

Body Mass Index and Psychological Symptoms Among Females Attending a Rural Family Health Unit, Benha, Qalyubia Governorate, Egypt

Mohamed M. Elkot¹, Nora A. Khalil¹, Afaf Z. Abdel Rahman², Marwa F. Youssef^{3*}

¹Family Medicine Department, Faculty of Medicine, Menoufia University, Egypt

²Neuropsychiatry Department, Faculty of medicine, Menoufia University, Egypt

³Resident of Family Medicine, Benha Health administration, Egypt

Abstract:

Background: Attention to mental health issues is growing globally and association between body mass index (BMI) and psychological distress is an area of interest for many researchers. The psychological distress among persons had many contributors. Women are slightly more at risk for having an unhealthy BMI than men, they are much more vulnerable to psychological disorders.

Objectives: The study aimed to assess BMI of the studied participants and to study relationship between BMI, stress level and psychological symptoms among the studied group. **Methods:**

A cross-sectional study was conducted on 312 females' clients in childbearing period attending (Batta) family health unit (FHU) in (Benha) district, Qalyubia governorate. Data were collected from studied group using questionnaires to assess socio demographic criteria, stress level, psychosocial stressors, and psychological symptoms. Weight and height were estimated to calculate BMI. **Results:** About thirty percent of the studied females were obese, 45%, 3% were overweight and under weight and normal BMI represented by (22%). Mean age of the studied groups was 29.89 ± 9.08 , BMI mean was significantly higher among participants aged from (37-49) years (32.15 ± 7.18), housewives (30.16 ± 6.1), illiterate/primary (31.42 ± 7.11), Widows ($30.98\% \pm 7.13$). BMI was significantly higher among participant with severe stress level (31.34 ± 7.02) $P < 0.001$. Also, psychological symptoms were significantly more prevalent among obese participant (31.48 ± 7.96) $P < 0.001$. **Conclusion:** psychological symptom recorded the highest frequent percent in obese group. We suggest that future obesity research focusing on psychological distress.

Keywords: BMI, Family Health Unit, Obesity, Psychological disorders.

Introduction:

Body mass index is used to classify individuals' weight status according to weight and height. It is calculated by dividing the weight in kilograms by the squared height of the individual, in meters (kg/m^2). Overweight is defined as having a BMI between 25 and 29.9 and obesity is defined as having a BMI of 30 or more, obesity is one of the fastest-growing and most challenging public health problems and at 2014 was estimated to affect

1.9 billion adults globally.¹ Among Egyptian population around 3 out of 4 women and 6 out of 10 men aged from 15-59 years are overweight or obese.² Psychological distress is a state of emotional suffering that is generally characterized by symptoms of depression and anxiety.³ It has been recognized that health issues related to mental, behavioral, disorder is growing throughout the world. The psychological distress among persons had many contributors as socio-cultural factors,

*Corresponding author: E-mail: marwafathy4563@gmail.com

such as female gender, lower education and lower socioeconomic status, lack of social support, and stressful life event.⁴ The relationship between obesity and common mental disorders such as depression, anxiety, and low self-esteem is well-known.⁵

Many studies demonstrated a positive correlation between BMI and common mental illnesses such as depression, anxiety, and stress.^{6,7} One of them observed that in young women the probability of having psychological disorder increased as BMI increased.⁶ The other study demonstrated that psychological distress as depressive and anxiety symptoms is associated with higher BMI in adolescence.⁷ Bariatric surgery and body weight reduction are significantly reduced anxiety and depressive symptom.⁸

Women are slightly more at risk for having an unhealthy BMI than men, they are much more vulnerable to psychological distress. In people who have difficulty recovering from sudden or emotionally draining events (e.g., loss of a close friend or family member, relationship difficulties, losing a job or facing a serious medical problems, depression can be the cause and result from stress, which, in turn, may cause you to change your eating and activity habits.⁹ The study aimed to assess BMI of the studied

participants and to study relationship between BMI, stress level and psychological symptoms among the studied group.

