Novelty Journals

ISSN 2394-7330

International Journal of Novel Research in Healthcare and Nursing
Vol. 4, Issue 3, pp: (50-63), Month: September - December 2017, Available at: www.noveltyjournals.com

Relationship between Obesity and Maternal Psychological Status of Pregnant Women

[1]Zebeda Abd El Gawad Elsherif, [2]Nemat Mazloum Mohamed Fahmy

[1] Lecturer of Psychiatric and Mental Health Nursing
[2] Lecturer of Community Health Nursing Faculty of Nursing, Tanta University, Egypt

Abstract: **Several studies have shown that obese women are more vulnerable to the development of psychiatric and psychological disorders. Additionally maternal psychosocial stress during pregnancy is associated with risks to maternal health and birth outcomes, and health and behavioral outcomes in offspring. The study aimed to investigate the relationship between obesity and maternal psychological status of pregnant women. This study followed a comparative descriptive design. The study was conducted at antenatal clinic at Tanta University Hospital, The target population include 100 normal pregnant and 100 pregnant obese women who attend at antenatal clinic for receiving antenatal care, Four tools used to collect data for the study, tool I ; Socio-demographic characteristics of the women, tool 2 ;Perceived Anxiety (HAM-A), Tool 3; Perceived Stress Scale, Tool 4: General Health Questionnaire (GHQ-12). Results of the study indicated that there was a statistically significant difference between normal pregnant women and obese pregnant women at p-value =0.001 in their experience of anxiety during their pregnancy, and in their experience of stress in at p-value =0.003. Also there was a statistically significant relationship between the effect of income on normal pregnant women and obese pregnant women in their experience of anxiety at p-value =0.006 and at p-value =0.044. It was concluded that the obese or normal weight pregnant women with low education, low income, and had no job were more likely to experience severe levels of stress and anxiety, which has more complication for them. The study recommended that a combination of health education with psychological interventions is more effective than information alone to produce significant behavior change.**

Keywords: **obese pregnant women, normal weight pregnant women, anxiety, stress, psychological distress.**

1. INTRODUCTION

The incidence of obesity in pregnancy has increased over the past two decades, with nearly 50% of U.S.A women aged 15-49 are classified as overweight or obese. On the other hand in U.S.A the proportion of women who are overweight or obese is rapidly increasing to over 20% of U.S.A women when they become pregnant. [(1)] In Egypt the mean BMI of all women age 15-59 was 28.9. The majority of women had a BMI of 25.0 or higher and are considered overweight (28 percent) or obese (40 percent) [(2)].

The increasing prevalence of obesity among pregnant women is a serious health concern, as it may affect the pregnancy outcome for both mother and baby and therefore of future generations. Maternal obesity, excess gestational weight gain, lifestyle behaviors and failure to breastfeed have been associated with future overweight for both mothers and babies [(3, 4)].

The impact of obesity and excess weight gain on pregnancy outcomes has become more salient in recent years, as the prevalence of overweight and obesity has grown. Moreover obesity has been reported to have a negative impact on physical health and psychological wellbeing. In addition to lack of attention to the psychosocial dimensions of overweight, obesity and pregnancy represents a significant gap in the studies because it was known that individual who are overweight or obese are more likely to experience stigma, lower self-esteem and negative body image compared to those with a healthy weight. There is an association between depressions, anxiety and obesity [5, 6].

Maternal obesity has been associated with adverse pregnancy outcomes, including hypertensive disorders of pregnancy, and need for operative delivery, maternal obesity also has a significant impact on fetal development, the neonatal period and overall childhood development [7, 8].

Obesity increases the risk for diabetes and insulin resistance, which could affect the brain in such a way as to increase the risk for depressive disorders. From a psychological perspective, obesity tends to be associated with decreased self – esteem, adverse childhood experiences and teasing, which might increase the risk of depressive disorders, obesity and depression are each casual factors for the other [9]. The impact of obesity on physical health during pregnancy has been studied extensively, while the relationship between obesity and maternal mental health has been largely neglected. Mental disorders are among the most common complications of pregnancy [10].

Obesity may have organic causes as well as social, cultural, or psychological ones, and pregnancy is a period with physical, psychological, and social changes. Women's physical and psychological health during this period is intertwined. Pregnancy is a milestone in women development, and involves a set of readjustments, regards to identity, social roles, and emotional conflicts. Although obesity is not classified as a psychiatric disorder, it is related to psychological factors. However, obese people are at greater risk for psychiatric disorders, especially depression. The biological condition of pregnancy promotes changes in women's bodies and minds, altering the way they look at themselves and their bodies. Self-awareness can be hindered under conditions of obesity due to stigma and social discrimination [11].

Several studies have shown that obese women are more vulnerable to the development of psychiatric and psychological disorders. A number of studies have investigated symptoms of depression and anxiety during and after pregnancy. Both anxiety and depression during pregnancy are strong predictors for post-partum depression [6]. Stress is associated with depression among low income obese pregnant women and women in their second and third trimesters. Researchers have examined perceived stress by trimesters and have found that third trimester women are less likely to report perceived stress than the second trimester women [12].

