Prevalence of Eating Disorders among Overweight and Obese patients attending Obesity outpatient Clinic in Kasr Al Ainy Hospital

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Abstract:

Background: Overweight and obesity are now so common that are replacing the more traditional public health concerns. Eating disorders are serious illnesses that affect both the physical and socio-emotional health of people; they have significant impact on families and cause significant mortality and morbidity. **Objectives:** The study aimed to examine the magnitude of eating disorders among obese and overweight patients. It aimed also, to assess the impact of eating disorders on adherence for therapeutic lifestyle modifications. **Methods:** A cross sectional study was conducted on 100 patients in the obesity outpatient clinic located in the Diabetes and Endocrinology Clinic at Kasr El Ainy Hospital, Cairo University. The study included a questionnaire, eating attitudes test (EAT-26) that has been translated to Arabic. Then it was pilot tested for validation before using. Open ended questions were designed and added by researcher for assessment of nutrition knowledge related to healthy nutrition and therapeutic life style changes related to management of overweight and obesity. **Results:** Eight percent of the studied patients reported binge eating disorder; moreover, 2 % were Eating Disorder Not Otherwise Specified (EDNOS). Only one patient had bulimia nervosa. A total of 11 patients (11%) displayed an eating disorder. More than seventy percent (72.7%) of females suffered from an eating disorder. The most common co-morbidity among overweight and obese patients was dyslipidemia (58%) followed by sleep apnea and arthritis (33%) and depression (31%). **Conclusion:** Data indicated that eating disorders are significantly higher in obese group (p=0.00).

Keywords: Obesity, Overweight, Eating disorders, Binge eating disorder

Introduction: Obesity increases the likelihood of various diseases, particularly heart disease, type 2 diabetes, obstructive sleep apnea, certain types of cancer, and osteoarthritis. Among Egyptian population around 3 out of 4 women and 6 out of 10 men age 15-59 years are overweight or obese.(1) An eating disorder is an illness that causes serious disturbances to Eating disorders frequently appear during the teen years or young adulthood but may also develop during childhood or later in life.(2)

The common eating disorders include Anorexia Nervosa (AN), Bulimia Nervosa (BN), and Binge-Eating Disorder (BED), Eating Disorder Not Otherwise Specified (EDNOS) according to Diagnostic Statistical Manual (DSM-V).[3] Eating disorders, including AN, BN, BED and EDNOS along with their variants, are serious illnesses that often have a variety of medical complications. Some of complications are irreversible and life threatening, and have significant psychiatric co-morbidity. Binge eating is the eating behavior that has most often been implicated in obesity, although there is also evidence for a pattern of eating called "night-eating syndrome". Community studies show that binge eating rates are higher in obese than normal-weight adults, although still comparatively low (<5%).[4]

The relationship between obesity and eating disorders has always attracted interest. In both conditions, weight, eating and body image are central features, and in both conditions societal and cultural influences play a major role. The two disorders have been linked with one another in many different etiological models.[5] According the above mentioned study, there was a need to conduct the current study aiming at examining the magnitude of eating disorders among obese and overweight patients and to assess the impact of eating disorders on adherence for therapeutic lifestyle modifications.

Methods:

This cross sectional study was done to estimate the prevalence of eating disorder among males and females in the age group (20-49 years) suffering from overweight or obesity attending obesity and endocrine outpatient clinic in Kasr El Ainy Hospital. It was conducted during the period from September 2013 to the end of March 2014. It also assesses the impact of eating disorders on adherence to therapeutic lifestyle modification.

The sample of the study was 100 patients over a period of 6 months. All patients in the age group (20-49 years) suffering from overweight and obesity (BMI $\geq$25Kg/m2). They were recruited regardless of their gender. Those with

chronic endocrinological disorders or refused to participate were not included in the study. As patients were recruited from Endocrinology clinic, they have records with their diagnosis, and as some endochrinolgoical disorders may lead to obesity or overweight they were excluded. Pre tested questionnaire of Eating Attitudes Test EAT-26, Garner, 1982). It was pilot tested for validation and before using. It was chosen for patients attending the obesity clinic to be completed by researcher.

