

Comparison of Obesity/Psychological Disorders Comorbid between Older and Younger Adult Women

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Introduction: Epidemiologic data proposed a relationship between obesity and depression in older adults. We conducted this study to evaluate the association between obesity and depressive disorders, as well as a range of eating disorders in old women. **Methods:** From a total of 1477 clients referred to an outpatient clinic, 212 obese persons (97 persons 60+ and 115 persons 40 - 59 years of age) were enrolled. Data of demographics, comorbidities, anthropometrics, physical activity level, and diet, as well as, depressive and eating disorders were collected. Depressive and eating disorders were assessed using diagnostic structural interview based on DSM-IV-TR (Diagnostic Statistical Manual of Mental Disorder—fourth edition—Text version). BMI more than or equal to 30 was considered as obesity. **Results:** The prevalence of dysthymic disorder was significantly lower in older women compared to younger ($p = 0.026$). Comparable but not significant results were observed for major depression disorder, Bulimia Nervosa, and eating disorders not otherwise specified. **Conclusion:** Our findings suggest that obese older women were less likely to suffer from Comorbid dysthymic disorder/obesity compared to younger.

Keywords: Dysthymic Disorder; Obesity; Elderly

Introduction

In recent decades obesity and depressive disorders including major depression and dysthymic disorder have become notable public health problems (Chan & Woo, 2010; Sartorius, 2010). A growing body of clinical-based and population-based studies supports the association between obesity and depressive disorders (De Wit et al., 2010; LaCoursiere, 2011; Spitzer et al., 2012). The data from 2005 National Health Interview survey on over 30,000 American adults confirmed the correlation ($r = 0.8$) between obesity and depression (Blaine, 2008). There are some causal models that explained the obesity and depression comorbidity. One well known model, weight-related stigma, suggests that stigmatizing has prominent role that causes obese patients to also suffer from co-morbid depression. According to this model obesity is a deeply stigmatizing attribute that prompts negative stereotyping and discrimination in others, which, in turn, causes depression and other negative psychological and social outcomes (Puhl, Brownell, Schwartz, & Rudd, 2005; Puhl, Moss-Racusin, Schwartz, & Brownell, 2008). The other casual model recognizes that depression can exert causal effects on obesity. A third model combines the two mentioned model. This model suggests negative body image stigmatization of obese individuals could lead to low self esteem and psychological distress generally (Puhl et al., 2005; Puhl et al.,

2008). It's supposed that the older obese are less likely to suffer from depressive symptoms, known as "jolly fat" hypothesis (Crisp & McGuinness, 1976). One of the potential explanations for this hypothesis could be the higher concentration of estrogen in women with higher level of adipose tissue. Estrogen might protect against the development of depression (Kim et al., 2010). Although different studies were dedicated to assessing the relationship between obesity and depression in the elderly, limited data are available on the obesity and dysthymic disorder relation as well as its relationship with eating disorder. Hence in this study we aimed to assess the correlations between obesity, eating and depressive disorders in the elderly compared to middle-aged individuals.

Methods

Study Design and Sampling

In this cross-sectional study, participants were randomly selected from a total of 1477 women referred to the outpatient overweight and obesity clinic of Sina University hospital between Jan 2008 and Jan 2012. Individuals were invited to participate in the study by telephone call. The individuals, who accepted to participate, received a comprehensive health screen by sport medicine specialist, nutritionist, and psychologist. Patients with dementia, Alzheimer and other neurodegenerative disease, psychiatric disorders, and malignancies were excluded.

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212 women were enrolled including 97 persons over 60 (62.26 ± 5.32) and 115 individuals between 40 and 59 years (49.97 ± 5.52). An informed written consent was obtained.

Measurements

Basic Data

Sociodemographic and clinical data including educational level, status, age, marital status, smoking habit, and regular exercise were collected. Educational status was classified into ≤ 5 years, 6 - 12 years (college education level), ≥ 13 years. Smoking was categorized as nonsmoker, regular smoker, and habitual smoker.

Disease history including diabetes, hypertension, cardiovascular disease, hyperlipidemia, thyroid diseases, hepatocellular and gastrointestinal disorders, genitourinary disease, osteoarticular disease, as well as respiratory and lung disease were reported by clients.

Anthropometry

Body weight was measured to the nearest 0.1 kg using Seca 755 Dial Column Medical Scale. Height was measured to the nearest 0.1 cm using a standard stadiometer. Body Mass Index (BMI) was calculated by dividing weight in kilograms by height in square meters. $BMI \geq 30$ was defined as obesity. Waist circumference was measured by the standard tape meter at the maximal narrowing of the waist from anterior view. Hip circumference was measured at the point of maximal gluteal protuberance from the lateral view. Waist to hip ratio was calculated by dividing the waist circumference to hip circumference.

