Pregnancy Course and Outcome in Obese women, Across-Sectional Study in two Maternity Hospitals in Baghdad/ Rusafa Pregnancy - Obese - Course

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Abstract:

The aim of the study is to ascertain reproductive risk factors among overweight and obese women, to assess the effects of obesity on the course of pregnancy and to assess effects of obesity on outcomes of pregnancy in two maternity hospitals (Elwayia and Fatima AL-Zahraa) Whose main age were (18-45 years) for the period 1st June to 30th February 2013**, BMI** (body mass index) was calculated from weight (kg) over the height (^{m2})(WHO1997).

So according to **BMI** calculation we had 3 groups of pregnant women (40.4%)normal weight(wt<18-24.9kg/^{m2}), (36.3%) over weight (25-29.9 kg/ $^{m2)}$ and (23.3%) were obese (>=30 kg/^{m2}).

The study illustrated that (95.2%) had their first visit to primary antenatal health care in the first trimester of pregnancy and (48.1%) of the sample had three visits while (13.6%) were had (7) visits to primary Health Care centers, from this study (96%) were urban residence Centers.

Highest frequencies of the sample were of primary educational level and (56.4%) younger age below 30 years and (95.4%) were house wives.

Most of the pregnant women had their investigations of (HB%,FBS) in the first trimester (94.6%, 62.8%) respectively.

Among reproductive risk factors were obese women differ significantly in age group (under18 year) of age of low value in obese while overweight and normal weight group had high frequency (8%)which mean high with these two groups ,and (>35year)of age more with obese group(12%)

Obese group differ significantly from other two groups in primipara, grand multipara, prior fetal death, prior termination of pregnancy, prior operation in uterus, long inter pregnancy interval, lntra-uterine death.

Among relative frequency of selected outcomes obese differ significantly from other two groups in abnormal fetal heart beat,

macrosomia, cesarean section delivery, preterm delivery, low birth weight , fatal death, congenital abnormalities, small for gestational age and prenatal death all differ among over weight ,obese and normal weight.

Exclusion criteria:

1-Multiple pregnancies will be excluded because such pregnancies carry an unusually high risk of adverse outcome and the effect of maternal weight on these pregnancies will be difficult to distinguish

2-Extrauterine and tubal Gestation: These may present early with symptoms of pregnancy but usually ends surgically and so must be excluded.

Introduction

Obesity is the modern health epidemic of western society, the world health organization (WHO) estimated in the year 2000that as many as 300 million people worldwide are clinically obese(Jane,2004).

Obesity can be result of many factors including –more calories than it burns off, those extra calories are fat, mostly increased amount of fat and sugars in our diet and decreased amount of physical activity have been blamed for increasing incidence of obesity, the amount of weight gain leads to obesity doesn't happen in few weeks or months, (James et al, 2000)

Obesity is a growing concern world –wide in developing countries, the transition from rural agrarian to urban economies has accelerated the appearance of obesity.(Pop kin , 1994)

Overweight is defined as being (10-15%) heavier than recommended for women's height or having BMI of (25-29.9 kg/$^{m2)}$ while obese their BMI>=30 kg/^{m2} (March of Dime, 2006).

Due to limited knowledge of optimal weight gain for obese women, obesity in pregnancy defined as a pre gravid BMI minimum gain of 7-11 kg was advised during pregnancy, this is associated with healthy outcomes for mother and infant(Erin B,2006).

Certain amount of weight gain during pregnancy is desirable, the fetus itself, expanded blood volume, uterin enlargement, breast tissue growth and other products of conception generate, an estimated (5-10) kg of extra weight gain beyond this, however, is predominantly maternal adipose tissue(Institute of medicine).

In 1990 the Institute of medicine **(IOM)** established weight gain during pregnancy quid line to prevent adverse outcomes and malnourishment.

Pre gravid weight	**Weight Gain**
Under weight BMI<18.5	12.5-18
Normal weight BMI 18.5-24.9	Kg.5.11−16
Over Weight BMI, < 26.0- 29.9	Kg. 7− 11.5
Obese BMI > 30	Kg. 7− 11.5

Since then the percentage of women entering pregnancy were obese was increased, this associated with unhealthy outcomes for mother and infant (Erin B, 2006).It has been estimated that obesity is associated with 18%of obstetric causes of maternal death and 80%
of anesthesia-related death (Seven Cnattingius, 1998).