Maternal psychosocial stress during pregnancy is associated with risks to maternal health and birth outcomes, as well as adverse health and behavioral outcomes in offspring. Maternal immune dysregulation, particularly disruption of inflammatory processes, is also implicated in adverse prenatal health outcomes. Increasingly, the extent to which psychosocial stress induces dysregulation of inflammatory processes during pregnancy, it has been hypothesized that maternal psychological distress during pregnancy also leads to growth and developmental adaptations during fetal life and childhood [13, 14]. Poor sleep quality early in pregnancy has been linked to increased depressed mood later in pregnancy, and poor sleep quality in late pregnancy [15].

The nurse has a very important role in helping obese pregnant women to change their lifestyle which was found to be associated with restricted gestational weight gain, and a reduced prevalence of gestational diabetes among obese and overweight pregnant women. Moreover pregnant women should be advised about the medical complications associated with obesity in pregnancy. Accordingly it will reduce risks of any health problems either to the women or their babies [16, 17]. Furthermore, the nurse has a crucial role in counseling obese pregnant women which can lead to a reduced gestational weight gain, increased psychological comfort and lowers levels of anxiety, stress and depressed mood during pregnancy. Also nurses has role in providing a nutritional teaching when working with a pregnant women who has difficulty gaining the recommended weight during pregnancy [18, 19].

To be aware of and management the effect of obesity on the physical and psychological status of pregnant women, this study conducted to investigate the relationship between obesity and maternal psychological status of pregnant women.

Aim of the study:

The aim of the study was to investigate the relationship between obesity and maternal psychological status of pregnant women.

Research question:

Is there a relation between obesity and maternal psychological status of pregnant women?

2. SUBJECTS AND METHODS

Research design:

A comparative descriptive design was used for this study.

Setting:

The study was conducted in antenatal clinic at Tanta University hospital.

Subjects: The target population of this study consisted of 200 pregnant women who attend at antenatal clinic for receiving antenatal care during third trimester (24-36 week), 100 normal pregnant women and 100 pregnant obese women.

Inclusion Criteria:

-Age;18-45 years

-Primi-para or multi-para

-Gestational age; 24-36 weeks

Exclusion Criteria:

-Twins

-Polyhydromenous

-oligohydromenous

Tools of the study;

The data of this study was collected using the following tools**:**

Tool I; **Socio-demographic characteristics sheet:** It was developed by the researchers to elicit the socio-demographic data about pregnant women's as; age, income, residence, co-habituation, educational level, occupation**.** It consisted of three parts:

Part one: Nutritional assessment: Using anthropometric measurements: This measures was carried out by the researchers, it included two measures to determine normal weight and obesity for pregnant women as follows:

a) **Body weight** was measured by using a platform scale.

b) **Height** was measured by using a plastic tape.

c) **Body Mass Index (BMI)**; was calculated by using the value of weight and height as follows: **BMI =weight in kg divided by height in meter**. Women were considered obese if **BMI** exceed 25 or more.

Part two: women's obstetric history as: number of pregnancy, number of delivery, number of live children.

Part three: Women's life style as: Active smoking, exposure to passive smoking, sleep status: practice of exercise, support people, family problems, any risk with pregnancy and receiving any medication during pregnancy.

Tool II: **Hamilton Anxiety Rating Scale HAM-A**: A scale developed by **Hamilton m (1959)**[20].' the scale consists of 14 items, each defined by a series of symptoms, and measures both psychic anxiety (mental agitation and psychological distress) and somatic anxiety (physical complaints related to anxiety). Main purpose to assess the severity of symptoms of anxiety, the assessment of anxiety stated by rating, each item is scored on a scale of 0 (not present) to 4 (severe). Average completion time 20–30 minutes, the researcher added score through statistics expert.

Its Scoring include: with a total score range of 0-56, where <17 indicates mild severity, 18-24 moderate severity 25-30 severe and, > 30 very severe.

Tool III: Perceived Stress Scale (PSS) : A scale developed by **Cohen, S et al (1983)**[21]. The Perceived Stress Scale (PSS) is the most widely used psychological instrument for measuring the perception of stress. It is a measure of the degree to which situations in one's life are appraised as stressful and how different situations affect their feelings and their perceived stress. The questions in this scale ask about feelings and thoughts during the last month. It consists of 10 items include choice on a 5-point agreement scale. 0 = Never 1 = Almost Never 2 = Sometimes 3 = Fairly Often 4 = Very Often. Items number 4, 5, 7, and 8 require reverse coding, to compute the total assessment score, sum all scale items. Average completion time**:** 20-30 minute. The researcher added score through statistic expert. **Its Scoring include**: Total scores will range from 0 to 40 with higher scores indicating higher perceived stress.

Scores ranging from 0-13 would be considered low stress.

Scores ranging from 14-26 would be considered moderate stress.

Scores ranging from 27-40 would be considered high perceived stress.

Tool 1V: General Health Questionnaire (GHQ-12): A scale developed by **Goldberg S D (1978)** [22]. this 12- item scale is a well-documented screening measure for common psychiatric disorders and assesses emotional distress in the last month. GHQ-12 is a consistent and reliable instrument for use in general population studies. Each item is rated on a four-point scale from (0) less than usual to (3) much more than usual (less than usual, no more than usual, fairly more than usual and much more than usual). Average completion time**:** 20-30 minute. The researcher added score through statistic expert. **It's Scoring include;** A participant could have been scored between 0 and 12 points.

Scores about 1-10 indicate: Normal Healthy.