It was Pilot tested on 10 obese patients to assess the accuracy of the questionnaires and they were not included in the sample. Minor modifications were done. All individuals attending the Obesity and Endocrine outpatient clinic who met the inclusion criteria were interviewed for nearly 15 minutes in the waiting room by researcher. The researcher used an Eating attitude test questionnaire and open ended questions for assessment of nutrition knowledge related to healthy nutrition and therapeutic life style changes related to management of overweight and obesity. Then it was pilot tested for validation before using. Lifestyle habits were chosen according to the following: Very sedentary: Sits nearly all day. Sedentary: very little or no physical activity. Moderately active: light physical activity associated with typical day-to-day life. Very active: Hard physical activity or physical job or sports.[6]

Participants removed their shoes and heavy outer clothing before measuring weight and height. Anthropometric measurements including weight in Kg's and height in cm and waist circumference were taken. All obese patients were assessed for hemoglobin, blood pressure, lipid profile. The SPSS version 17 was used for data analysis. Simple frequencies were used for data checking. Comparison between groups was done using independent sample t-test for quantitative data, chi-square test for qualitative variables, P-values $\leq$ 0.05was considered to be statistically significant.

For Ethical considerations approval of Family Medicine Departmental Ethics Committee and the approval of the Head of Endocrinology department was also taken. A verbal consent to share in the study was taken from all patients.

Results:

The studied sample of patients shows that female participants are double the males representing (68%) and males (32%). Most of the patients (41%) are 30-39 years of age, and (39%) are in the age group (20-29 years). About (10%) only reached their education university level and (40%) of them are illiterate. Regarding the employment status two thirds of the participants (63%) are not working and (66%) of them are married. Regarding the smoking status (65%) are non –smokers, about one third are passive smokers and (14%) of them are smokers.

The mean anthropometric measurements of study participants were (96.6 ± 12.6 kg) for weight, (168 ± 7.8 cm) for height, (34± 3.2 kg/m^2) for BMI, while for WC it was (106 ± 9.4cm). While, the mean laboratory investigations of study participants were (239.9 ± 51.7mg/dl) for cholesterol level, (171 ± 46.4 mg/dl) for triglyceride level while it was (37 ± 6.8 mg/dl) for HDL levels and (168 ± 47 mg/dl) for LDL levels. For hemoglobin level it was (11.29 ±1.45 g/dl).

The mean systolic blood pressure measurement in males is (122.1± 18.4 mm hg) and the diastolic blood pressure (80.8± 11.2 mm hg) is significantly higher for males (p=0.01).

A total of 11 patients (11%) displayed an eating disorder. None of the participants report anorexic and (8%) report binge eating disorder, moreover, (2 %) are EDNOS. Only one patient has bulimia nervosa (Figure 1).

