Effect of pregnancy lifestyle on maternal body mass index

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ABSTRACT

Maternal obesity has become one of the most commonly occurring obstetric risk factors for maternal mortality in developed countries. The study was **aimed** to assess the effect of pregnancy life style on maternal body mass index **Design:** Descriptive study. **Setting:** This study was conducted at out patient antenatal clinics in Ain Shams Maternity University Hospital. **Subject:** A Purposive sample included (86)woman, was selected in the study according to certain criteria (BMI ≥ 30Kg) and at the end of 1st trimester **Tools: 1**) A Structured interviewing questionnaire, which included two parts, **a)** Socio-demographic characteristics ,previous medical, obstetric, surgical ,family, and present pregnancy history **b)** Maternal lifestyle assessment sheet . **Results:** The main results showed that, There was statistically significant relation between pregnancy life style and maternal body mass index and highly significance difference in terms of activities of daily living ,numbers of meals ,exercises ,daily personal hygiene and housing sanitation p = 0.001 , while significance difference in meals component p = 0.019**Conclusion:** The present study shows that maternal obesity during pregnancy body mass index are associated with, lifestyle factors **Recommendation:** raising awareness and education about maternal obesity among populations at greater risk for maternal obesity and excessive gestational weight gain

Key words: pregnancy lifestyle -- obesity --maternal body mass index
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INTRODUCTION

Maternal obesity has become one of the most commonly occurring obstetric risk factors for maternal mortality in developed countries. Rising rates of obesity, especially among women of childbearing age, are affecting maternal-fetal outcomes**(Jevitt, 2009)**

Obesity in pregnancy is usually defined as a Body Mass Index (BMI) of 30 kg/m2 or more at the first antenatal consultation. BMI is a simple index of weight-for-height to screening of weight categories that may relate to health problems & a widely used diagnostic tool to help identify obesity in the population it is a practical tool to determine relevant risk of complications. And is calculated by dividing a mother's weight in kilograms by the square of their height in meters (kg/m2) **(National Institutes of Health Weight Control, 2008).**

Maternal dietary intervention may be a potential strategy to improve pregnancy outcomes in obese mothers and their offspring, including maternal low-fat diet , low glycemic index diet, protein supplementations and micronutrient supplementations of particularly iron and folate. **(Zhang,2014)**

Obesity is a multifactorial condition in which environmental, biological and genetic factors all play essential roles. The Developmental Origins of Health and

Disease (DoHaD) hypothesis has highlighted the link between prenatal, perinatal and early postnatal exposure to certain environmental factors and subsequent development of obesity Maternal obesity and excessive gestational weight gain, resulting in over-nutrition of the fetus, are major contributors to obesity and metabolic disturbances in the offspring. Pregnancy offers the opportunity to modify the intrauterine environment, and maternal lifestyle changes during gestation may confer health benefits to the child. Lifestyle intervention in obese pregnant women has the potential to modify the intrauterine environment and confer long-term benefits to the child**.(dan ,2014).**

Further evidence is needed on the optimal GWG in obese and overweight pregnant women and on easy, widely applicable strategies to optimize GWG, healthy eating behaviour and physical activity during pregnancy in this group of patients. **(Swinburn,et al.2004)**

Nurses play a vital role in primary intervention of obesity , this role is based on accurate assessment, The nurse should inform overweight women of childbearing age of the risks associated with obesity, receive appropriate dietary counseling and encourage to perform physical activity during follow up in the clinic and through home visits. A Preconception counseling using lifestyle changes if possible, careful prenatal management, tight monitoring of weight gain and encouragement given for physical activity, behavior modification, before attempting pregnancy and long-term follow-up could minimize the social and economic consequences of pregnancies in overweight and obese women. ***(Madeha, 2005).***

Weight management is important for every women of reproductive age overweight and obese women should aim at weight reduction prior to pregnancy. However, majority of the obstetricians consider their training on weight management Obese and overweight pregnant women might therefore benefit from regular visits to a dietician who is familiar with the dietary and physical activity recommendations for obese pregnant women., the counselling should strive for a healthy lifestyle during pregnancy and a controlled GWG. Unfortunately, available intervention studies that tried to interfere with GWG through dietary recommendations and closely monitoring GWG do not provide concordant results and show limitations. **(Swinburn,et al.2004)**