Methods:

This is a cross-sectional study was conducted in Batta family health unit, El Qalyubia governorate, Egypt in the time frame from January 2016 to November 2018. The study included 312 women in childbearing period (aged from 16 to 49 years) attended the selected family health unite. Sample size was calculated using online Raosoft sample size calculator based on prevalence of obesity in Egyptian women (48%)¹⁰ and population size of females in child bearing period in the selected district for study.

Females in the child bearing period aged from (16-49 years) attending selected family health for any medical services during the period of data collection were recruited in the study unite. Female participants were randomly selected as each third patient was interviewed to participate in the study. Pregnant, lactating females or who received antipsychotic drugs were excluded from the study. All participants were interviewed and data was collected using questionnaires to assess socio demographic criteria, stress level, psychosocial stressors, and psychological symptoms. The socioeconomic status was

assessed according to El Gilany et al.¹¹ scoring scale. It included questions about age, education, occupation, income, number of individual per room, housing, material possessions, etc...). It had 7 domains with a total score of 84.

Anthropometric measurements including weight in Kg and height in cm were taken. All Participants removed their shoes and heavy outer clothing before measuring weight and height. BMI was calculated using BMI equation (kg/m^2) and were classified into underweight, normal, over weight and obese.¹²

Stress level was assessed by using stress level questionnaire in its validated translated Arabic version. It was designed to assess degree of stress that a person has at the time of interview for the previous month, 35 questions were ranged from 5-10minutes. Score of the stress level questionnaire ranged from: Mild (35-50), moderate (51-79), severe (80-105). Its validity was 100%; and reliability was 0.76.¹³

Psychological symptom assessment has done using Symptom Check List-90-R (SCL-90R) questionnaire, it is validated tool.¹⁴It is an instrument intended to measure psychological symptoms: All participated females rated the 90 symptoms of distress. It

consists of 90 items and takes 12–15 minutes along 9 primary symptom dimensions, which are somatization, obsessive-compulsive, interpersonal sensitivity, depression, anxiety, hostility, phobic anxiety, paranoid ideation, psychoticism, with Scoring Items scored (0- 4). Not at all to "Extremely" Raw scores for each of the primary symptoms are converted into standardized score.

Ethical Consideration:

The study was approved by the Ethical Committee of the Faculty of Medicine, Menoufia University. Administrative permissions were obtained from authority of faculty of Medicine. Verbal consent was obtained from all participants with their assurance regarding the confidentiality of the obtained information.

Statistical Analysis:

Results analyzed and tabulated using Analysis of data was done by DELL computer using Statistical Package for the Social Sciences (SPSS), Version 22 (SPSS Inc., Chicago, IL, USA). Two types of statistics were done: Descriptive: e.g. Percentage (%), mean, standard deviation. Analytical: includes: chi-square test, the One-way Analysis of Variance (ANOVA). A value of $P < 0.05$ was indicated statistically significant.⁽¹⁵⁾

Results:

Among 312 studied females mean age of was 29.89 ± 9.08 . About 48% the studied groups were housewives and (41.35%) had secondary education, more than half (50.32%) of the studied group were married. As regard socioeconomic level about 48% of studied group had middle socio economic level (Table-1).

The results of the current showed that: about (45%) of the studied females were overweight, and about 30% were obese, about (3%) were under weight and normal BMI represented by (22%) (Figure -1). There was statistical significant relationship between socio demographic criteria of studied group regarding their body mass index (BMI); as BMI mean \pm SD was significantly higher among participants aged from (37 - 49) years (32.15 ± 7.18), housewives (30.16 ± 6.1), those with lower level of education (31.42 ± 7.11), Widows (30.98 ± 7.13) (Table-2).