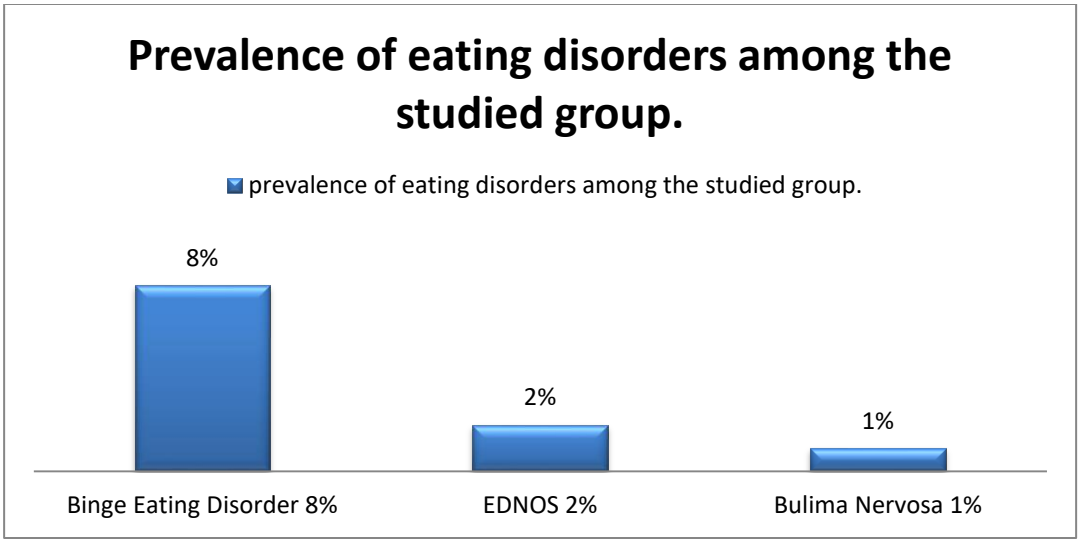

Figure (1): **Prevalence of eating disorders of the studied group**

EDNOS: Eating Disorder Not Otherwise Specified including the following:-Night Eating Syndrome, Sub-threshold Binge Eating Disorder, and Purging Disorder.

Considering the relation between socio-demographic characteristics and BMI, the data indicates no statistical significant difference between overweight / obese and socio- demographic characteristics (P-value <0.05%). Married individuals are found to suffer from obesity than those who are not married and divorced. Regarding age, those who are above 30 years of age are found to be overweight and obese than those who are less than 30. Additionally, illiterate participants are slightly more overweight and obese than other participants (those with primary, secondary and university education). Also, it is clear that unemployed participants suffered from obesity and overweight than those who working whether they are skilled workers, industrial and even professional workers.

More than seventy percent (72.7%) of females are suffering from an eating disorder. Regarding age; those aged >30 are found to suffer from eating disorders than those who are ≤ 30. It is evident that married individuals have eating disorders (54.5%) than those who are not married and divorced. Additionally, (72.7 %) of unemployed patients are suffering from an eating disorder. Illiterate and primary/prep participants are shown to suffer from more eating disorders (36.4%)

comparable with those in secondary school or university (27.3%). There is no statistically significant difference (P-values >0.05) between eating disorders and socio-demographic characteristics.

The data displayed in Table (1) reveals a statistically significance between the eating disorder group and without eating disorder group as regard sleep apnea (p= 0.03), depression (p=0.00), arthritis (p=0.00) .There are no indication of any significant difference between the eating disorder group and those without eating disorder regarding to obesity related co-morbidities: cardiovascular disease, dyslipidemia and cholecystitis.

Table (1): Relation between eating disorders and co-morbidities

Co-morbidities	Eating Disorders				Total		P-value
	Without Eating Disorder		With Eating Disorder				
	No.	%	No.	%	No.	%	
▪ Dyslipidemia	49	55	9	81.8	58	58	0.9
▪ Sleep apnea	25	28	8	72.7	33	33	0.03
▪ Arthritis	24	27	9	81.8	33	33	0.00
▪ Depression	22	24.7	9	81.8	31	31	0.00
▪ Cholecystitis	8	9	4	36.3	12	12	0.08
▪ Cardio-vascular diseases	7	7.9	3	27.2	10	10	0.43

Table (2) demonstrates the correlation between eating disorders and body mass index, it is evident that; binge eating disorder among obese and overweight patients is considered to be statistically significant (p=0.01), no significant difference is found among the other eating disorders.

Table (2): Relation between types of eating disorders and BMI among studied group

Eating disorders	BMI				Total		P-Value
	Overweight		Obese				
	No.	%	No.	%	No.	%	
▪ **Bulimia Nervosa**	0	0.0	1	2.9	1	1.0	0.16
▪ **Binge Eating disorder**	1	1.5	7	20.6	8	8.0	0.01
▪ **EDNOS***	0	0.0	2	5.8	2	2.0	0.47

EDNOS*: Eating disorder not otherwise specified.

The study demonstrates how behavior is related to obesity and overweight; those who went on eating binges 1- 3 times a month were (39.4%) in overweight patients and (29.4 %) in obese patients. Also, the study shows that (23.6 %) of the obese patients have gone on eating binges at least 1-6 times a week which is statistically significant (p=0.01). It is also evident that nearly 18% of the studied patients never exercised at all, while those who exercised 1-3 times a month were overweight (62.1%). Moreover, those who lost 9 kg in the past 6 months showed a statistical significance (p=0.02)