Significance of the study

Over weight and obesity are on the rise around the world about 300.000 deaths per day may be attributable to obesity. Overweight and obesity are the fifth leading risk for global deaths (***WHO, 2008***). There is a complex relationship between obesity and disability. Sedentary lifestyle contributes to obesity and obesity exacerbates disability. **(*Piechota, 2005*)**

The prevalence of obesity among pregnant women is rising, exposing the mother and her child to short- and long-term health problems If a woman becomes overweight in between two pregnancies the risk of developing gestational diabetes during her second pregnancy is doubled compared with the risk during her first pregnancy Inversely, a small decrease in weight results in a decreased risk for macrosomia **(Swinburn,et al.2004)**

Aim of the Study

The aim of the study was to assess effect of pregnancy life style on maternal body mass index through: Assessing the pregnancy life style on maternal BMI.

Research question

-What is the effect of pregnancy life style on maternal body mass index ?

-What is the relation between pregnancy life style and maternal body mass index ?

SUBJECTS AND METHODS

Design: A descriptive study design was used.

Setting: The study was carried out at out patient antenatal clinics in Ain Shams Maternity university hospital.

Sampling:

A Purposive sample, with the following Inclusion criteria; obese pregnant woman (BMI ≥30Kg),,at the end of 1st trimester , with Different socio demographic characteristics , different Parity and Free from medical disease &obstetrics disease) at the previously mentioned setting The follow up rate of women that representing (15%) admitted to the outpatient antenatal clinics in Ain sham maternity university hospital in the period from January 2010 to December 2010 were (86)woman of total pregnant women (576) .

Tools of data collection:

Data was collected by the researcher using tools: Structured interviewing questionnaire sheet: it was designed by the researcher after reviewing current related literature. It was written in Arabic language it was consisted of two parts:

It consisted of (53) questions concerning. Assess socio-demographic characteristics, medical, surgical history ,obstetric history ,family history, BMI ,and present pregnancy history …ect,

Part II:

It consisted of (6) questions concerning maternal life style Activities of daily living, number of daily meals, meals component, exercises Daily personal hygiene and housing sanitation.

Field work:

The l field work started from the period January 2010 to December 2010. for data collection. The researcher collected the data 3 days/week from 9AM to 1PM. After obtaining the approval of the women obtained orally before taking history and after explaining the purpose of the study. Data related to the effect of pregnancy life style were collected through the study tools first the researcher introduce herself to the woman at outpatient antenatal clinics, and explained the study purpose to obtain her consent. Data will be collected for all pregnant women who were admitted to out patient antenatal clinics, with inclusion criteria for selection. through using first tool designed by researcher **A Structured interviewing questionnaire** it took about 10 minuts to be fill by reserchер and giving the brief idea about the aim of the research.

Administrative design:

An official permission was obtained from the faculty of nursing Ain Shams University then the director of the Ain Shams Maternity university hospital

Content and face validity:

Pilot study: pilot study was carried out before starting the data collection in October 2012 for two weeks, to test the applicability and reliability and the clarity of the study tools.It was applied on15% of women sample which was (9) cases at the hospital which were included in the total sample to evaluated the content validity of the study tools . no major modification was found after pilot study. Simple modification in the form of rephrasing were done for the study tools according to the obtained results from the pilot study.

Ethical consideration:

Oral consent was obtained from each student. The researcher explained the objectives and aim of the study to the women. The researcher maintains anonymity and confidentiality of data; they have the right to withdraw from the study.

Statistical Design

The collected data were organized, revised, scored, tabulated and analyzed using the number and percentage distribution. Statistical analysis was done by computer using The statistical package for social sciences **(SPSS)** to determine whether there were significant differences or not . The significant of the results was considered as follows: When P >0.05: It is statistically insignificant differences while P< 0.05: It is statistically significant differences.

RESULTS

Table (1)): shows the distribution of the study group according to their socio demographic characteristics. Concerning age 46.5% of them their age ranged from 25-29 year. As regards their Residence 82.6% of them lived in urban area. While concerning occupation 86.0 % of them were House wife, as regards education 36.1 % of them finished Primary school.