Prevalence of obesity among females

Obesity during pregnancy can cause several serious health complications including high blood pressure which increase the risk for preeclampsia and eclampsia, diabetes, miscarriage, more caesarian deliveries with higher rates of anesthesia complications and infections and longer stays in the hospital this lead to more urinary tract infections failure to start or continue breast feeding(Laura Riley 2006).

Obesity is the common disorder carries maternal health disorders (Sebire, nj, 2001):

1- High blood pressure which increase the risk for preeclampsia.
2- Gestational diabetes.
3- Miss carriage.
4- More cesarean section deliveries with higher rate of anesthesia complications and wound infections and longer stays in the hospital.
5- Premature deliveries in obese women.
6- More urinary tract infections and long term incontinence problems.
7- Failure to start or continue breast feeding.

Babies born to mothers who have obesity are more likely to have health problems (Watkins, etal,2003) including:

Higher rate if birth injuries.*

Low APGAR scores.*

Increased risk of neural tube defects such as spine bifida.*

More admission to neonatal intensive care unit (NICU).*

Higher rate of prenatal death.*

*Macrocosmic (baby born with high body weight >=4 kg).

A women of child bearing age needs to know the effects that obesity has their health and their babies, the problem of obesity during pregnancy is not going away like smoking, in the last 10 years with an increase in public awareness program, smoking rates in pregnant women have increased by 7% but at the same time the percentage of obesity has almost doubled. (Jackson,2005).

Methods

Setting and sample

This across sectional study was carried in the large public and famous maternity hospitals in Baghdad and primary health care centers, the sample which taken **401** pregnant women ,their ages was from(18-45 years) their weight and height measured during their first antenatal care visit and surely not beyond the 10^{th} weeks of gestation.

Data collection:

Data will be collected through a detailed questionnaire which especially designed for this study where every pregnant woman is communicated for filling the required data by the researcher through direct interview, patients case sheet from the Antenatal care unit in the same hospital, delivery room, hospital laboratory and bedside physical examination of the patients, Weight will be measured with the minimal clothing and approximated to the nearest 100 grams, i.e. one decimal.

All pregnant women will have their weight measured during the first antenatal visit and surely during the first 3 month of pregnancy.

Height will be measured with the occipital, heel and the back touching the vertical scale and approximated to the nearestcentimeter, i.e. two decimals.

Some dummy variables were introduced into the questionnaire form in an attempt to attain objectivity of the patient's response.

Statistical analysis:

Study and comparison groups will be evaluated using **Chi square** test for (dichotomous variables) and fisher's exact test will be applied when necessary, continuous variable will be analyzed using two tailed pooled student's t test; possible confounding variables will be identified from Background data, obstetric risk factors and health behavior. Multivariate analysis will be used based on using multiple logistic regression analysis.

P. Value< 0.05 will be considered statistically significant.

Table1: Frequency distribution of the study sample by socio- demographic variables

	N	%
Residence.		
Urban	385	96
Rural	16	4
Total	**401**	**100**
Age in years-groups		
<18	94	23.4
19-29	226	56.4
30-39	77	19.2
40+	4	1
Total	**401**	**100**
Educational level		
Illiterate	47	11.6
Primary	227	56.8
Secondary	116	29
Higher education	11	2.8
Total	**401**	**100**
Occupation		
House wife	371	95.4
Worker	29	4.6
Total	**401**	**100**
Husbandoccupation		
Professional	8	2
Non-professional	53	13.4
Self employed	275	69.6
Military	40	8.9
Hard labor	24	6.1
Total	**401**	**100**

Table2: **Frequency distribution of the study sample by selected complications during the current pregnancy*:***

Complications during the current pregnancy (n=401)	**N**	**%**
Proteinuria on GUE	69	17
Glucosuria on GUE	18	4.5
Hypertension	53	13.2
PET	32	8.0
Leg edema	102	25.4
Gestational DM	13	3.2
Anemia (Hb<10 g/dl)	83	20.7
UTI	175	43
Ante-partum hemorrhage	28	7
Prolonged gravidity	19	4.7
Chorioamnionitis	5	1.2

Note: some time same patient had 2 or three from these current complications

Table3: **Frequency distribution of the study sample by selected reproductiveriskfactors**.