Patients were asked about their lifestyle and results showed that (53%) of the patients adopted a sedentary lifestyle while on the other hand only (3%) were very active. Moreover, it illustrates the amount of water patients drank on a daily basis, (21%) drank more than 8 cups per day which is equivalent to 2 liters. A considerable percent (79 %) drank 4 cups which is equivalent to 1 liter per day. The study shows that only (27 %) of the patients consumed fruits and vegetables more than 3 times a week and (73%) consumed 1-3 times a week. It also demonstrates what are participants snacks based on, (24%) of the patients ate sweets as a snack, (10 %) ate fried foods, on the other hand (24%) ate fruits, biscuits and crackers. Only (5%) of the participants think that fried food is the healthiest cooking method, it is evident that (57%) think that grilled cooking is the

healthiest cooking method. (23%) considered boiling to be the healthiest and (15%) suggested steaming to be the healthiest one.

Discussion:

In the current study which included 100 participants; More than sixty percent (68%) were females and only (32%) were males. Obesity is a growing problem among Egyptian women as evident in Egypt Demographic Health Survey (2014). It showed that; 85 percent of Egyptian women are overweight with 48 percent of them were suffering obesity.[7] These results were comparable to a Norwegian study where 157 obese participants were interviewed; 73 % were females and only 26.8 % were males.[8] Such concordance could be explained in the view of; overweight and obesity are resulting from inappropriate life style and behaviors that became evident worldwide across developed and developing countries.

The present study indicates that (11%) reported symptoms consistent with eating disorders. These results were in partial agreement with the reported results from a Norwegian study that was conducted on patients awaiting bariatric surgery. It showed a higher prevalence (17.8%) of eating disorders**.** In the present study, (8%) reported symptoms consistent with the diagnosis of BED, (2%) reported EDNOS, (1%) reported BN, (0%) AN. These results were comparable with the Norwegian study where (13%) reported BED, (3.8%) EDNOS, (1%) BN, (0%) AN.[8]

In the current study, 63.6% of the overweight participants were married and (70.6%) of them were obese, comparing to an American Indian study that included 176 participants (60%) of the overweight participants were married while (52.5%) of them were obese. [9] It was evident in the current study that; prevalence of obesity among those aged > 30 years was 56% and higher than younger adults aged <30years (44 %). These results were in concordance with reported results from united states in 2013.[10]

The data from current study indicated no statistical significance between eating disorders and socio-demographic characteristics. These were in agreement with an Egyptian study conducted in Sharkia, and showed similar results.[11] In the current study, dyslipdemia was evident among the studied population (58%) with statistically signification association. These results were slight higher compared to Saudi Arabian study which demonstrated a prevalence of (20%-44%).[12]

This study showed that there was a statistically significant association between BMI and cholecystitis (p=0.01). These results were agreed partly with a Turkish study that showed cholecystitis was higher in obese patients than in overweight patients.[13] In our study the prevalence of sleep apnea in overweight patients was 12.1 % but it was 73.5% in obese patients with statically significant difference (p=0.00). It was also agreed that obese patients suffer more from obstructive sleep apnea than overweight patients which was proven in a Spanish study. It showed the prevalence of sleep apnea in overweight patients was 41% while in obese patients it was 57 %.[14]

Results of this work showed that 31% of the studied patients were suffering from depression, which was similar to a British study that showed the prevalence of depression was 35% among overweight and obese patients.[15] The prevalence of arthritis among obese patients in this study was 33% that almost agreed with reported results from United states as addressed in National Health Interview Survey(2012) that showed the prevalence of arthritis among obese was (28.9 %).**[16]** These results were in agreement with another American study and showed that arthritis was more prevalent in obese patients (61%) and in overweight patients(23%).[17]

In the current study, eating disorders among females was higher than males. It was 72.7% among females compared with 27.3% among males. These results were consistent with the obtained results of Hudson et al, 2007 who stated that; in obese patients, the prevalence of eating disorders was higher in females than males.[18]

In the present study, binge eating disorder was among obese and overweight patients. There was statistically significant correlation between obesity and going on eating binges at least 1-6 times a week. (p=0.01) (p=0.01).These results were in disagreement with Simone et al, 2012 who stated that no significant association was found between body mass index and binge eating disorder (p=0.341).[19]

