational Diabetes	1	24	5	5	35
	2.9%	68.6%	14.3%	14.3%	100.0%
Heart disease	4	32	8	5	49
	8.2%	65.3%	16.3%	10.2%	100.0%
UTI	7	31	15	14	67
	10.4%	46.3%	22.4%	20.9%	100.0%
Post-partum Hemorrhage	3	91	38	17	149
	2.0%	61.1%	25.5%	11.4%	100.0%
Total	46	375	142	87	650
	7.1%	57.7%	21.8%	13.4%	100.0%
X²=8.437		p-value< 0.05			S

Table 7 shows relation to pregnancy outcomes, overweight and obese women had higher incidence of gestational diabetes (68.6%) heart disease (65.3%) and pregnancy-induced hypertension (61.4%) compared to normal weight women. Incidence of UTI (10.4%), post-partum hemorrhage (2%). The result was statistically high significant as p-value was < 0.05.

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Table (8) Relationship of prenatal visit with BMI

No .visit	BMI				Total
	18 – 24.9	25 – 29.9	30 – 35.9	36	
1	13	169	74	44	300
	4.3%	56.3%	24.7%	14.7%	100.0%
2-3	21	125	30	22	198
	10.6%	63.1%	15.2%	11.1%	100.0%
more than4	12	81	38	21	152
	7.9%	53.3%	25.0%	13.8%	100.0%
Total	46	375	142	87	650
	7.1%	57.7%	21.8%	13.4%	100.0%
X²=15.442		p-value<0.05			S

Table 8 shows that overweight and obese women had higher incidence of pregnant have 2-3 attending antenatal care 63.1% vs. 10.6%

Table (9) Relationship of gestational weeks with BMI

Gestational weeks	BMI				Total
	18 – 24.9	25 – 29.9	30 – 35.9	36	
37 – 40	2	15	5	2	24
	8.3%	62.5%	20.8%	8.3%	100.0%
41 - 42	18	175	77	53	323
	5.6%	54.2%	23.8%	16.4%	100.0%
> 42	26	185	60	32	303
	8.6%	61.1%	19.8%	10.6%	100.0%
Total	46	375	142	87	650
	7.1%	57.7%	21.8%	13.4%	100.0%
X²=9.083		p-value>0.05			NS

Table 9 shows the overweight and obese women had higher incidence of post term pregnancy (41-42 weeks, 22.11% vs. 26.52%)