Reproductive risk factors (n=401)	**N**	**%**
Under 18 years Of age	51	38
Over 35years of age	22	5.5
Primipara	229	57.1
Grand multipara	29	7.2
Previous miscarrige	134	33.4
Prior fatal death	51	12.7
Prior termination of pregnancy	31	7.7
Prior operation on uterus	46	11.5
Short inter-pregnancy interval (<12 months)	143	35.7
Long inter-pregnancy interval (>6 years)	37	9.2
IUD use befor this pregnancy	27	6.7
History of infertility	39	9.7
Smoking (> 5 cigarettes).	15	3.7
Essential hypertension	23	5.7
Diabetes Mellitus	2	0.5
Other chronic disease(:epilepsy)	27	6.7

Table4: the difference in relative frequency of selected reproductive risk factors between overweight, obeseand normal BMI groups depend on P-Value.

	Body Mass Index (BMI) Kg/m2-groups							
	Normal (<25)		**overweight (25-29)**			**obese(>=30)**		
	N	**%**	**N**	**%**	**P1**	**N**	**%**	**P2**
Reproductive risk factors	(n=158)		(n=142)			(n=91)		
Under 18 years of age	25	15.8	21	14.8	0.80NS	5	5.5	0.02
Over 35 years of age	3	1.9	6	4.2	0.32NS	11	12.1	<0.001
Primipara	108	68.4	85	59.9	0.11NS	32	35.2	<0.001
Grand multipara	8	5.1	5	3.5	0.51NS	15	16.5	01
Previous miscarriage	54	34.2	40	28.2	0.26 NS	35	38.5	0.003 NS
Prior fetal death	12	7.6	12	8.5	0.79 NS	26	28.6	0.50 NS
Prior termination of pregnancy	4	2.5	8	5.6	0.17 NS	18	19.8	<0.001
Prior operation on uterus	10	6.3	13	9.2	0.36 NS	23	25.3	<0.001
Short inter- pregnancy interval (<12months)	51	32.3	49	34.5	0.68 NS	38	41.8	0.13 NS
long inter- pregnancy interval(>6 years)	9	5.7	9	6.3	0.82 NS	18	19.8	<0.001
History of infertility	10	6.3	18	12.7	0.06 NS	8	8.8	0.47 NS
IUD use before this pregnancy	4	2.5	8	5.6	0.17 NS	14	15.4	0.001
Smoking (>5cigarettes / day)	5	3.2	6	4.2	0.63 NS	4	4.4	0.62 NS
Other chronic disease	9	5.7	10	7	0.63 NS	8	8.8	0.35 NS
Essential hypertension	3	1.9	6	4.2	0.24 NS	13	14.3	0.001
Diabetes Mellitus	0	0	1	0.7	0.47 NS	1	1.1	0.19 NS

Table5: The difference in relative frequency of selected complications during the current pregnancy between normal, overweight and obese groups.

	Body Mass Index (BMI) Kg/m2-groups							
	Normal (<25)		**overweight (25-29.9)**			**obese(>=30)**		
	N	%	N	%	P1	N	%	P2
Complications during the current pregnancy	(n=158)		(n=142)			(n=91)		
Glucosuria on GUE	3	1.9	7	4.9	0. 20 NS	8	8.8	<0.02
Hypertension	5	3.2	15	10.6	0.01	30	33	<0.001
PET	2	1.3	9	6.3	0.02	19	20.9	<0.001
Leg Oedema	21	13.3	36	25.4	0.008	40	44	<0.001
Gestational DM	1	0.6	5	3.5	0.07	7	7.7	0.004 NS
Anemia (Hb<10 g/di)	37	23.4	24	16.9	0.16 NS	22	24.2	0.89 NS
UTI	67	42.4	59	41.5	0.88 NS	45	49.5	0.28 NS
Ante-partum hemorrhage	13	8.2	12	8.5	0.94 NS	3	3.3	0.13 NS
Prolonged gravidity	4	2.5	10	7	0.06 NS	5	5.5	0.29 NS
Chorioamnionits	1	0.6	3	2.1	0.35 NS	1	1.1	1

Table6: The difference in relative frequency of selected outcomes complications between obese, over weight and normal BMI