Score 11-20 indicate: Evidence of psychological distress

Score >20 indicate: severe problems and psychological distress

Methods:

-A written official letters from the Faculty of Nursing, Tanat University was directed to the director of Tanta University Hospital to take their permission to collect data after explaining the purpose of the study. The director was informed about the goal of the study, the data and time of data collection.

Ethical consideration;

- A written consent was taken from women to participate in the study after explanation of the purpose of the study.
- Informing study subjects' that confidentiality and privacy of any obtained information will be ensured.
- Respecting the right of the study sample to be withdrawal from the study at any time

-Tool I was developed by researcher.

Novelty Journals

ISSN 2394-7330

International Journal of Novel Research in Healthcare and Nursing
Vol. 4, Issue 3, pp: (50-63), Month: September - December 2017, Available at: www.noveltyjournals.com

-All tools was translated into Arabic by the researcher, and tested for their translation and content validity by a group of 5 experts in psychiatric nursing and obstetric nursing to ascertain the clarity and translation of the tools.

- The Internal consistency of the study tools, (Tool II and tool II, tool IV) found reliable in the original research and was done by means of Cronbach's Alpha coefficient which yielded values of (0.77 to 92) (0.78), (0.929) respectively.

-A pilot study was carried out on 10 normal pregnant women, and 10 obese pregnant women were selected, explained to them the scales to be answered to ensure the clarity of the scales, to test the visibility and applicability of the study tools and determine obstacles may be encountered during the period of data collection. According to the result of the pilot study the necessary modifications had done. And later the pilot study subjects excluded from the study subjects.

Actual Study:

-A written consent was obtained from each selected women according to the previous criteria for participation in the study after explaining the aim of the study, establishing rapport and trusting relationship with the studied women.

-The form of the study tools was explained to the women and they were reassured that all information will be confidential and used only for the purpose of the study and they were individually interviewed for keeping their privacy.

-Tools of the study were implemented by the researcher using the interview questionnaire sheet to determine the anxiety level, perceived stress level, and their general health state to identify their distress level and their psychological state.

-The questionnaire was distributed to the women (normal pregnant women, and obese pregnant women), the researcher was present during data collection for any help and guidance for women after taking their tall measurement and their body weight to identify their body mass index to detect the normal weight and obese pregnant women.

-Each interview was implemented on an individual basis and lasted for about 20-30 minute for each tool according to women's attention and willing to cooperate or talk with the researcher.

-Data were collected over a period of 4 months starting from April 2015 to August 2015.

3. STATISTICAL ANALYSIS

The collected data were organized, tabulated and statistically analyzed using SPSS software statistical computer package version 23. For quantitative data, the range, mean and standard deviation were calculated. For qualitative data, comparison was done using Chi-square test (χ^2). For comparison between means, the F-value of analysis of variance (ANOVA) was calculated. A significance was adopted at $P<0.05$ for interpretation of results of tests of significance.

Table (1): Distribution of the studied groups according to their socio-demographic characteristics

Socio-demographic characteristics		Normal (n=100)		Obese (n=100)		χ^2 P
		N	%	N	%	
Age (years)	<20 Years	13	13.0	5	5.0	**10.054 0.018***
	20-30 years	70	70.0	63	63.0	
	31-40 years	17	17.0	29	29.0	
	>40 years	0	0.0	3	3.0	
	Range Mean ± SD	18-39 25.34±5.20		18-45 28.34±5.72		
Income	enough	62	62.0	66	66.0	0.347 0.556
	Not enough	38	38.0	34	34.0	
Residence	Urban	51	51.0	75	75.0	**12.355**

Novelty Journals

ISSN 2394-7330

International Journal of Novel Research in Healthcare and Nursing
Vol. 4, Issue 3, pp: (50-63), Month: September - December 2017, Available at: www.noveltyjournals.com

	Rural	49	49.0	25	25.0	**0.00***
Live with	Alone	40	40.0	29	29.0	2.677 0.102
	Family	60	60.0	71	71.0	
Education level	Illiterate	18	18.0	12	12.0	3.951 0.413
	Read and write	31	31.0	41	41.0	
	Diploma	37	37.0	32	32.0	
	University	14	14.0	14	14.0	
	Post	0	0.0	1	1.0	
Occupation	Work	11	11.0	6	6.0	1.607 0.205
	not work	89	89.0	94	94.0	

* Significant at level P< 0.05

Table (2): Distribution of the studied groups according to their nutritional assessment

Nutritional assessment	**Normal (n=100)** Range Mean±SD	**Obese (n=150)** Range Mean±SD	**F**	**P**
1. Height	136-175 160.68±7.23	150-197 162.44±6.29	3.37	0.068
2. Weight	45-160 60.61±11.86	78-160 97.98±17.59	**310.49**	**0.00***
3. BMI	18.5-24.9 23.47±4.33	25.0-61.0 37.14±6.36	**315.60**	**0.00***

* Significant at level P< 0.05

Table (3): Distribution of the studied groups according to total anxiety rating score, perceived stress score and general health questionnaire score