It is evident that BMI was significantly higher among participant with severe stress level (31.34 ± 7.02). Also, psychological symptoms were significantly more prevalent among obese participant (31.48 ± 7.96) (Table-3). The results show that 31.37% of the studied group suffered from psychological symptom: somatization, anxiety, depression which

represented by 17%, 13.46, 10.26% respectively, and about 70% haven't psychological symptoms. (Figure 2)

According to data displayed in table (3): anxiety, depression, somatization, obsessive compulsive symptoms were significant more among obese participants (30.11%, 18.28%, 37.63%, 7.53 % respectively) While hostility was the most frequent (30.11%) in underweight participant (Table 4).

Discussion:

In our study which included 312 females in child bearing period, about (45%) of the studied females were overweight, and about 30% were obese, about (3%) were under weight and normal BMI represented by (22%) and mean of BMI was 28.56 ± 6.34 . These results are not surprising as Egypt was previously ranked among the countries in the world with the most obese people Murray CTL.¹⁶

This result comes parallel to a result of study carried by Amugsi et al.¹⁷ which set out to investigate the prevalence overweight and obesity among urban women between 1991 and 2014 in 24 African countries-including Egypt-, which founded that The prevalence of overweight and obesity among women increased in all the 24 countries but Egypt has

the highest levels of overweight and obesity at (44%) and (39%) respectively.

Results showed that BMI means was significantly higher among participants aged from (37-49) years (32.15 ± 7.18), housewives (30.16 ± 6.1). This result is consistent with study by Dinsa et al.¹⁸ that founded female gender and illiteracy appear to be independently associated with overweight and obesity. While another study by Elfaki.¹⁹ Unlike our study, there was no connection between education and obesity. Concerning relation with age a study by Abdall et al.²⁰ reported that among adult's participant, there is association between overweight and obesity ($P = 0.001$) and increasing in age.

The current study revealed that BMI means was significantly higher among those with lower level of education (31.42 ± 7.11), housewives (30.16 ± 6.1) and Widows ($30.98\% \pm 7.13$) this is in agreement with study by Haribondhu et al.²¹ who revealed that BMI was significant higher housewives (30.16 ± 6.1) with their result which reveal that housewives were at 1.85 times higher odds of being overweight or obese than women engaged in manual work, however they found that widowed rural women were less likely to be overweight or obese compared to the married women. Findings of the present study

about obesity with age disagree with the result by Eltagi et al.²² The study revealed there was no statistical association between overweight /or obesity and age group ($P > 0.05$).

Findings of the current study revealed that BMI was significantly higher among participants with severe stress level (31.34 ± 7.02). Also, psychological symptoms were significant more prevalent among obese participant (31.48 ± 7.96) this finding agree with the result of a study conducted by Gu et al.²³ which revealed that BMI increased with increasing psychological distress (no distress, BMI = 27.2 kg/m^2 ; mild distress, 27.6 kg/m^2 ; and moderate/high distress, 33.1 kg/m^2 ; ($P=0.016$). Another follow-up study by Kouvonen²⁴ found that men and women who reported long-term conflicts, or lack of support from their closest relationships were more likely to have had an increase in waist circumference and body mass index over the study period.

The results of present study showed that 31.37% of the studied group suffered psychological symptom: somatization, anxiety, depression which represented by 17%, 13.46, 10.26% respectively, about 70% didn't have any psychological symptoms. This finding comes in parallel to the most recent Adult Psychiatric Morbidity Survey in

England which was carried out in 2014 and the data was released in 2016 Parliament UK²⁵ which revealed that One in six people aged >16 years reported having symptoms of a common mental disorder (CMD) include different types of depression and anxiety, panic disorder, phobias, and obsessive compulsive disorder. CMDs are more common among women than men in every age category.

In contrast, the US survey from the WMH group (the National Comorbidity Survey-Replication: NCS-R⁽²⁶⁾ found significant associations between obesity and a number of mental disorders. Also, anxiety, depression, somatization, obsessive compulsive symptoms were significant more among obese participants (30.11%, 18.28%, 37.63%, 0.03% respectively). This finding agree with a study by Kamel et al.²⁷ which revealed that the prevalence of obesity and overweight in psychiatric patients was 66.93% (22.31% were obese, and 44.62% were overweight).

