

Impact of Normal and Overweight Pregnant Women upon Neonatal Outcomes in Al-Nasiriya Hospitals :Comparative Study

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Abstract

Background: Maternal obesity is a major risk for both the mother and the fetus, and it is considered an obstetrical risk factor that leads to a high incidence of complications throughout the prenatal period, as well as an increased risk of many adverse pregnancy outcomes.

Objectives: To assess the impact of normal and overweight pregnant women upon Neonatal outcomes at Al-Nasiriya city.

Methodology: A descriptive analytic study was conducted from January 11th, 2021 to March 18th, 2021 at Al-Nasiriya City Hospitals for Maternity and Children on (100) pregnant women who attending labor room , (50) were overweight and (50) normal weight pregnant women with gestational age for 08-40 weeks were included . A non-probability (Purposive sample) was used to select the participants of study sample.

Results: The result of study revealed that (34.1%) (36.4%) of study sample aged (26-30) years in normal, and overweight pregnant respectively. The study results clarifies the previous and current body mass index among normal weight pregnant women (100% & 95%) respectively, while in overweight (63.6%) overweight previously and (65.9%) obesity class (I) at current. the impact of weight upon neonate outcomes; the findings indicates that weight has significant impact up on outcomes related to neonate, at p-value= 0.006, while there is no impact has been reported among group of normal weight pregnant women.

Conclusion: The study concluded that overweight impact upon outcomes related to neonate condition, while there is no impact has been reported among group of normal weight pregnant women.

Recommendations: Increased physical activity and knowledge of healthy eating habits among pregnant women as part of primary health care centre initiatives to reduce obesity in women.

Keywords: Pregnant, Overweight, Normal weight, Adverse neonatal outcomes.

Introduction

Overweight and obesity are steadily growing in all age groups worldwide, especially in countries with low and medium incomes [1]. Given the correlation with negative short- and long-term maternal and child outcomes, pre-pregnancy obesity (body mass index,

BMI> 30 kg/m²), excessive gestational weight gain (GWG) and postpartum weight retention (PPWR) are seen as new public health threats [2]. These findings include, in later life, obstetric or neonatal complications, obesity, type 2 diabetes (T2D) and cardiovascular disease (CVD) [3].

Overweight is defined by a BMI of ≥ 25 and obesity by a BMI of ≥ 30 [4]. Several maternal, fetal and neonatal complications are associated with overweight and obesity. Maternal complications are associated with maternal obesity as well as fetal and neonatal complications, such as hypertensive disorders, diabetes and venous thrombo-embolism, including miscarriage and stillbirth, foetal abnormalities, macrosomia, preterm birth, extended pregnancy, Caesarean delivery, postpartum haemorrhage and complications in anesthesia [5].

Materials and Methods

A descriptive analytic study was conducted to determine the Impact of normal and overweight pregnant women upon neonatal outcomes in Al-Nasiriya city Hospitals: Comparative Study. The study was performed from January 11th, 2021 to March 18th, 2021. Non-probability (purposive sample) used to collect the data from (100) pregnant women. The study sample consists of (50) pregnant women with normal weight and (50) pregnant women with overweight. A pilot study conducted in order to determine the reliability of the questionnaire in a sample of (10) pregnant women. content validity was determined through a panel of (16) experts who had more than 8 years of experience in their field. The data was collected after obtaining the agreement from women to participate in this study. Data are analyzed through the use of (SPSS) ver. (24.0).

Results and Discussion

Discussion of Socio-demographic Characteristics of study (Table 1):-

The present study results reveals that the highest percentage (34.1%) , normal weight pregnant are with age group of (26 - 30) years, with mean \pm SD (24 \pm 5) years, and the highest percentage (36.4%), among overweight pregnant is also refers to (26 - 30) age group, with mean \pm SD of (27 \pm 6) years. Khan & Qianli, (2017) stated that the most important cause for increase in weight gain with age is the activity of the

metabolism decreases with increase of age, and this lead to fewer of body burns calories and this ends up accumulating lipid in the body and thus an increase in weight [6].