Score		**Normal (n=100)**		**Obese (n=150)**		χ^2 **P**
		N	%	N	%	
Total anxiety rating score	<17 mild	18	18.0	7	7.0	**16.808** **0.001***
	17-24 moderate	24	24.0	15	15.0	
	25-30 severe	31	31.0	24	24.0	
	>30 very severe	27	27.0	54	54.0	
Total perceived stress score	0-13 low stress	2	2.0	2	2.0	**11.683** **0.003***
	14-26 moderate stress	74	74.0	51	51.0	
	27-40 high perceived stress	24	24.0	47	47.0	
Total general health questionnaire score	0-10 healthy people	11	11.0	9	9.0	0.756 0.685
	11-20 Evidence of psychological distress	52	52.0	58	58.0	
	21-36 severe distress	37	37.0	33	33.0	

* Significant at level P< 0.05

Novelty Journals

ISSN 2394-7330

International Journal of Novel Research in Healthcare and Nursing
Vol. 4, Issue 3, pp: (50-63), Month: September - December 2017, Available at: www.noveltyjournals.com

Table (4): Effect of income on total anxiety rating score, perceived stress score and general health questionnaire score among studied groups

Scores		Normal				Obese			
		Enough (n=62)		Not enough (n=38)		Enough (n=66)		Not enough (n=34)	
		N	%	N	%	N	%	N	%
Total anxiety rating score	<17 mild	17	27.4	1	2.6	6	9.1	1	2.9
	17-24 moderate	16	25.8	8	21.1	14	21.2	1	2.9
	25-30 severe	17	27.4	14	36.8	15	22.7	9	26.5
	>30 very severe	12	19.4	15	39.5	31	47.0	23	67.6
χ^2 , P		12.471 , 0.006*				8.114 , 0.044*			
Total perceived stress score	0-13 low stress	1	1.6	1	2.6	2	3.0	0	0.0
	14-26 moderate stress	49	79.0	25	65.8	34	51.5	17	50.0
	27-40 high perceived stress	12	19.4	12	31.6	30	45.5	17	50.0
χ^2 , P		2.147 , 0.342				1.139 , 0.566			
Total general health questionnaire score	0-10 Healthy people	8	12.9	3	7.9	8	12.1	1	2.9
	11-20 Evidence of psychological distress	35	56.5	17	44.7	39	59.1	19	55.9
	21-36 severe distress	19	30.6	18	47.4	19	28.8	14	41.2
χ^2 , P		2.940 , 0.230				3.185 , 0.203			

* Significant at level P< 0.05

Table (5): Effect of education level on total anxiety rating score, perceived stress score and general health questionnaire score among studied groups

Scores		Normal								Obese									
		Illiterate (n=18)		Read & write (n=31)		Diploma (n=37)		University (n=14)		Illiterate (n=12)		Read & write (n=41)		Diploma (n=32)		University (n=14)		Post (n=1)	
		N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%	N	%
Total anxiety rating score	<17 Mild	2	11.1	2	6.5	11	29.7	3	21.4	0	0.0	1	2.4	3	9.4	3	21.4	0	0.0
	17-24 Moderate	4	22.2	4	12.9	9	24.3	7	50.0	2	16.7	3	7.3	6	18.8	4	28.6	0	0.0
	25-30 Severe	6	33.3	15	48.4	8	21.6	2	14.3	5	41.7	12	29.3	6	18.8	1	7.1	0	0.0
	>30 very severe	6	33.3	10	32.3	9	24.3	2	14.3	5	41.7	25	61.0	17	53.1	6	42.9	1	100
χ^2 , P		18.138 , 0.034*								16.080 , 0.188									
Total perceived stress score	0-13 low stress	1	5.6	0	0.0	0	0.0	1	7.1	0	0.0	1	2.4	1	3.1	0	0.0	0	0.0
	14-26 moderate stress	14	77.8	23	74.2	25	67.6	12	85.7	8	66.7	21	51.2	15	46.9	6	42.9	1	100
	27-40 high perceived stress	3	16.7	8	25.8	12	32.4	1	7.1	4	33.3	19	46.3	16	50.0	8	57.1	0	0.0
χ^2 , P		8.050 , 0.234								3.438 , 0.804									
Total general health questionnaire score	0-10 Healthy people	1	5.6	3	9.7	4	10.8	3	21.4	1	8.3	2	4.9	3	9.4	3	21.4	0	0.0
	11-20 Evidence of psychological distress	7	38.9	20	64.5	20	54.1	5	35.7	7	58.3	25	61.0	18	56.3	7	50.0	1	100
	21-36 severe distress	10	55.6	8	25.8	13	35.1	6	42.9	4	33.3	14	34.1	11	34.4	4	28.6	0	0.0
χ^2 , P		7.082 , 0.313								4.264 , 0.833									

* Significant at level P< 0.05

Novelty Journals

ISSN 2394-7330

International Journal of Novel Research in Healthcare and Nursing
Vol. 4, Issue 3, pp: (50-63), Month: September - December 2017, Available at: www.noveltyjournals.com

Table (6): Effect of occupation on total anxiety rating score, perceived stress score and general health questionnaire score among studied groups