These findings are considered higher than the prevalence of obesity in general populations in most countries according to the WHO, 2016 report, which revealed that 39% of adults aged 18 years and over were overweight, and 13% were obese.¹ The current

study revealed that hostility was the most frequent (30.11%) in Underweight participant, this agree a study by Hamer et al.²⁸ that observed a U-shaped association between BMI and psychological distress; compared with normal weight, the underweight and stage II/III obese participants had higher odds psychological distress.

Also, Degirmenci et al.²⁹ study was conducted on middle age women who seek for obesity treatment. It was determined that the mild depression and moderate anxiety symptoms detected in the study group were higher than those found in the control group.

Study Limitations:

The current study was a cross section the limits the causal association between obesity and its psychological symptoms. Data collection depends on patient recall that may lead to recall bias

Conclusion:

Psychological symptom recorded the highest frequent percent in obese women our results suggest that psychiatric support to improving quality of life and self-esteem in individual with obesity.

Conflict of interest: There was no conflict of interest and there were no funding agencies.

Acknowledgment: The author gratefully acknowledges the support from head manger of the selected FMU.

References:

1. World Health Organization (WHO). Overweight and obesity. Available at: <http://www.who.int/mediacentre/factsheet/fs311/en/> last accessed February 2018
2. El-Zanaty F. Egypt Health Issue Survey. Ministry of Health and Population, Cairo, Egypt, ICF International. 2015
3. Drapeau A, Marchand A, Beaulieu-Prevost D. In: Epidemiology of psychological distress, mental illnesses – understanding, prediction and control. LAbate Luciano., editor. Available from: <http://www.intechopen.com/books/mental-illnesses-understanding-prediction-and-control/epidemiology-of-psychological-distress> last accessed June 2016
4. Gust D, Gvetadze R, Furtado M. Factors associated with psychological distress among young women in Kisumu, Kenya. *Int J Womens Health*. 2017; 9: 255–264.
5. De Wit L, Luppino F, van Straten A et al. Depression and obesity: a meta-analysis of community-based studies. *Psychiatry Res*. 2010, 178(2):230-5.
6. McCrea R, Berger Y, King M. Body mass index and common mental disorders: exploring the shape of the association and its moderation by age, gender and education *Int J Obes* 2012; 36(3):414-2
7. Kubzansky L, Gilthorpe M, Goodman E. A prospective study of psychological distress and weight status in adolescents/young adults. *Ann Behav Med*. 2012; 43(2):219-28.
8. Thonney B, Pataky Z, Badel S et al. The relationship between weight loss and psychosocial functioning among bariatric surgery patients. *Am J Surg*. 2010; 199(2):183-8.
9. American Psychological Association Mind/Body Health: Obesity <https://www.apa.org/helpcenter/obesity> last accessed JUNE 2018
10. Mowafi M, Khadr Z, Kawachi I et al. Socioeconomic status and obesity in Cairo, Egypt: A heavy burden for all. *Journal of Epidemiology and Global Health* 2014, 4(1):13-21
11. El Gilany A, El Wehady A, El Wasify M. Updating and validation of the socioeconomic status scale for health research in Egypt. *EMHJ*; 2012, 18: 9-15.
12. WHO. The BMI classification. Geneva, Switzerland: WHO; 2000. Cambridge, UK: The Press Syndicate of the University of Cambridge; 2004.

