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NEW SUGGESTION SCORING SCALES BODY MASS INDEX (BMI) IN LIGHT OF MALNUTRITION IN PREGNANT WOMEN

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ABSTRACT

Objectives: This study aimed to investigate body mass index (BMI), weight gain during pregnancy, and birth outcomes among pregnant women associated with eating disorders. to evaluate malnutrition status among a sample of pregnant women in different aspects. **Methodology:** A cross sectional design study was conducted to evaluate of Malnutrition Status Among a Sample of pregnant women. A random sampling technique targeted a sample of (650) pregnant women who attending maternity unite in four hospitals (two in Al-Karkh and two in Al-Rusafa), whom entitled (Fatima Al- Zahra Hospital, Al-Alwaia Teaching Hospital) in Al-Rusafa district, (Al-Karkh Maternity Hospital, Al-yarmook teaching Hospital) in Al-karkh district**.** The methods used Descriptive statistic (frequencies and percentages, with Mean value, and Standard Deviation, Odds Ratio) as well as Inferential statistics (Contingency Coefficient, Binomial test, Screening tests, Estimated area of ROC curve, **Results:** Body mass index has been modified particularly for pregnant women and according to the time period of pregnancy through applying correction plot which takes into account the relationship between duration of pregnancy (weeks from LMP) to weight gain (kg). Results shows that most of studied pregnant women has overweighed, and they are accounted (46.0). The Changes in BMI reflect the physiological changes of body size during pregnancy. seemed less than our results. as well as (29.4%) who has obesity problem. **Recommendations:** All women booking for antenatal care should have their Body Mass Index calculated accurately and Take a daily supplement of 400 micrograms (400µg/0.4mg) folic acid, higher does are required for those with a history of neural tube defects or pre-existing diabetes mellitus. Pregnant women and women planning pregnancy should be encouraged to eat a healthy, balanced diet

incorporating foods based on the Health Service Executive (HSE) national Food Pyramid – Iron, calcium, vitamin D and long chain omega-3 polyunsaturated fatty acids are particularly important.

KEYWORDS: malnutrition status, health service executive.

INTRODUCTION

Overweight and obesity are reaching epidemic proportions, in 1999–2004 the prevalence's of overweight and of obesity were 52% and 29%, respectively, in American women of reproductive age.[1] Obese women have an increased incidence of pregnancy complications and the fetus of an obese mother has an increased risk of stillbirth and birth defects.[2] Fetal overgrowth is common in pregnancies of women with increased body mass index (BMI), and results in the birth of a large-for-gestational age infant (typically defined as a birth weight greater than the 90th percentile). Large-for-gestational age infants have an increased risk of traumatic birth injuries[3] and are prone to developing obesity, diabetes, and hypertension during childhood and later in life.[4] The mechanisms underlying fetal overgrowth in pregnancies complicated by maternal obesity are not known. Fetal growth is largely determined by nutrient transfer across the placenta, which is dependent on several factors, including maternal nutrient levels and placental transport capacity. Maternal hormones such as insulin[5], leptin and insulin-like growth Factor-I (IGF-I) have been shown to stimulate placental nutrient transporters. Leptin and fasting insulin are elevated in late pregnancy in obese women[6], reported that insulin concentrations in the second trimester were positively correlated with maternal first-trimester body mass index (BMI). Thus, it is possible that increased circulating concentrations of maternal hormones, such as leptin and insulin, constitute a mechanistic link between maternal overweight or obesity and fetal overgrowth mediated by up-regulation of placental nutrient transporters. Furthermore, obesity is associated with elevated maternal plasma concentrations of interleukin-6 and decreased adiponectin concentrations[7], in late pregnancy. it is well established that severe malnutrition in human pregnancy causes a reduction in birth weight. Also, more moderate variations in maternal diet in pregnancy can influence fetal growth.[8] However, whether these effects are caused by altered maternal nutrient levels per se or by changes in plasma concentrations of maternal metabolic hormones is unknown. Indeed, animal experiments suggest that regulation of placental transport capacity by maternal hormones best explains altered fetal growth in response to changes in maternal dietary intake. Whether an increased dietary intake

contributes to fetal overgrowth in women with overweight or obesity is not well established. The previously demonstrated positive correlation between BMI and fetal growth[9]

OBJECTIVES

1. Identify the nutrition problems and risks faced by pregnant women & its consequences.
2. To determine the demographic factors contributing to malnutrition among pregnant women.

METHODOLOGY

Setting of the study: A cross sectional study was conducted in Baghdad city for the period between (1st December 2017 and 1st February 2017) in two districts in Baghdad (Al-Karkh and Al-Rusafa), four hospitals (two in Al-Karkh and two in Al-Rusafa), whom entitled (Fatima Al- Zahra Hospital, Al-Alwaia Teaching Hospital) in Al-Rusafa district, (Al-Karkh Maternity Hospital, Al-yarmook teaching Hospital) in Al-karkh district. **The sample of the study**: A convenient sample of (650) pregnant women (simple Random sampling technique) targeted a sample who have been attending maternity unite.