Scores		Normal				Obese			
		Work (n=11)		Not work (n=89)		Work (n=6)		Not work (n=94)	
		N	%	N	%	N	%	N	%
Total anxiety rating score	<17 Mild	2	18.2	16	18.0	1	16.7	6	6.4
	17-24 Moderate	6	54.5	18	20.2	4	66.7	11	11.7
	25-30 Severe	2	18.2	29	32.6	0	0.0	24	25.5
	>30 very severe	1	9.1	26	29.2	1	16.7	53	56.4
χ^2, P		6.928 , 0.074				15.391 , 0.002*			
Total perceived stress score	0-13 low stress	0	0.0	2	2.2	0	0.0	2	2.1
	14-26 moderate stress	9	81.8	65	73.0	4	66.7	47	50.0
	27-40 high perceived stress	2	18.2	22	24.7	2	33.3	45	47.9
χ^2, P		0.524 , 0.770				0.698 , 0.709			
Total general health questionnaire score	0-10 Healthy people	1	9.1	10	11.2	3	50.0	6	6.4
	11-20 Evidence of psychological distress	5	45.5	47	52.8	3	50.0	55	58.5
	21-36 severe distress	5	45.5	32	36.0	0	0.0	33	35.1
χ^2, P		0.382 , 0.826				14.099 , 0.001*			

* Significant at level P< 0.05

Table (7): Effect of sleep on total anxiety rating score, perceived stress score and general health questionnaire score among studied groups

Scores		Normal				Obese			
		Yes (n=33)		No (n=67)		Yes (n=24)		No (n=76)	
		N	%	N	%	N	%	N	%
Total anxiety rating score	<17 Mild	12	36.4	6	9.0	3	12.5	4	5.3
	17-24 Moderate	8	24.2	16	23.9	6	25.0	9	11.8

	25-30 Severe	9	27.3	22	32.8	6	25.0	18	23.7
	>30 very severe	4	12.1	23	34.3	9	37.5	45	59.2
χ^2 , P		**13.488 , 0.004***				**5.075 , 0.166**			
Total perceived stress score	0-13 low stress	1	3.0	1	1.5	0	0.0	2	2.6
	14-26 moderate stress	27	81.8	47	70.1	18	75.0	33	43.4
	27-40 high perceived stress	5	15.2	19	28.4	6	25.0	41	53.9
χ^2 , P		**2.275 , 0.321**				**7.450 , 0.024***			
Total general health questionnaire score	0-10 Healthy people	6	18.2	5	7.5	4	16.7	5	6.6
	11-20 Evidence of psychological distress	21	63.6	31	46.3	14	58.3	44	57.9
	21-36 severe distress	6	18.2	31	46.3	6	25.0	27	35.5
χ^2 , P		**8.306 , 0.016***				**2.675 , 0.262**			

* Significant at level P< 0.05

4. RESULTS

Table 1 presents the distribution of the studied groups according to their socio-demographic data. The results revealed that the highest percentage of normal pregnancy women (70%) had age ranging from 20-30years with a mean age of 25.43±5.20. and for obese women (63%) also ranging from 20-30 years with a mean age of 28.34±5.72 and there was a statistically significant difference between the normal and obese pregnant women in their age at p-value =0.018. Concerning the women's income more than half of normal pregnant (62%) and obese pregnant women (66%) their income were enough for them. As regards their residence, about half of normal pregnant women (51%) live in urban area with their family but most of obese pregnant women (75%) live in urban area with their family and there was a statistically significant difference at p-value =0.000. In relation to their educational level about 37% of normal pregnant women had diploma degree and about 41% of obese pregnant women read and write. Regarding their occupation most of normal pregnant women (89%) and most of obese pregnant women (94%) were not working and had no job.

Table 2 presents the distribution of the studied groups according to their BMI**,** The results revealed that the range of BMI for normal pregnant women was 18.5-24.9 with a mean of 23-47±4.33 and the range of BMI for obese pregnant women 25-61 with a mean of 37.14±6.36, and there was a statistically significant difference at p-value =0.00.

Table 3 illustrate the comparison between normal and obese women in relation to total anxiety rating score, perceived stress score and general health questionnaire score. The results revealed that there was a statistically significant difference between normal pregnant women and obese pregnant women at p-value =0.001 in their experience of anxiety during their pregnancy.

Concerning their perceived stress in their pregnancy, there was a statistically significant difference between normal pregnant women and obese pregnant women at p-value =0.003. There was no statistically significant difference between normal pregnant women and obese pregnant women in their perception of the psychological distress during pregnancy at p-value =0.685.

Table 4 shows the effect of income on total anxiety rating score, perceived stress score and general health questionnaire score among studied groups. The results revealed that there was a statistically significant relationship between the effect of income on normal pregnant women and their experience of anxiety at p-value =0.006 and the effect of income on obese pregnant women and their experience of anxiety at p-value =0.044. Concerning the perceived stress for normal pregnant women, there was no statistically significant relationship between the effect of income and their perception of stress at p-value =0.342 and also for obese pregnant women at p-value =0.566. Regarding the perception of the psychological distress during pregnancy for normal pregnant women there was no statistically significant relationship between the effects of income and their perception of the psychological distress during pregnancy at p-value=0.230 and also for obese pregnant women at p-value=0.203.

Table 5 revealed that effect of education level on total anxiety rating score, perceived stress score and general health questionnaire score among studied groups. The results showed that there was a statistically significant relationship for normal pregnant women between their level of education and their experience of anxiety p-value=0.034, while there was no statistically significant relationship for obese pregnant women between their level of education and their experience of anxiety p-value=0.188. Concerning their perception of stress there was no statistically significant relationship for normal pregnant women between their level of education and their perception of stress p-value=0.234, also for obese pregnant women at p-value =0.833. Regarding their perception of the psychological distress during pregnancy there was no statistically significant relationship for normal pregnant women between their level of education and their perception of the psychological distress during pregnancy at p-value=0.313 and also for obese pregnant women at p-value =0.833.