13. Zein El Abdein A , Ismaeel M ., Abd El-Hameed Z et al. An epidemiological Study of Eating Disorders and Stress Level in a Sample of Female College Students, thesis submitted for partial fulfillment for degree of Master degree of psychiatry ,faculty of medicine Manoufia University 2008
14. Derogatis L, Savitz, K. The SCL-90-R and the Brief Symptom Inventory (BSI) in Primary Care. In: Maruish, M.E., Ed., Handbook of Psychological Assessment in Primary Care Settings, Vol. 236 Lawrence Erlbaum Associates, Mahwah, 2000: 297-334.
15. Pallant, J. SPSS survival manual. McGraw-Hill Education (UK), 2013.
16. Murray C, Ng M. The Institute for Health Metrics and Evaluation (IHME) Nearly one-third of the world's population is obese or overweight, new data show (2014). <http://www.healthdata.org/news-release/nearly-one-third-world%E2%80%99s-population-obese-or-overweight-new-data-show> (accessed 3 Apr 2017).
17. Amugsi D, Dimbuene Z, Mberu B et al. Prevalence and time trends in overweight and obesity among urban women: an analysis of demographic and health surveys data from 24 African countries, 1991–2014." *BMJ* 2017, 3: 173-4.
18. Dinsa G, Goryakin Y, Fumagalli E. Obesity and socioeconomic status in developing countries: a systematic review. *Obes Rev* 2012, 13: 1067–1079.
19. Elfaki A. Prevalence of hypertension and obesity among Sudanese patients with type 2 diabetes mellitus. *Sky Journal of Medicine and Medical Sciences* 2015; 4(2):020 –022.
20. Abdall E, Abdulraheem N. Sociodemographic determinants of overweight and obesity among adults in Jabra Area in Khartoum State Sudan: a community-based study. *International Journal of Science and Research (IJSR)*, 2016; 5(11): 83-8.
21. Haribondhu S, Nazmus S, Mehedi H et al. Determinants of overweight or obesity among ever-married adult women in Bangladesh. *BMC Obes*. 2016; 3: 13.
22. Eltagi A, Hassan A, Abdalla I. Prevalence and Possible Risk Factors Associated with Overweight and Obesity Among Adults in Mayo Areain, Khartoum State, Sudan. *World Journal of Pharmacy and Pharmaceutical Sciences SJIF* 2013, 6(5): 174-185

23. Gu J, Bang K, Charles M et al. Associations between Psychological Distress and Body Mass Index among Law Enforcement Officers: The National Health Interview Survey. 2013, 4(1):30.
24. Kouvonen A, Stafford M, De Vogli R. Negative aspects of close relationships as a predictor of increased body mass index and waist circumference: The Whitehall II study. *Am J Public Health*. 2011;101(8):1474–80.
25. Parliament UK. [Mental health statistics for England: Prevalence. Association between obesity and psychiatric disorders in the US adult population.](https://researchbriefings.files.parliament.uk/documents/SN06988/SN06988.pdf) <https://researchbriefings.files.parliament.uk/documents/SN06988/SN06988.pdf> last accesses April 2018
26. Simon G, Von Korff M, Saunders K et al. *Arch Gen Psychiatry*. published in final edited form as: [Arch Gen Psychiatry](https://doi.org/10.1093/archgen/63.7.824). 2006 Jul; 63(7): 824–830.
27. Kamel A, Abuhegazy H, Ismail A et al. The prevalence of obesity in a sample of Egyptian psychiatric patients *Egyptian Journal of Psychiatry* 2016, 37:157–165
28. . Hamer M, Stamatakis E. U-Shaped Association Between Body Mass Index and Psychological Distress in a Population, Sample of 114,218 British Adult [https://www.mayoclinicproceedings.org/article/S0025-6196\(17\)30720-6/fulltext](https://www.mayoclinicproceedings.org/article/S0025-6196(17)30720-6/fulltext) last accessed December 2018 <https://doi.org/10.1016/j.mayocp.2017.09.014>.
29. Değirmenci T, Nalan Kalkan-O, Gülfizar S et al. Psychological Symptoms in Obesity and Related Factors. *NORO PSIKIYATR ARS*. 2015;52(1): 42–46.