Table (2) illustrates the Distribution of study group According to their past medical & surgical history ,it was clear that most of the study sample 93.0 % were anemic and 83.8 % of them had urinary problem as past medical history and for past surgical history 45.5 % of them had done cholecystectomy .

Table (3) shows that distribution of the study group according to their Previous Obstetric history. show that most of study group (70.9%) had Multi pregnancy and less than half of study group (29.1%) had primi pregnancy. 34.9% had Para 2 , and more 29.1% of them were para0 ,18.6 were Para 1 ,Regards to previous pregnancy complication 47.8% had vaginal infection as regards Labor complications 59.3 % had bleeding and 47.8 % of them had cesarean section

Table (4): reveals distribution of study group according to their present pregnancy history 65.1 % of them dependent in activities of daily living . 58.1% have numbers of meals ranged from (4-6 per day), and 88.4 % of them their meal component not balanced . 36.1 % of them don't practice exercises ,54.7% of them have daily personal hygiene and ,84.9% of them have housing sanitation .

Figure (1): revels distribution of study group according to their BMI ; class11 ,class1 and class 111 represents 46.6 % 44.2% 9.3 % respectively.

Table (5) :show the Relation between pregnancy life style & BMI , revels that highly significance difference in activities of daily living ,numbers of meals ,exercises ,daily personal hygiene and housing sanitation p= 0.001 , while significance difference in meals component p= 0.019

Figure (2): revels distribution of study group according to their gestational age of the studied sample as 32 wk ,20wk ,16 wk ,& 28 wk represents 67.4 % 53.5 % 46.5 and 32.6 % respectively.

Table (1) Distribution of studied Obese Women According to Their Socio Demographic Characteristics.

Socio demographic characteristics	N =86	
	No	**%**
Age:		
19 - ≤24	17	20.9
25 -≤29	40	46.5
30- ≤34	18	19.8
≥35	11	12.8
X ± SD	27.5 ± 6.5	
Residence :		
Urban	71	82.6
Rural	15	17.4
Occupation :		
House wife	74	86.0
Working	12	14.0
Level of education:		
Illiterate	11	12.8
Primary	31	36.1
Secondary	26	30.2
University	18	20.9
Marital status:		
Married	86	100.0
Widowed		
Divorced		
Duration of marriage:		
1 - ≤ 3	33	38.4
4 -≤ 8	35	40.7
9 - ≤ 15	16	18.6
≥ 16	2	2.3
X ± SD	5.9 ± 4.1	

Table (2): Distribution of studied Obese Women According to Their past medical & surgical history.

Items	N =86	
	No	**%**
past medical history		
1- urinary problem	*72	83.8
2- breathing problem	*31	36.0
3- varicosities	*36	41.10
4-anemia	*80	93.0
Past surgical history		
1-cholecystectomy	39	45.3
2- heart	5	5.9
3-thyroid	7	8.1
* not exclusive		

Table (3) Distribution of studied Obese Women According to Their Previous Obstetric history.

Items	N =86	
	No	**%**
Gravida:		
Primi	25	29.1
Multi	61	70.9
Parity:		
Nullipara (Para 0)	25	29.1
Para 1	16	18.6
Para 2 and >	30	34.9
No of children:		
None	27	31.4
1 – 2	25	29.0
3 – 4	19	22.1
Pregnancy complications:		
1-G.DM	*13	15.11
2-G.hypertention	*12	13.11
3-Pre eclampsia	*13	15.11
4-Abortion	*15	17.4
5-Vaginal infection	*41	47.8
6-Fetal death	*2	2.3
7-IUGR	*2	2.3
Labour complications:		
1-CS	*41	47.8
2-Pre term	*8	9.3
3-bleeding	*51	59.3
4-PROM	*2	2.3
5-Macrosomic	*21	24.4
* not exclusive		

Fig (1): Distribution of studied Obese Women According to Their BMI.