The present study showed that almost 80% of the overweight and obese patients consumed only 4-8 cups and 21% consumed more than cups per day, this result was consistent with an American study that mentioned that 76% of their obese participants consumed less than 8 cups per day.[20] Also, it showed inadequate consumption of fruits and vegetables , only (27%) consumed fruits and vegetables more than 3 times a week, this result was similar to a British study that proved that only (26%) consumed fruits and vegetables more than 3 times a week. [21]

Results in the current study showed that 53% of the studied population reported a sedentary lifestyle**.** These results were in partial agreement with those reported by Ann, 2012. He reported that sedentary physical activity among adults is higher than 30%.[6] For the knowledge towards a healthier cooking method; It was evident that 38% of the participants think boiled/steamed food to be the healthiest cooking method, while (62%) think grilled/ fried food is the healthiest cooking method. These results were similar to results reported by National Centre for Social Research (2012). It stated that, in obese patients only 32% agreed that boiled/ steamed cooking methods are more healthier cooking methods.[22]

Conclusion:

Data indicated that eating disorders were significantly higher in obese group. More than half of the participants adopted a sedentary lifestyle. As regards co-morbidities of obesity; cholecystitis, arthritis, sleep apnea, and dyslipidemia were significantly higher in the obese group. Proper health education and early diagnosis and treatment of eating disorders are critical to minimize the negative consequences including related morbidity and mortality.

Study limitations: Limitations of the study were in the form of inadequate time that led to some difficulty to complete the questionnaires appropriately. Political circumstances and instability in Egypt during the period of the study have affected the number of patients who attend the clinic. Some patients refused to have their waist circumference measured due to embarrassment. Some patients refused to fulfill questionnaire because it triggered an emotionally sensitive issue. Others were reluctant to provide information about their weight.

References:

1. El-Zanaty FH. Egypt Health Issue Survey. Ministry of Health and Population, Cairo, Egypt, ICF International. 2015.
2. Becker A, Grinspoon S, Klibanski A et al. Eating disorders. *New England Journal of Medicine*, 2002; 340(14):1092–1098.
3. American Psychiatric Association *Diagnostic and Statistical Manual of Mental Disorders, fifth edition (DSM-5)*. Washington, DC: American Psychiatric, 2013.
4. Johnson CJ Current challenges in recognizing and treating eating disorders. Minn Med 2009; 86(11):34-9.
5. Day J, Ternouth A, Collier DA Eating disorders and obesity: two sides of the same coin? EpidemiolPsichiatr Soc. 2009; 18(2):96-100.
6. Barnes A. Obesity and Sedentary Lifestyles. Tex Heart Inst J. 2012; 39(2): 224–227.
7. El-Zanaty FH. Egypt Demographic Health Survey. Ministry of Health and Population ,Cairo, Egypt, ICF International. 2014.
8. Dahl JK, Eriksen L, Vedul-Kjelsås E, et al Prevalence of all relevant eating disorders in patients waiting for bariatric surgery: A comparison between patients with and without eating disorders 2010; Vol. 15: e247-e255.
9. Hodge Felicia S, Cantrel Betty G, Kim S. Health Status and Sociodemographic Characteristics of the Morbidly Obese American Indians, Ethn Dis. 2011 Winter; 21(1): 52–57.
10. U.S department of health and human services; Centers for Disease Control and Prevention 2013.
11. Fawzi MM, Hashim HM, Fouad Amira A,et al. Prevalence of Eating Disorders in a Sample of Rural and Urban Secondary School-Girls in Sharkia, Egypt.Current Psychiatry 2010; Vol.17, No.4 2010: 1-12.
12. Amin TT, Al Sultan AI, Mostafa Ola A, et al. Profile of Non-Communicable Disease Risk Factors Among Employees at a Saudi University.APJCP.2014.15.18.7897.
13. . Gökçen C, Yildirim E, Göktürk S, et al. Body mass index, cholecystitis, cholelithiasis, pancreatitis and imaging of common bile duct stones.Am J Med Sci 2014 May;347(5):364-9.
14. Quintasa DR, Novoaa MT, AlvesPérezb MT, et al. Obstructive Sleep Apnea in Normal Weight Patients: Characteristics and Comparison With Overweight and Obese Patients. 2013;49:513-7.