Table (1): Socio-demographic characteristics of the studied group

Socio-demographic criteria	Frequency (N=312)	Percent (%)
Age (year):		
▪ 16-25	121	38.78
▪ 26-36	101	32.37
▪ 37-49	90	28.85
Mean ± SD = 29.89 ± 9.08		
Occupation:		
▪ Housewives	151	48.4
▪ Skilled	89	28.53
▪ Employee	72	23.08
Education level:		
▪ Illiterate/Primary	98	31.41
▪ Secondary	129	41.35
▪ High	85	27.24
Marital status:		
▪ Single	99	31.73
▪ Married	157	50.3
▪ Divorced	29	9.29
▪ Widow	27	8.65
Socioeconomic level:		
▪ Low	87	27.88
▪ Middle	152	48.72
▪ High	73	23.39

SD: standard deviation

Table (2): Relationship between BMI and socio demographic criteria of the studied group

Socio demographic criteria		BMI (kg/m ²)				F test	P
		No.	Mean	±SD	Range		
Age (years)	▪ 16-25	121	25.96	4.98	16.9-40	28.80	<0.001 (HS)
	▪ 26-36	101	28.37	5.52	16.5-43		
	▪ 37-49	90	32.15	7.18	16-44		
Occupation	▪ Household	151	30.16	6.1	16-44	11.32	<0.001 (HS)
	▪ Skilled	89	27.62	6.15	16.5-44		
	▪ Employee	72	26.21	6.28	18-44		
Education level	▪ Illiterate/primary	98	31.42	7.11	17.9-44	16.39	<0.001 (HS)
	▪ Secondary	129	27.35	5.39	16.5-43		
	▪ High	85	26.97	5.73	16-44		
Marital status	▪ Married	157	30.21	6.0	16-44	14.46	<0.001 (HS)
	▪ Never	99	25.48	5.38	16.5-40		
	▪ Divorced	29	27.51	6.64	18-43.2		
	▪ Widow	27	30.98	7.13	17.9-44		
Socioeconomic level	▪ Low	87	28.48	7.31	16.9-43.8	1.25	0.29
	▪ Middle	152	29.0	6.6	16-44		
	▪ High	73	27.57	4.26	18.3-40		

SD: standard deviation **P:** p value **S:** significant difference (p<0.05). **HS:** significant difference (p<0.001). **F test:** ANOVA test

Table (3): Relation between stress level, psychological symptoms and BMI

Variables		BMI (kg/m ²)				F test	P
		No.	Mean	±SD	Range		
Stress level	▪ None/Mild	153	26.92	5.57	16.9-43	12.22	<0.001 ^{HS}
	▪ Moderate	100	29.31	6.43	16.5-44		
	▪ Severe	59	31.34	7.02	16-44		
Psychological symptom (SCL 90R)	▪ Yes	100	31.48	7.96	16-44	t= 5.95	<0.001 ^{HS}
	▪ No	212	27.13	4.87	16.9-40		

SCL_90R: Symptom Check List-90-R **BMI:** body mass index, **SD:** standard deviation, **t:** independent t test, **P:** p value, **S:** significant difference (p<0.05), **HS:** significant difference (p<0.001) **F test :** ANOVA test

Table (4): Relation between psychological symptom and BMI

Psychological symptom (SCL- 90R)	BMI (kg/m ²)								P*
	Underweight (no.=10)		Normal weight (no.=69)		Overweight (no.=140)		Obese (no.=93)		
	No.	%	No.	%	No.	%	No.	%	
▪ Having no symptoms	6	60.0	52	75.36	110	78.57	44	47.31	<0.001 ^(HS)
▪ Anxiety	2	20.0	4	5.8	9	6.43	28	30.11	<0.001 ^(HS)
▪ Depression	1	10.0	6	8.7	8	5.71	17	18.28	0.02 ^(S)
▪ Somatization	1	10.0	11	15.94	12	8.57	35	37.63	<0.001 ^(HS)
▪ Phobic	0	0.0	2	2.9	7	5.0	1	1.08	0.44
▪ Paranoid	0	0.0	1	1.45	1	0.71	1	1.08	0.82
▪ Hostility	3	30.0	2	2.9	3	2.14	6	6.45	0.005 ^(S)
▪ Obsessive-compulsive	0	0.0	2	2.9	1	0.71	7	7.53	0.03 ^(S)
▪ Interpersonal sensitivity	1	10.0	2	2.9	7	5.0	10	10.75	0.13