Regarding the level of education, the highest percentage among pregnant women are graduated from primary school; (47.7%) among overweight pregnant and (38.6%) among normal weight. These findings are consistent with Pakniat & Ranjkesh,(2015) and with Stanford et al., (2015) ,and with Teixeira et al., (2012) they found that lack of appropriate understanding and adequate competence regarding obesity likely contributes to ambivalent belief development and negative attitudes toward obese individuals, who are described as unmotivated, lazy, and lacking self-control [7,8,9].

Regarding Income, the highest percentage among pregnant women are perceived barely sufficient monthly income (70.5%) among normal weight pregnant and (65.9%) among overweight pregnant women. The study by Ogden et al., (2017), stated that obesity prevalence decreased with increased levels of income and educational attainment among women [10] and, May et al.,(2013) have suggested that obesity prevalence varies by income and educational level, although patterns might differ between high-income and low-income countries [11].

Discussion of Pregnant Women According to BMI (Table 2):-

The study results clarifies the previous and current body mass index among pregnant women that refer to normal among the group of normal weight pregnant (100% and 95.5%), while refer to overweight previously (63.6%) and obesity I (65.9%) at current among the group of overweight pregnant women. This result agree with Eren et al., (2015) they found the mean of pre-pregnancy body mass index is (27.18 \pm 5.38), also one third of the study sample are within normal weight status and then followed by overweight and class-I obesity [12], also agree with Machado et al., (2020) pregnancy BMI: (29.6%) women (n = 918)

were classified as overweight and (27.3%) (n = 846) as obese ⁽¹³⁾. Also agree with Subhan et al., (2019) that most women (64%) had a normal pre-pregnancy BMI ^[14].

Table (1): Distribution of Pregnant Women According to their Socio-demographic Characteristics

List	Characteristics		Normal weight		Overweight	
			f	%	f	%
1	Age	16 – 20 year	14	31.8	7	15.9
		21 – 25 year	11	25	10	22.7
		26 – 30 year	15	34.1	16	36.4
		31 – 35 year	4	9.1	8	18.2
		36 ≤ year	0	0	3	6.8
		Total	44	100	44	100
		M±SD	24±5		27±6	
2	Level of education	Doesn't read & write	2	4.5	4	9.1
		Read & write	3	6.8	3	6.8
		Primary school	17	38.6	21	47.7
		Intermediate	7	15.9	6	13.6
		Secondary	4	9.1	3	6.8
		Institute	0	0	2	4.5
		College/higher	11	25	5	11.4
		Total	44	100	44	100
3	Perceived income	Insufficient	6	13.6	13	29.5
		Barely sufficient	31	70.5	29	65.9
		Sufficient	7	15.9	2	4.5
		Total	44	100	44	100

f: Frequency, %: Percentage, M: Mean, SD: Standard deviation

Table (2): Distribution of Pregnant Women According to BMI

List	Body mass index		Normal weight		Overweight	
			f	%	f	%
1	Previous	Underweight	0	0	0	0
		Normal	44	100	0	0
		Overweight	0	0	28	63.6
		Obesity I	0	0	15	34.1
		Obesity II	0	0	1	2.3
		Obesity III	0	0	0	0
		Total	44	100	44	100
2	Current	Underweight	0	0	0	0
		Normal	42	95.5	0	0
		Overweight	2	4.5	3	6.8
		Obesity I	0	0	29	65.9
		Obesity II	0	0	12	27.3
		Obesity III	0	0	0	0
		Total	44	100	44	100

f: Frequency, %: Percentage

Table (3): Assessment the Effect of Weight on Neonate Condition among Pregnant Women

List	Outcomes (Neonate conditions)		Normal weight N=44		Overweight N=44	
			f	%	f	%
1	Macrosomia (a child's weight more than 4000 g)	No	43	97.7	38	86.4
		Yes	1	2.3	6	13.6
2	Child weight less < 2500gm	No	40	90.9	34	77.3
		Yes	4	9.1	10	22.7
3	Small gestational age (SGA)	No	43	97.7	35	79.5
		Yes	1	2.3	9	20.5
4	Large gestational age (LGA)	No	44	100	43	97.7
		Yes	0	0	1	2.3
5	Admission to the neonatal intensive care unit	No	40	90.9	26	59.1
		Yes	4	9.1	18	40.9
6	Umbilical cord problems	No	44	100	43	97.7
		Yes	0	0	1	2.3