No	**Out Comes Complication**	**Normal (<25)**		**Overweight (25-29.9) N=142**			**Obese (>=30) N=91**		
		N	%	N	%	P_1	N	%	P_2
1	*Preterm delivery*	17	10.8	10	7	0.26 $_{NS}$	0	0	0.001
2	*Abnormal fetal heart beat*	13	8.2	20	14.1	0.11	10	11	0.47 **NS**
3	*Small for gestated age*	39	29.7	20	14.1	0.021	7	7.7	<0.001
4	*Low birth weight*	44	27.8	29	20.4	0.14 **NS**	11	12.1	0.004 **NS**
5	*Risk of admission to neonate unit*	35	22.2	32	22.5	0.94 **NS**	21	23.1	0.87 **NS**
6	*Risk of fetal death*	5	3.2	7	4.9	0.44	4	4.4	0.62 **NS**
7	*Risk of prenatal death*	14	2.5	2	1.4	0.49 **NS**	5	5.5	0.23 **NS**
8	*Risk of congenital structural anomalies.*	5	3.2	4	2.8	0.86	6	6.6	0.21 **NS**
9	*Risk of macrozamia*	1	0.6	11	7.7	0.002	12	13.2	<0.001
10	*Risk of caesarean section*	48	30.4	50	35.2	0.36**NS**	53	58.2	<0.001

Results

There were 401 pregnant took part in the survey, of whom 158 were based normal weight (<25), 142 pregnant women were overweight (25-29.9) and 91 were obese (>=30).

Most the studied sample were urban residence (96%), highest number of the study groups below age (30 years),the most important characteristics of women in this research were(226)primary educational level and (116)secondary school and (371)house wives and others were working, from those(95.2%) they had their first visit in the first trimester,(48.1)had 3 visits and (13.6%) had 7 visit to antenatal clinic ,most of them were measured their BP in the first visit (97.5%) and from them (86.7%) were normotensive during their first visit.

Highest frequency of the studied group were had iron and folic acid supplementation early on pregnancy (81.5, 82.2%) respectively.

About half of studied pregnant women were primipara (57.3%) and (35.5%) were multipara .The most effective complications during current pregnancy in obese pregnant woman were hypertension 33%, leg oedma44%, protein urea 8.8%, and urinary tract infection 49.5% and preeclampsia 20.9%and gestational diabetes mellitus 7.7%.

The most outcomes complications were preterm delivery10% in overweight, while in obese not significant, abnormal fatal heart beat in overweight 14.1% ,in obese11%and smaller for gestational age were 14.1%in overweight,7.7% in obese.

The risk of low birth weight (<2500g) in overweight 20.4% while obese 12.1%,the risk of admission to neonatal unit in overweight 22.5% while obese 23.1% significant, the risk of fatal death among studied group no significant difference although odds' ratio is in excess of one for both group(overweight and obese) and p-model is not significant.

The risk of macrosomia of significant difference among overweight 7.7% while 13.2% in obese group and **p-model**(0.001) which is significant.

Cesarean section in overweight and obese compared to those with normal BMI was significant in obese 58.2% while35.2%in overweight 30.4%in normal weight.

The most deferrable were c.s, prenatal death, admission to neonatal care unit, small for gestational age. Macrosomia seems to be the most common outcomes in this group than normal body weight pregnant women.

Discussion:

Maternal obesity carries a significant risk for the mother and featus, the risk increase with degree of obesity, studied groups from the pregnant

women in Elwayia and Fatima AL-Zahraa, (96%) of the sample were urban residence and56.4% were their age below (30 years),their educational level was of primary (56.8%) this explains that majority groups were house wives(95.4%) and early marriage this effect the motivation for seeking antenatal care, and explain for all that low educational, younger age usually bad obstetrics history and low knowledgement about pregnancy, this all need to wide study about this subject .

References:

*Bianco AT, smilensw , Davis y , et al pregnancy out come and weight gain recommendations for the morbidly obese woman. ObsetGynecol 1998; 91:97-102.

*Cedergen MI. Maternal morbid obesity and the risk of adverse pregnancy out comeObestGynecol 2004 ; 103 : 219 -24 .

*International federation of gynecologist and obstetricians (IFAGO).Text book of gynecology and obstet.2004; p290,266.