* Obtained using chi-square test

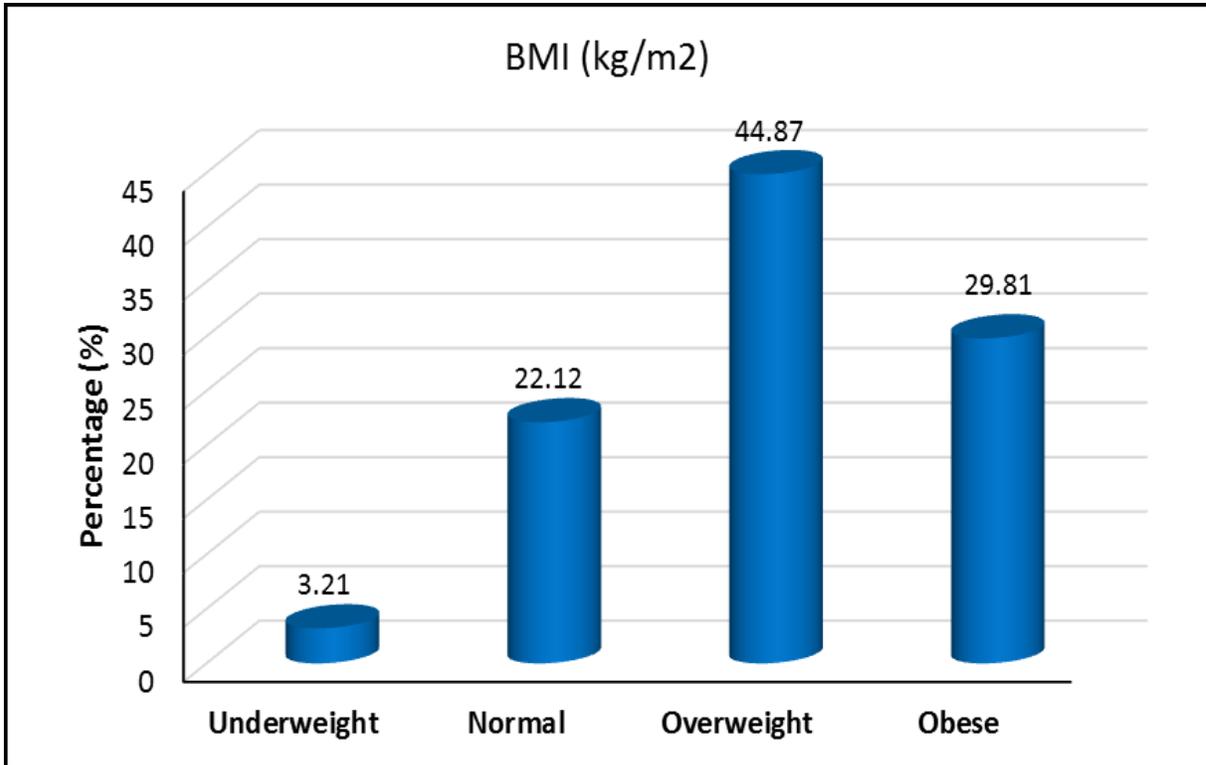


Figure (1): Prevalence of obesity in the studied group

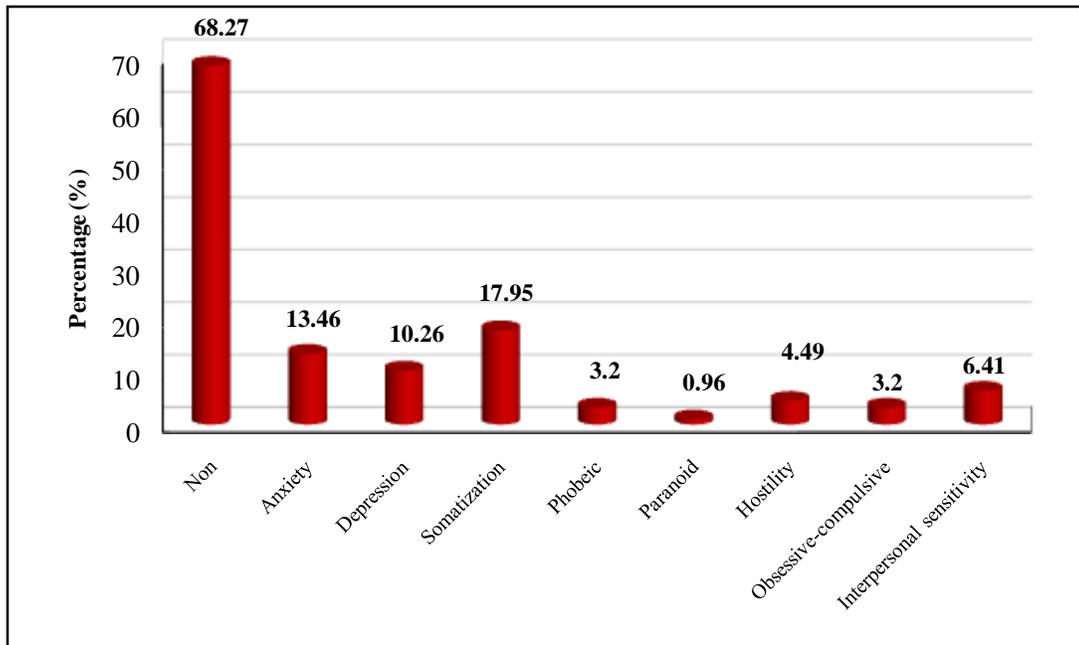


Figure (2): Distribution of psychological symptoms among studied participant

الملخص العربي

دراسة مؤشر كتلة الجسم والاعراض النفسية فى عينه من الاناث المترددين على وحدة صحية ريفيه-بناها- محافظه القليوبيه-

مصر

محمد القط - نورا خليل- عفاف عبد الرحمن-مروه يوسف

الخلفيه:اصبحت الصحة النفسية من المجالات المهمه على الصعيد العالمى وكذلك دراسه الارتباط بين مؤشر كتلة الجسم والاضطرابات النفسيه المصاحبه له محط اهتمام الباحثي.وكذلك العوامل المرتبطه به.والسيدات لديها عوامل خطوره اعلى من الرجال لمؤشر الكتله العالى بالاضافه للاضطرابات والضغط النفسيه. **الهدف:**وقد هدفت هذه الدراسه الى تقييم مؤشر الكتله ودراسه مدى الارتباطوالاعراض نفسيه ان وجدت

طرق البحث:وقد اجرىت هذه الدراسه المقطعيه على 312سيده فى سن الانجاب متردده على وحده صحه ريفيه وتم جمع البيانات الاجتماعيه الديموغرافيه وكذلك الاسيانات الخاصه بتقييم مستوى الضغوط ا نفسيه واستبيان قائمه العراض النفسه المعدله بالاضافه الى حساب مؤشر كتله الجسم عن طرق قياس الوزن والطول.

النتائج:اوضحت الدراسه حوالى 30%من الاناث يعانون من السمنه وحوالى 45%لديهم زياده بالوزن فقط22% لديهم مؤشر كتله طبيعى و3%نقص بالوزن.ووجد ان تتراوح اعمارهم (37_49) يعانون من زياده بمؤشر الكتله.وجد علاقه بين زياده مؤشر الكتله وتدنى مستوى التعليم وكذلك ربات البيوت والارامل.ومن يعانون من ضغط نفسي مرتفع واعراض نفسيه مصاحبه للسمنه **الاستنتاجات:**وخلصت الدراسه الى ان الاعراض النفسيه اكثر شيوعا بين من يعانون من السمنه.