Cont... Table (3): Assessment the Effect of Weight on Neonate Condition among Pregnant Women

7	Newborn death	No	44	100	35	79.5
		Yes	0	0	9	20.5
8	Birth defect / malformations	No	44	100	42	95.5
		Yes	0	0	2	4.5
9	Hypoglycemia in newborns	No	44	100	38	86.4
		Yes	0	0	6	13.6
10	Hyperbilirubinemia in newborns	No	42	95.9	41	93.2
		Yes	2	4.5	3	6.8
11	Delayed intrauterine growth (during pregnancy)	No	44	100	43	97.7
		Yes	0	0	1	2.3
12	Hypothermia	No	44	100	44	100
		Yes	0	0	0	0
13	Childbirth before 37 weeks of pregnancy	No	41	93.2	37	84.1
		Yes	3	6.8	7	15.9
14	Postdate birth after 42 weeks of pregnancy	No	44	100	42	95.5
		Yes	0	0	2	4.5
15	Shortness of breath	No	41	93.2	38	86.4
		Yes	3	6.8	6	13.6
16	Inhalation of amniotic fluid	No	42	95.5	39	88.6
		Yes	2	4.5	5	11.4
17	Apgar score Less than 7 in 5 minutes	No	44	100	33	75
		Yes	0	0	11	25
18	Neonatal asphyxia	No	43	97.7	40	90.9
		Yes	1	2.3	4	9.1

f: Frequency, %: Percentage

Table (4): Simple Linear Regression for Assessment the Impact of Normal and Overweight upon Neonate Outcomes among Pregnant Women

Independent Variable Dependent Variables	Normal weight Pregnant (N=44)					Overweight Pregnant (N=44)				
	Un standardized Coefficients		Standardized Coefficients	t	Sig.	Un standardized Coefficients		Standardized Coefficients	t	Sig.
	B	Std. Error	Beta			B	Std. Error	Beta		
Neonate outcome	0.50	0.897	0.086	0.55	0.58	1.54	0.541	0.403	2.85	0.00
Dependent Variable: Outcomes										

Table (5): Correlation among Weight with Neonatal Outcomes among Pregnant Women

Pregnant Weight Outcomes	Normal weight Pregnant (N=44)			Overweight Pregnant (N=44)		
	Spearman correlation	p-value	Sig	Spearman correlation	p-value	Sig
Macrosomia (a child's weight more than 4000 g)	0.033	0.830	N.S	0.344	0.02	S
Child weight less than 2500gm>	0.069	0.656	N.S	0.085	0.58	N.S
Small gestational age SGA	0.033	0.830	N.S	0.003	0.98	N.S
Large gestational age LGA	0.033	0.830	N.S	-0.065	0.67	N.S
Admission to the neonatal intensive care unit	0.069	0.656	N.S	0.363	0.01	S
Umbilical cord problems	0.033	0.830	N.S	0.231	0.13	N.S
Newborn death	0.033	0.830	N.S	0.221	0.14	N.S
Birth defect / malformations	0.033	0.830	N.S	0.119	0.44	N.S
Hypoglycemia in newborns	0.033	0.830	N.S	0.344	0.02	S
Hyperbilirubinemia in newborns	0.048	0.759	N.S	-0.252	0.10	N.S
Delayed intrauterine growth (during pregnancy)	0.033	0.830	N.S	0.231	0.13	N.S
Childbirth before 37 weeks of pregnancy	0.059	0.703	N.S	0.056	0.71	N.S
Postdate birth after 42 weeks of pregnancy	0.033	0.830	N.S	-0.093	0.54	N.S
Shortness of breath	0.059	0.703	N.S	0.344	0.02	S
Inhalation of amniotic fluid	0.048	0.759	N.S	-0.014	0.930	N.S
Apgar score Less than 7 in 5 minutes	0.033	0.83	N.S	0.263	0.08	N.S
Neonatal asphyxia	0.033	0.83	N.S	0.172	0.26	N.S

P: probability, Sig: Significance, N.S: Not Significant, S: Significant, H.S: High significant