15. Carey M, Small Hannah, Yoong Sze L, et al. Prevalence of comorbid depression and obesity in general practice: a cross-sectional survey, Published 1 March 2014.
16. Barbour KE, Helmick CG, Theis KA, et al. Prevalence of Doctor-Diagnosed Arthritis and Arthritis-Attributable Activity Limitation .Morb Mortal Wkly Rep. 2013;62(44):869-873.
17. National Health Interview Survey (NHIS), 2012. Last modified March 22, 2016Available from: https://nccih.nih.gov/research/statistics/NHIS/2012
18. Hudson, J I, Hiripi, E, Pope, HG et al. The Prevalence and Correlates of Eating Disorders in the National Comorbidity Survey Replication. Biological Psychiatry, 2007; 61(3), 348-358.
19. Bittencourt S. A., Lucena-Santos P, Moraes JD et al. Anxiety and depression symptoms in women with and without binge eating disorder enrolled in weight loss programs, 2012; vol.34 no.2.
20. Goodman Alyson B, Blanck Heidi M, Bettylou Sherry et al. Behaviors and Attitudes Associated With Low Drinking Water Intake Among US Adults, Food Attitudes and Behaviors Survey, 2013;10:120248.
21. Health and Social Care Information Centre. Health Survey for England. The NHS Information Centre, Statistics on obesity, physical activity and diet: England, 2012.
22. National Centre for Social Research. Knowledge and attitudes towards healthy eating and physical activity, what the data tell us.2012.

الملخص العربى

مدى انتشار اضطرابات العادات الغذائية بين مرضى السمنة فى مستشفيات القصر العينى الذين يعانون من زيادة الوزن والسمنة

أصبحت زيادة الوزن والسمنة شائعة جدا الآن بحيث بدأت تحل محل المخاوف الصحية العامة التقليدية.ان اضطرابات الطعام هي أمراض خطيرة تؤثر على الصحة البدنية والنفسيه والاجتماعية وتسبب الأمراض والوفيات بنسبة كبيرة.وقد هدفت هذه الدراسه الى دراسة حجم اضطرابات الطعام بين المرضى الذين يعانون من السمنة المفرطة وزيادة الوزن. أيضا تقييم تأثير اضطرابات الطعام على الامتثال لتعديلات نمط الحياة العلاجية.

وقد أجريت هذه الدراسه المقطعية على 100 مريض في العيادات الخارجية للسمنة في عيادة السكري والغدد الصماء في مستشفى القصر العينى، جامعة القاهرة. وشملت الدراسة استبيان واختبار اتجاهات الطعام (إيت-26) التي ترجمت إلى اللغة العربية. ثم تم اختباره التجريبي للتحقق من صحتة قبل استخدامه. وقد تم ملء الاستبيان بمعرفة الباحث بعد الحصول على موافقة شفهية من المرضى. تم تصميم الأسئلة المفتوحة من قبل الباحث لتقييم المعرفة التغذوية المتعلقة بالتغذية الصحية وتغيرات نمط الحياة العلاجية المتعلقة بإدارة زيادة الوزن والسمنة.

أوضحت الدراسة أن ثمانية في المئة من المرضى الذين شملتهم الدراسة (100 مريض) يعانون من اضطرابات الشراهه للطعام و 2٪ يعانون من اضطرابات الطعام الغير مصنفه. ووجد أن مريضا واحدا فقط كان يعاني من الشره المرضي العصبي (البوليميا).كما أظهرت أن ما مجموعه 11 مريضا (11٪) يعانون من اضطرابات الطعاموأن أكثر من سبعين في المئة (72.7٪) من الإناث يعانين من اضطراب الطعام. أكثر الاعتلالات المشتركة شيوعا بين المرضى الذين يعانون من زيادة الوزن والسمنة المفرطة هي اختلال مستوى الدهون بالدم (58٪) تليها توقف التنفس أثناء النوم والتهاب المفاصل (33٪) والاكتئاب (31٪). وخلصت الدراسه الى أن اضطرابات الطعام أعلى بكثير في المرضى الذين يعانون من السمنة.