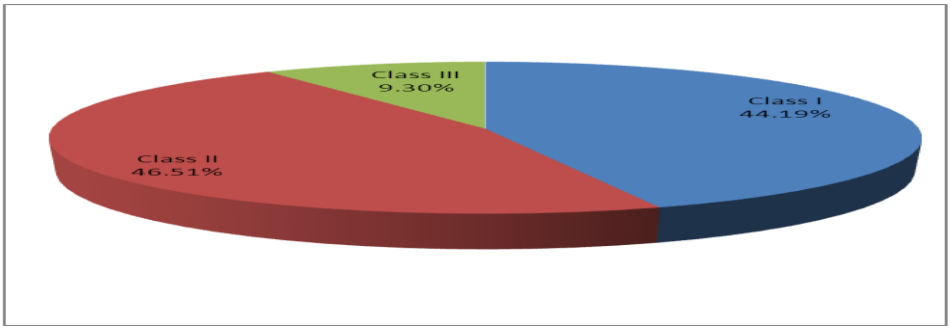

Fig (2): Distribution of studied Obese Women According to Their gestational age .

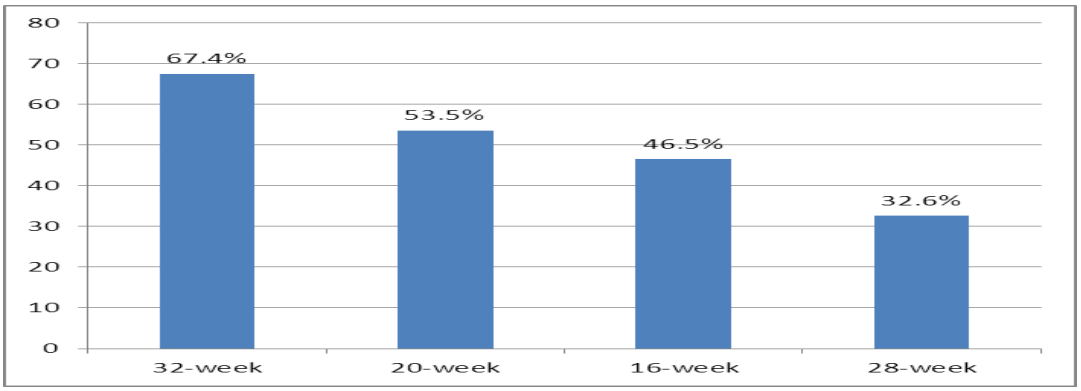

Table (4) Distribution of studied Obese Women According to Their pregnancy life style

Items	N =86	
	No	%
Activities of daily living:		
-dependant	56	65.1
-independent	30	34.9
No of daily meals:		
2- 3	12	14.0
4 – 6	50	58.1
>6	24	27.9
meals component:		
Balanced	22	11.6
Not balanced	64	88.4
Exercise:		
Yes	10	5.8
No	76	36.1
Daily personal hygiene:		
Yes	47	54.7
No	39	45.3
Housing sanitation		
Present	73	84.9
Absent	13	15.1

Table (5). Relation between pregnancy life style & BMI

Maternal Life style	Obese class I		Obese class II		Obese class III		Chi-square test	
	No.	%	No.	%	No.	%	x^2	p-value
1-Activities of daily living:								
- Dependant	30	78.95	18	45.00	8	100.00	14.616	**<0.001 (HS)**
- Iindependent	8	21.05	22	55.00	0	0.00		
2-No of daily meals:								
2- 3	12	31.58	0	0.00	0	0.00	39.364	**<0.001 (HS)**
4 – 6	19	50.00	31	77.50	0	0.00		
>6	7	18.42	9	22.50	8	100.00		
3-meals component:								
Balanced	15	39.47	7	17.50	0	0.00	7.975	**0.019 (Sig.)**
Not balanced	23	60.53	33	82.50	8	100.00		
4-Exercise:								
Yes	10	26.32	0	0.00	0	0.00	18.341	**<0.001 (HS)**
No	28	73.68	40	100.00	8	100.00		
5-Daily personal hygiene:								
Yes	29	76.32	18	45.00	0	0.00	18.341	**<0.001 (HS)**
No	9	23.68	22	55.00	8	100.00		
6- housing sanitation								
Present	35	92.11	35	87.50	3	37.50	15.761	**<0.001 (HS)**
Absent	3	7.89	5	12.50	5	62.50		