Table 6 illustrates the effect of occupation on total anxiety rating score, perceived stress score and general health questionnaire score among studied groups. The results showed that there was no statistically significant differences for normal pregnant women between their occupation and their experience of anxiety at p-value=0.074 while there was a statistically significant differences for obese pregnant women between their occupation and their experience of anxiety at p-value=0.002. As regards their perception of stress there was no statistically significant relationship for normal pregnant women between their occupation and their perception of stress at p-value= 0.770 and also for obese pregnant women at p-value=0.709. Concerning their perception of the psychological distress during pregnancy there was a statistically significant relationship for obese pregnant women between their occupation and their perception of the psychological distress during pregnancy at p-value=0.001, while there was no statistically significant relationship for normal pregnant women between their occupation and their perception of the psychological distress during pregnancy at p-value=0.826.

Table 7 shows effect of sleep on total anxiety rating score, perceived stress score and general health questionnaire score among studied groups. The results revealed that there was a statistically significant relationship for normal pregnant women between their sleep and anxiety at p-value =0.004, but there was no statistically significant relationship for obese pregnant women between their sleep and anxiety at p-value =0.166. Concerning their perception of stress, there was a statistically significant relationship for obese pregnant women between their sleep and their perception of stress at p-value =0.024, while there was no statistically significant relationship for normal pregnant women between their sleep and their perception of stress at p-value=0.321. Regarding their perception of the psychological distress during pregnancy, there was a statistically significant relationship for normal pregnant women between their sleep and their perception for the psychological distress during pregnancy at p-value=0.016, but there was no statistically significant relationship for obese pregnant women between their sleep and their perception for the psychological distress during pregnancy at p-value=0.262.

5. DISCUSSION

Obesity has been reported to have a negative effect on physical health and psychological wellbeing, and there is an association between depression, anxiety and obesity .several studies have shown that obese women are more vulnerable than obese men to the development of psychiatric and psychological disorder. [23] Little research has been conducted on the psychological and emotional aspects of women's experiences of overweight and obesity during pregnancy yet, there is a substantial body of research for overweight and obese individuals in the general population demonstrating that people with high BMI experience more psychological and emotional distress, including increased stigmatization, depression and anxiety disorder, negative body image and lower self-esteem than healthy weight people. [24]

The aim of this study is to investigate the relationship between obesity and maternal psychological status of pregnant women.

The present study revealed that there was a significant difference between normal weight pregnant women and obese pregnant women in experience for anxiety during pregnancy as obese pregnant women had higher level of anxiety than normal weight pregnant women. This may be due to their worries about changes in their bodies and had a higher score of anxiety. This is in consistent with **Rondo et al.,(2014),**who confirmed this result. Also this is in accordance with **Bogarts et al.,(2014)** in their studies reported that levels of anxiety are comparable to normal weight pregnant women, obese pregnant women behave psychologically differently during the third trimesters of pregnancy [25,18]. Also this is in accordance with **Clæsson I M, (2010)**,who reported that, In our study the prevalence of symptoms of anxiety among obese pregnant women was around 23% during pregnancy, and also our results where the symptoms of anxiety were lower in postpartum than during pregnancy [23].

In addition this result is similar to **Baker et al., (2001)**, who stated that obese women had the highest rates of anxiety disorder, affective disorders, and in some cases prevalence rates for obese women were almost double the rates of the normal weight pregnant women group [26]. This result also is similar to **Molynesux E et al., (2014)**, who reported that obese pregnant women had higher odds of elevated anxiety during pregnancy than normal weight pregnant women [27]. This is in contrast to **Bogarts et al., (2014),** who stated that levels of anxiety were significantly lower in obese pregnant women than normal pregnant women [18].

The study results showed that there was a statistically significant difference between obese pregnant women and normal weight pregnant women in their perception of stress as about half of obese women perceived high stress level than the normal weight pregnant women. This may be due to their fear about abnormal labor or missing their babies or fear from pre-eclampsia as obesity increases it.

Regarding psychological distress there was no significant difference between obese pregnant women and normal weight pregnant women in experience of psychological distress during their pregnancy, this is related to the same normal worry and fear about their pregnancy. This is in contrast with **Roohafza et al., (2014)**, who said that the psychological distress remained significantly associated with obesity after adjusting for possible confounders [28]. Also this is in contrast with **Rondo, (2014)**, who stated that psychological distress in pregnancy can influence weight gain during pregnancy [25].

About two thirds of obese pregnant women had very severe level of anxiety than normal weight pregnant women due to decreased income which contribute to food insecurity and due to poor coping skills. This is similar to **Laraia et al., (2006)** who found that the pregnant women who experience food insecurity had significantly lower income level and less education [29].

As regards to the level of education the results showed that normal weight pregnant women with lower level of education showed higher severe level of anxiety, than obese pregnant women this is related to the absence of information, illiteracy, presence of fear, and worry about pregnancy and its complications. This is in accordance with the study of **Marie et al., (2010),** who reported that women with lower level of education and without employment showed anxiety and depression often than women with a higher level of education [23]. Also this is inconsistent with **Bogart et al., (2014)** in their studies as they reported that maternal education was associated negatively with levels of anxiety [18].