Discussion of Assessment the Effect of Weight on Neonate Condition among Pregnant Women (Table 3):-

Regarding the outcomes related to neonate conditions; the results shows that “macrosomia” is seen among (2.3%) of normal weight and (13.6%) of overweight; the “child weight less than 2500 g” is seen among (9.1%) of normal weight and (22.7%) of overweight; “small gestational age” is reported among (2.3%) of normal weight and (20.5%) of overweight; “Large gestational age” is seen among only (2.3%) of overweight; “admission of neonate to NICU” is associated with (9.1%) of normal weight and (40.9%) of overweight; “umbilical cord problems” is only seen in (2.3%) of overweight; “newborn death” is reported in only (20.5) of overweight; the “birth defect” is seen among only (4.5%) of overweight pregnant; “hypoglycemia” is reported among only (13.6%); “hyperbilirubinemia” is reported among (4.5%) of normal weight and (6.8%) of overweight; “delayed intrauterine growth” is reported among only (2.3%) of overweight; the “childbirth before 37 weeks” is reported among (6.8%) of normal weight and (15.9%) of overweight; the “postdate birth after 42 weeks” is reported among only (4.5%) of overweight; the “shortness of breath” is reported among (6.8%) of normal weight and (13.6%) of overweight; the “inhalation of amniotic fluid” is seen among (4.5%) of normal weight and (11.4%) of overweight; the “Apgar score less than 7 in 5 minutes” is seen in only (25%) of overweight; and “neonatal asphyxia” is reported in (2.3%) of normal weight and (9.1%) of overweight.

Simple Linear Regression for Assessment the Impact of Normal and Overweight upon Neonate Outcomes among Pregnant Women (Table 4):-

The impact of weight upon neonate outcomes; the findings indicates that weight has significant impact upon outcomes related to neonate, among overweight pregnant women at p-value= 0.006, while there is no impact has been reported among group of normal weight pregnant women.

Correlation among Weight with Neonatal Outcomes among Pregnant Women (Table 5):-

The results illustrate that there is no significant relationship between pregnant women’ weight with regard to neonate’s outcomes among the normal weight pregnant women, but among the overweight pregnant women, it shows there is significant relationship among weight with regard to neonate’s outcomes of: macrosomia, admission to the neonatal intensive care unit, hypoglycemia in newborns, and shortness of breath at p-value= (0.022, 0.015, 0.022, and 0.022). Bhavadharini et al., (2017) (Ram et al., (2020) they found in their study consistently higher macrosomia which was more frequently present (16.1%) in the obese and overweight group (2.0%) category of woman compared to normal (2.5%) [15,16].

Papazian et al., (2017) found that (LBW) significantly was present in overweight (1.0%) category of women compared to normal (2.0%) [17]. Lamminpää et al., (2016), and Black et al., (2013) found that with overweight and obesity significantly contributing to the growing prevalence of large for gestational age infants and increasing the risk of pregnancy-related complications [18,19]. Liu et al., (2013) found that of neonatal intensive care admission (AOR, 2.07; 95% CI, 1.32–3.23) and Apgar score of under 7 at 5 minutes (95%) in overweight compared with normal weight [20]. Also Hartge et al., (2016) , and Hanneman et al., (2020) found that neonates born to obese women were associated with significantly increased rates of hypoglycemia (95%) [21,22].

Hanneman et al., (2020). Disagree with Du et al., (2019) , and Weng et al., (2014) who found no significant association between women weight and neonatal outcomes, risks of stillbirth, neonatal death, preterm birth, congenital anomaly, and low birth weight [22,23,24].

Conclusion

The study finding manifests that there is no significant relationship between pregnant women’

weight with regard to neonatal complications among the normal weight pregnant women, but among the overweight pregnant women, it shows there is significant relationship among weight with regard to neonate's outcomes of: macrosomia, admission to the neonatal intensive care unit, hypoglycemia in newborns, and shortness of breath at p-value= (0.022, 0.015, 0.022, and 0.022).

Recommendations: The study suggests that nursing and health-care professionals play a bigger role in educating pregnant women and raising awareness about their health, especially natural weight gain before and during pregnancy.

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Conflict of Interest: None declared.

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