DISCUSSION

Healthcare professional suggest that effort to Tackle obesity, pre-pregnancy counselling should be carried out for all women and every effort to intervene should be made in those women who are overweight or obese. **(Nankervis , 2006)**.Having an antenatal lifestyle programme to which health professionals could refer women with a BMI $\geq$30 kg/m^2 , Providing lifestyle advice during maternity care was viewed as contributing to the wider public health issue of obesity **(Kapur** ,**2011)**

BMI was calculated as the ratio of weight (kg) divided by height (m2). Women were divided into three groups obese class 1, obese class 11, and obese class 111

Concerning classification of obese pregnant women according to BMI In the present study, The Present study showed that almost half of studied group had obese class 11 and obese class 1 BMI (30-37)or ,while one to eight had obese class 111 BMI $\geq$38.this results agree with **(Salah ,2009)** Who reported in his study of Prepregnancy Obesity and Pregnancy Outcome that About two - third of the study group were having mild obesity, moderate obesity comprised about 28% and about 4% only was morbidly obese. This similar to results of **(Hedley et al. , 2004)** who reported that the prevalence for obese and extremely obese adults is 30% and 5%

Also agree with **(Shahla et al. ,2012)** who reported that the prevalence for obese and morbid obese pregnant woman of the study sample 356 cases (35.6%) had a BMI 25-29.9, 98 cases (9.8%) had a BMI 30-34.9 and 6 cases (0.6%) had a BMI $\geq$ 35 ,

Concerning education ,the study showed that most of them were low educated

this is similar to (Freisling,2006) who reported that women with a higher level of education showed a higher intake of dietary fibre , folate , beta-carotene , and calcium ,whereas the intake of total fat was lower. The mean reported prepregnancy Body Mass Index (BMI) of lower educated women was significantly higher than that of women with medium or high levels of education

Concerning practice of exercise the study showed that most of the studied group don't practice exercise this results agree with**(Löf,2008).** Who reported that High BMI and low pre-pregnancy physical activities were associated with excessive GWG Similar to **(Hui ,2011)**) who reported that lifestyle intervention during pregnancy increased physical activity, improved dietary habits and reduced EGWG in urban-living pregnant women.

Concerning meals component the study showed that most of the study group their meals component were not balanced and have high number of meals . this is similar to **(Vyas,2008).** Who reported thatr It is probable that staying at home, physical inactivity and fat and sugar rich diet is responsible for the higher frequency of obesity in urban female population also agree with **(Zhang,2014**) who reported that The underlying onset of this global health concern is an unhealthy dietary and physical lifestyle (e.g. high fat and/or high carbohydrate intake, (micro)nutrient deficiencies and physical inactivity) over a prolonged period. Poor maternal nutrition is known to be a key contributor to poor fetal growth and short-long term infant morbidity and mortality (e.g. gestational diabetes, macrosomia, large/small infants, low/high birth weights and pre-term delivery).

This is not in corrdenence with **(Jodie, 2014)**who reported that women who were overweight or obese, the antenatal lifestyle advice used in this did not improve maternal pregnancy and birth outcomes.

Conclusion & Recommendations

The study concluded there was highly significance difference in activities of daily living ,numbers of meals ,exercises ,daily personal hygiene and housing sanitation ($p < 0.001$) while significance difference in meals component ($p < 0.019$)

A pregnant obese woman must have an antenatal booking appointment with a consultant. The care given during the pregnancy, should be planned & documented and include a thorough assessment for the development of pregnancy related disorders and Obese women should be counselled on weight reduction through diet, exercise and behaviour modification

According to the results of the study, the following recommendations are suggested.

- health education and counseling regarding the risks of entering pregnancy as obese. Women who screened positive for overweight or obesity would require behavioral modification in the form of increased physical activity, dietary counseling referral and follow-up care.

- Raising awareness and education about maternal obesity among populations at greater risk for maternal obesity and excessive GWG (e.g., individuals residing in rural communities, individuals residing in deprived neighbourhoods, etc.).

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