*Institute of medicine, subcommittee on nutritional status and weight gain during pregnancy, nutrition during pregnancy.Washington, DC; National academy, Press,1990.

*James M.Lyznicki, M.S, M.P.H, et al .obesity; Assessment and management in primary care. Am JFamiphys; 1001;63/11.

*(Jane E Ramsay, Ian Greer. Obesity in pregnancy:, 2004 ,15;109-132 Cambridge university.

*Laura Riley, M.D.Dirct obstetric gynecol.obesity during pregnancy threaten health of mother and fetus.June;9.2004.

*KaisaRaatikairen ,NonnaHeishanen , and SeppoHeinonen . Transition from overweight to obesity worsens pregnancy outcome in a BMI dependent manner obesity Research vol . 14 No .1 January 2006.

*sebireNj . Jolly M, Harris Jp, et al . Maternal obesity and pregnancy outcome , a stndy of 287 , 213 pregnancies in London int j obs Relate Metab Disorder .2001 ;25:1175 - 82 .

*Rissanen A, Heliovaara m, khekt P, et al. Risk of disability and mortality due to overweight in a finish population BMj 1990; 301: 835 -7.

*Watkins ML, Rasmussen SA, Honein MA, Botto LD, MooreCA.Maternal obesity and risk for birth defects, Pediatrics 2003;111;1152-8.

*World health organization, stopping the Invisible Epidemic of maternal death;29 sept,2004.

سير ونتائج الحمل في النساء البدينات
دراسة مقارنة استعادية في مستشفين للولادة في بغداد/ الرصافة.
الحمل – البدانة – الولادة

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الملخص:

تهدف هذه الدراسة لمعرفة تأثير السمنة على الحمل ونتائجه وقد اختيرت العينة (401)حامل من النساء المراجعات لمستشفى العلوية التعليمي للولادة ومستشفى فاطمة الزهراء للولادة ممن تتراوح أعمارهن (18–45)سنه للفترة من أول أيار سنة 2012ولغاية الثلاثين من شهر شباط سنة 2013 باستعمال استجواب اعد لهذا الغرض وقد جرى قياس الوزن والطول لكل أمراه حامل في الشهور الأولى خلال الثلاثة أشهر الأولى من الحمل وقد حسبت وحدة كتلة الجسم للمرأة الحامل من تقسيم الوزن/كغم على الطول / م2وحسب هذه المعادلة اصبح لدينا ثلاثة مجموعات من النساء الحوامل عدد الحوامل طبيعيات الوزن 40,4%(18–24.9) و36,6% زائدات الوزن (25–29,9كغم/م2)ونسبة النساء البدينات(23,3%)(أكثر او =30كغم/م2) وبينت الدراسة ان نسبة 95,2% من نساء العينة يراجعن خلال الشهور الأولى من الحمل و(48.1%)منهن لديهن ثلاث زيارات و(36,6%) لديهن سبع زيارات لمراكز الرعاية الصحية الأولية.

وقد وجد من خلال الدراسة إن نسبه(096%)يعشن في المجتمع الحضري واكبر نسبه لديهن تحصيل دراسة ابتدائية (56,4%) والنسبة الأكبر(95,4%)هن ربات بيوت وكشفت الدراسة ان معظم النساء الحوامل(81,5%) تناولن أقراص الحديد وان(82,2%) تناولن حامض الفوليك ومعظمهن اجرين التحاليل المختبرية خلال الزيارة الأولى مثل فحص الدم وفحص السكر أما بالنسبة لعوامل الخطورة فمجموعة زائدات الوزن تختلف بشكل ملحوظ عن المجموعتين الأخريين في ارتفاع ضغط الدم وتسمم الحمل وتورم الساقين وسكر الحمل يكون بنسبه اكبر مما عند الحوامل طبيعيات الوزن أما النساء البدينات فنسبة زيادة وزن الجنين, الولادة القيصرية,الولادة المبكرة والتشوهات الخلقية تعتبر من أكثر المضاعفات المصاحبة.

يوصي البحث بضرورة وجود دراسة أوسع واشمل على مستوى العراق لمعرفه تأثير السمنة ومضاعفاتها على المراه البدينة الحامل وزيادة الوعي الصحي في مراكز الرعاية الصحية الأولية لتعريف الحوامل مضاعفات السمنة على المرأة الحامل وجنينها.