Steps of the Study: For evaluating of Malnutrition Status Among a Sample of pregnant women, this study used a reliable questionnaire format to measure one or more dimensions of malnutrition status in pregnant women.

Descriptive data analysis

a. Statistical tables, frequencies and percentages, with Mean value, and Standard Deviation.
b. Odds Ratio of related rates: A measure of the strength of the association between the presence of a factor and the occurrence of an event, (95%) Confidence interval for population Odds ratio values.
c. Graphical presentation by using:

- Bar Charts.
- Cluster Bar Charts.
- Line Chart.
- Cluster Bar Charts.
- ROC curve Chart.

RESULTS

Table (1): Sampling Location Distribution with comparisons significant.

Sampling Location	Groups	No.	%	C.S. (*) P-value
District	Al-Karkh	320	49.2	P=0.724 (NS)
	Al-Rusafa	330	50.8	
	Total	650	100	
Hospital	Al-Karkh Delivery	170	26.2	χ^2= 3.649 P=0.325 (NS)
	Al-Yarmok Education	150	23.1	
	Al-Alwyah Delivery	152	23.4	
	Fatima Al-Zahra'a	178	27.3	
	Total	650	100	

(*) NS: Non Sig. at P>0.05; Testing based on One-Sample Chi-Square test, and Binomial test.

Respect to subject (Sampling Location) distribution, results shows that no significance differences are accounted at P>0.05 among distribution of the observed frequencies comparing with an expected outcome.

Table (2): Distribution of the studied sample according to demographical characteristic variable (DCv.) with comparison significant.

DCv.	Groups	No.	%	C.S. (*) P-value
Age Groups	15 – 19	129	19.8	χ^2= 264.3 P=0.000 (HS)
	20 - 24	191	29.4	
	25 - 29	194	29.8	
	30 - 34	79	12.2	
	35 - 39	43	6.6	
	40 - 45	14	2.2	
	Total	650	100	
	Mean ± SD	24.98 ± 6.30		
Marital Status	Married	639	98.3	χ^2= 1863.0 P=0.000 (HS)
	Divorced	2	0.3	
	Widow	4	0.6	
	Separate	5	0.8	
	Total	650	100	
Education Levels	illiterate	68	10.5	χ^2= 184.3 P=0.000 (HS)
	read & write	47	7.2	
	primary	155	23.8	
	intermediate	147	22.6	
	secondary	100	15.4	
	institute and college	122	18.8	
	High education	11	1.7	
	Total	650	100	

Occupation	High professional & managerial jobs as doctors, engineers, … etc	26	4	χ^2= 702.5 P=0.000 (HS)
	Lower professionals, skilled and semiskilled workers as sc	91	14	
	Unskilled workers as laborers, farmers casual workers, unemployment, housewife,….etc	533	82	
	Total	650	100	
Residency	Urban	622	95.7	P=0.000 (HS)
	Rural	28	4.3	
	Total	650	100	

(*) HS: Highly Sig. at P<0.01; NS: Non Sig. at P>0.05; Testing based on One-Sample Chi-Square test, and Binomial test.

Pregnant women were selected symmetrically from Al-Karkh, and Al-Rusafa districts, with no significant different at P>0.05.

Respect to subjects of studied (DCv.), results shows that a highly significance differences are accounted at P<0.01 among distribution of the observed frequencies comparing with an expected outcome.

Table (3): Distribution of the studied sample according to (SES) with comparisons significant.

SES	**Groups(**)**	**No.**	**%**	**C.S. (*) P-value**
Socio-Economic Status	Low : < 60	228	35.1	χ^2= 138.28 P=0.000 (HS)
	Mod. : 60 - 80	333	51.2	
	High :81 - 100	89	13.7	
	Total	650	100	

(*) HS: Highly Sig. at P<0.01; Testing based on One-Sample Chi-Square test. (10)

Vast majority of studied sample had low and moderate responding, and they accounted 333(86.3%), while low level is accounted for 228 (35.1%), finally high level is accounted for 89 (13.7%). It is clear from this that the majority of the sample respondents suffer from low level of living concerning (Socio – Economic Status).

Table (4): Distribution of studied sample according to Anthropometrics body mass index (BMI) (n= 650).

Anthropometrics and Mobility Status	Groups	No.	%	C.S. (*) P-value
Body Mass Index	Under weight	17	2.6	χ^2= 570.7 P=0.000 (HS)
	Normal weight	143	22	
	Overweight	299	46	
	Obese-1	144	22.2	
	Obese-2	35	5.4	
	Obese-3	12	1.8	

(*) HS: Highly Sig. at P<0.01; Testing based on One-Sample Chi-Square test.

Results indicated that there has been a highly significant differences at P<0.01 among different levels of studied (Anthropometrics measurement body mass index, BMI).

Respect to subject Body mass index has been corrected for the privacy of pregnant women and according to the time period of pregnancy through applying correction plot which takes into account the relationship between duration of pregnancy (weeks from LMP) to weight gain (kg).