The results of the current study revealed that high severe levels of stress were among non working and working women in a similar level among normal pregnant and obese pregnant women. Moreover, mild to moderate level of stress symptoms were more prevalent among working than non working in both normal and obese pregnant. This is inconsistent with a study done by **Hassan et al., (2016)**, who stated that the seriousness level of stress symptoms was convergent among housewives (51.9%) and working women (48.1%). Furthermore, mild to moderate level of stress symptoms were more prevalent among working women (60.2%) than housewives' ones (39.8%) [30]. Also this result is agree with **Jose et al.,(2014)** in their study as they reported that there was significant difference between working and non-working antenatal mothers stress score. The mean and standard deviation (SD) of the stress scores of working antenatal mothers (mean= 21.33, SD= 9.87) was more than nonworking antenatal mothers (mean= 14.7, SD= 8.6) [31].

The normal weight pregnant women experience very severe level of anxiety and severe psychological distress so they can not able to sleep than obese pregnant women who perceived high stress level as they cannot sleep enough, this may be due to sleep apnea and fear of pre-eclampsia and cardiovascular disorder. This is similar to **Roberts et al., (2016**) who reported that in late gestation the genesis appear to be largely due to air way obstruction, sleep apnea, as indicated by snoring, so stress increases compared to normal pregnant women [32]. And also this is consistent with **Louis et al., (2012**), who reported that increased risk of pregnancy in obese women, and this obesity is considered a risk factor for precipitated or exacerbating all of causes of maternal death [33].

6. CONCLUSION

Based on the findings of this study, it can be concluded that obese pregnant women had higher level of anxiety than normal weight pregnant women, as two thirds of obese pregnant women had very severe level of anxiety. The study showed that about half of obese women perceived high stress level than the normal weight pregnant women. The results also showed that normal weight pregnant women with lower level of education showed higher severe level of anxiety, than obese pregnant women, It was found that in the current study high severe levels of stress were among non working and working women in a similar level in normal pregnant women and obese pregnant women. The normal weight pregnant women experience very severe level of anxiety and severe psychological distress so they can not able to sleep than obese pregnant women who perceived high stress level as they cannot sleep enough.

7. RECOMMENDATIONS

- The mental health of obese pregnant women should be developed thoroughly and feelings should be taken into account when developing prenatal care programs for pregnancy high risk group.
- A comprehensive assessment of personal coping strategies to facilitate a healthy psychology of pregnant obese women should be involved.
- Routine screening of stress among low income overweight and obese pregnant women may be as important as the screening of depression. Early detection and intervention of psychosocial stress in this population may have a significant positive impact on maternal emotional well-being.
- A combination of health education with psychological interventions is more effective than information alone to produce significant behavior change.
- Intensive specialized follow up during pregnancy including motivational behavior coaching, for improvement of the psychological wellbeing in obese pregnant women.
- Obese pregnant women must attending an intervention program, based on motivational and behavioral treatment and stress management program, with the primary aim of reducing weight gain during pregnancy through giving advice and support that would show fewer distress and anxiety symptoms throughout pregnancy.

ACKNOWLEDGMENT

Our appreciation and gratitude to normal weight and obese pregnant women who agreed to participate in the study and gave us the opportunity to accomplish the study.

REFERENCES

[1] Wahabi H, Fayed A,Alzeidan R and Mandil A.The independent effects of maternal obesity and gestational diabetes on the pregnancy outcomes, BMC Endocrine Disorders,2014; 14:47

[2] El-Zanaty, F and Way A . Egypt Demographic and Health Survey 2008. Cairo, Egypt: Ministry of Health, El-Zanaty and Associates, and Macro International.

[3] Ahmed S and Thennakoon J. The association between mid-pregnancy body mass index and socio economic status of women; evidence from Australia. Annal of public health and research, 2016; 3(2):1-7.

[4] Jersey S. Are we missing opportunities? Understanding health behaviors associated with overweight in pregnancy. Thesis is submitted for the degree of Doctor of Philosophy in the School of Nutrition and Exercise Science, Queensland University of Technology, 2013.

[5] Hafez A, and Sabra A. Prevalence of Maternal Obesity and Pregnancy outcome among normal and high risk pregnant women in Al-Khoper city, Eastern region, Saudi Arabia. The Egyptian Journal of community Medicine, 2012; 30 (1):11-9.

[6] Entringer S, Epel E, Lin J,Buss C, Shahbaba B, Blackburn E, Simhan H and Pathik D. Wadhwa .Maternal psychosocial stress during pregnancy is associated with newborn leukocyte telomere length. Am J Obstet Gynecol,2013; 208(2):1-12

[7] Forno E, Young O, Kumar R, Simhan H, and Celedon J. Maternal obesity in pregnancy, Gestational Weight Gain, and Risk of Childhood Asthma. Journal of the American Academy of pediatrics, 2014; 134 (2):535-548.

[8] Hazeldine E,Rees G, Handy R and Stannous E. Managing obesity in pregnancy; are psychological dimentions of behavioral change important to midwives and women? Journal of research in obesity,2016; (2016):1-10.