Results shows that most of studied pregnant women has overweighed, and they are accounted 299(46.0%), as well as 191(29.4%) who has obesity problem.

DISCUSSION

Respect to subject (sampling location distribution), table (1) results shows that no significance differences among distribution of the observed frequencies comparing with an expected outcome.

This study utilized available data obtained over direct interview with pregnant women in two district Al-Karkh & Al-Rusafa where the number of pregnant women on both of sides al-karkh & al-rusafa 650 samples distributed in four hospitals & results shows that no significant differences are accounted at P>0.05 among distribution of the observed frequencies comparing with an expected outcome.

In the present study the **Mean ± SD** age **24.98 ± 6.30**. table (2) most of studied sample age were younger group, between 20-24 years and between 25-29 years were 29.4% and 29.8% respectively. These findings disagree_with the results of study conducted in Iraq in 2014 and

their results were their age between 15-24 years old were 43.1% women, between 25-34 years old were 44.6% women.[11]

About (98.3%) of studied sample was that marriage, and findings of current study similar to the study done in Ethiopia in 2013, (97.1%) were married which reported when Assessment of Nutritional Practices of Pregnant Mothers on Maternal Nutrition and Associated Factors.[12]

Concerning the level of education, most of them 23.8% are primary and 22.6% intermediate. This finding agrees with study's results which is entitled with (weight gain pattern during pregnancy in sector al-aadhamia / Baghdad-Iraq 2014) where as their results shows that the level of education for primary were 34.3% and 25% for secondary level, it might be characteristic in our country culture similar to developing countries.[11]

Regarding of occupation variables, most of pregnant women was un employment (housewife) for about 82%, this finding was agreement with study that conducted in Iraq in 2014 which is entitled with (weight gain pattern during pregnancy in sector al-aadhamia / Baghdad-Iraq 2014). There results were 77.2% of pregnant women are unemployment (housewife),[11]

Regarding to Table (3) shows observed frequencies, percent's and Cumulative percent of Socio-Economic Status(SES) with comparison significant, and they are accounted through applying of WHO instrument, which consists of several components such that, occupation, education levels, crowding index (no. of households, and no. of rooms), and particular properties (house ownership, available of specific requisite materiel). Three social and economic levels represented by the preceding contents (Low, Moderate, and High). Vast majority of studied sample had low and moderate responding, and they accounted (51.2%), while low level is accounted for (35.1%), finally high level is accounted for (13.7%). It is clear from this that the majority of the sample respondents suffer from low level of living concerning (Socio-Economic Status). The findings of the study also showed that socio economic factor is one of the causes of consequences in pregnant mothers.[13]

Regarding to table (4) Body mass index has been modified particularly for pregnant women and according to the time period of pregnancy through applying correction plot which takes into account the relationship between duration of pregnancy (weeks from LMP) to weight gain (kg).

Results shows that most of studied pregnant women has overweighed, and they are accounted (46.0%). This finding was agreement with study that done by [S. Taleb 1, 2011] which is entitled [Assessment of Nutritional Status of Pregnant Women Attending the City Tebessa PMI Algeria], (14) and their result was (39. 25%). The Changes in BMI reflect the physiological changes of body size during pregnancy. The prevalence of overweight found in other studies in Algeria, (15), seemed less than our results. as well as (29.4%) who has obesity problem. This finding was in agreement with study that conducted in Iraq in 2014 which is entitled with (weight gain pattern during pregnancy in sector al-aadhamia / Baghdad-Iraq 2014). There results were (22.6%).[11]

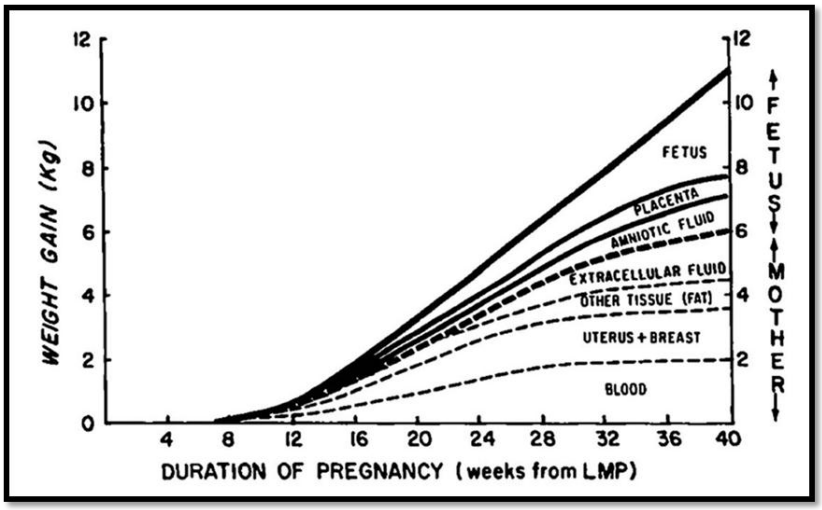

Figure (1): Component of gestational weight gain.[16]

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