[9] Rogan S, Payne J, and Broody S. Relationship between Depressive Mood and Maternal Obesity: Implications for post partum Depression, 2013;99-120. Available at: http/ link-springer.com/chapter/10-1007/978-4471-2831-16

[10] Heslehurst N, Lang R, Rankin J,Wilkinson J, Summerbella C . Obesity in pregnancy: a study of the impact of maternal obesity on NHS maternity services, An International Journal of Obstetrics and Gynaecology, 2007;114:334–342.

[11] Schützer D, Surita F, Nascimento S, Vieira C and Turato E. Psychological issues facing obese pregnant women: a systematic review, Journal of Maternal-Fetal and Neonatal Medicine,March 2016; 1–8.

[12] Chang M. Stress, Sleep, Depression and Dietary Intakes Among Low-Income Overweight and Obese Pregnant Women, Maternal Child Health J,2015; 19:1047–1059.

[13] Christian L. Stress and Immune Function During Pregnancy: An Emerging Focus in Mind-Body Medicine, Association for Psychological Science, 2015; 24 (1): 3–9.

[14] Guxens M, Tiemeier H,Jansen P,Raat H,Hofman A,Sunyer J and Jaddoe V. Parental Psychological Distress During Pregnancy and Early Growth in Preschool Children: American Journal of Epidemiology, 2013;177(6):1-10.

[15] Allison K,Wrotniak B,Pare E and Sarwer D. Psychosocial Characteristics and Gestational Weight Change among Overweight, African American Pregnant Women, Obstetrics and Gynecology International,2012;1-10.

[16] Ntim E,Varma R,Croker H,Poston L and Doyle P. Life style Interventions for Overweight and Obese Pregnant Women to Improve Pregnancy Outcome:Systmatic Review and Meta-Analysis MNCHP Network Bulletin 16,2012;1-10.

[17] American Congress of Obesity and Pregnancy.2016;1-3. Available at: https://www.acog.org./patients/FAQs/obesity-and-pregnancy.

[18] Bogaerts A, Devlieger R and Bergh V. Obesity and pregnancy, an epidemiological and intervention study from a psychosocial perspective, FVV in Ob Gyn, 2014; 6 (2): 81-95.

[19] Allender J,Rector C and Warner K. Community and Public Health Nursing:Promoting the Public Health.Wolters Kluwer Health,Lippincott Williams&Wilkins.8th edition.Philadelphia,New York,2014:667.

[20] Hamilton M. The assessment of anxiety states by rating (HAMA). Britch Journal of Medical Psychology,1959; 32: 50-55.

[21] Cohen, S, Kamarck T, and Mermelstein R, "A Global Measure of Perceived Stress," (PSS) in Journal of Health and Social Behavior, 24 (1983):385-396.

[22] Goldberg D, Hillier F. A Scaled Version of the General Health Questionnaire (GHQ). Psycho.Med, 1978; 9(1):139-145.

[23] Claesson I M, Josefsson A, Sydsjö G. Prevalence of anxiety and depressive symptoms among obese pregnant and postpartum women; BMC public health, 2010; 10 (766): 1-10.

[24] Barnier J, Hanson V. Overweight and obesity in pregnancy; A Review of Evidence. Atlantic Centre of Excellence for Women's Health, 2012; 10(760):1-10.

[25] Rondó P , Souza M, Morae F, and Nogueira F. Relationship between Nutritional and Psychological Status of Pregnant Adolescents and Non-adolescents in Brazil. Journal of Health Population Nutrition, 2004; 22 (1): 34-45.

[26] Becker E, Margraf J, Tu¨rke V , Soeder U and Neumer S. Obesity and mental illness in a representative sample of young women. International Journal of Obesity, 2001; 25(1):55–59.

[27] Molyneaux E, Posten L,Williams S, and Howard L. Obesity and Mental Disorders During Pregnancy and Postpartum: A Systematic Review and Meta-analysis. Obstet Gynecol, 2014; 123(4): 857–867.

[28] Roohafza H, Kabir A, Shokouh P, Hossein S, Andabili A, Mehrabi Y, Sarrafzadegan N , Mehrabi Y. Effect of Psychological Distress on Weight Concern and Weight Control Behaviors. Archives of Iranian Medicine, 2014; 17(9): 608–612.

[29] Laraia B, Siega-Riz A, Gundersen C and Dole N. Psychosocial Factors and Socioeconomic Indicators Are Associated with Household Food Insecurity among Pregnant Women. J. Nutrion, 2006; 136:177–182.

[30] Hassan H, Sheha E, Nasr E. Level of stress among pregnant women with heart problem. International Journal of ,2016; 4 (7) :220-230.

[31] Fernandes, Maggie Jose, Castelino B, Prabhu S, Kamath S, Pratibha K . Comparative Study to Assess the Stress among Working and Non-Working Antenatal Mothers in Selected Hospitals of Udupi District. Nitte University Journal of Health Science,2014; 4(3):38-42.

[32] Roberts J. The Role of Obesity in Preeclampsia, Pregnancy Hypertens, 2011; 1(1): 6–16.

[33] Louis J, Auckley D,Miladinovic B,Shephered A,Mencin P,Kumar D,Mercer B and Redline S. Perinatal Outcomes Associated With Obstructive Sleep Apnea in Obese Pregnant Women, obstetrics & gynecology,2012;120 (5):1-9.