Fat percent and fat free mass (FFM) by Body composition analyzer type BC-418 MA TANITA. The participants were asked not to eat or drink within 4 hours, and not to exercise within 12 hours of the test. They have completely voided the bladder within 30 minutes of the test and have had minimal consumption of diuretic agents.

Physical Activity Level

The global physical activity questionnaire (GPAQ) was used to assess physical activity level. This questionnaire is valid and reliable for Iranian population. The Global Physical Activity Questionnaire was developed by WHO for physical activity assessment.

It collects information on physical activity level in three settings and sedentary behaviour.

These settings are:

- 1) Activity at work,
- 2) Travel to and from places,
- 3) Recreational activities (Herrmann, Heumann, Der Ananian, & Ainsworth, 2013).

Depressive and Eating Disorders

Depressive and eating disorders were assessed using a diagnostic structural interview based on DSM-IV-TR (Diagnostic Statistical Manual of Mental Disorder-fourth edition-Text version) consist of anorexia nervosa, bulimia and non otherwise specified (NOS) (American psychiatric Association, 2000).

Statistical Analysis

For descriptive analysis of quantitative data, the Mean and

Standard deviation were used. For qualitative data, frequency percentage was reported. To evaluate the association between obesity, depressive and eating disorders OR with 95% CI was used. Statistical package for the Social Sciences, version 17.0 (SPSS, Chicago, IL, USA) was used to analyze the data.

Results

Sociodemographic characteristics of the study population and the prevalence of depressive and eating disorders were presented in **Table 1**. Also the physical activity in both groups was in low active range or sedentary. **Table 2** demonstrated the obesity indices and **Table 3** presents OR for depressive and eating disorders. As presents in **Table 3**, obese aged women were less likely to have dysthymic disorder compared to middle-aged obese women 0.27 (95% CI: 0.083 - 0.9).

Table 1. Sociodemographic characteristics of the study population and the prevalence of depressive and eating disorders.

		<60 years Number (percent)	≥ 60 years Number (percent)
Marital status	Single	4 (3.6)	1 (1)
	Married	96 (86.5)	74 (77.1)
	Divorced	8 (7.2)	4 (4.2)
	Widowed	3 (2.7)	17 (17.7)
Educational level	≤ 5 years	32 (28.6)	59 (61.5)
	6 - 12 years	61 (54.4)	30 (31.2)
	≥ 12 years	19 (17)	7 (7.3)
	Diabetes	16 (15)	22 (23.2)
	Hyperlipidemia	18 (16.8)	39 (40.6)
Chronic conditions	Hypertension	32 (29.9)	48 (50)
	Cardiovascular diseases	13 (12.1)	34 (35.4)
	Respiratory diseases	26 (24.3)	22 (22.9)
	Hepatocellular and gastrointestinal disorders	57 (50.9)	29 (30.2)
	Genitourinary diseases	17 (17.3)	14 (14.6)
	Thyroid diseases	30 (32.7)	19 (19.8)
	Osteoarticular diseases	65 (67)	66 (68.8)
Smoking	Nonsmoker	89 (77.4)	79 (82.3)
	Regular smoker	4 (3.2)	2 (2.1)
	Recreational smoker	22 (19.4)	15 (15.6)
Depressive disorders	Major depression	43 (37.7)	30 (31)
	Dysthymic disorder	33 (28.3)	9 (9.8)
Eating disorders	Bulimia Nervosa	4 (3.7)	7 (7.3)
	Disorders not otherwise specified	23 (16.7)	4 (4.9)

Table 2.
Obesity indices in middle-aged women and the elderly.

	<60 years Mean ± SD	≥60 years Mean ± SD
Weight (kg)	90.7 ± 17.65	82.9 ± 12.25
Height (cm)	157.8 ± 5.3	156.6 ± 9.3
Body Mass Index (BMI)	36.65 ± 7.1	33.77 ± 5.77
Waist circumference (cm)	109.9 ± 14.05	110.7 ± 13.37
Hip circumference (cm)	121.7 ± 13.8	118.7 ± 12.5
Fat%	43.3 ± 4.5	39.17 ± 9.6
Fat free mass (kg)	51.09 ± 7.1	49.16 ± 6.95

Table 3.
The association between obesity, depressive and eating disorders

		OR (95% CI)	P. value
Depressive disorders	Major depression	0.83 (0.35 - 1.93)	0.657
	Dysthymic disorder	0.27 (0.083 - 0.9)	0.026
Eating disorders	Bulimia nervosa	0.56 (0.47 - 0.68)	0.219
	Disorders not otherwise specified	0.26 (0.052 - 1.27)	0.075

Discussion

We found that older obese women were less likely to suffer from dysthymic disorder than their middle-aged compartments.

The inverse association between dysthymic disorder and obesity among elderly Iranian women support the “Jolly Fat” hypothesis (Crisp & McGuiness, 1976). Our results were fairly in consistent with the previously reported findings in two Asian populations. Elderly Japanese women with chronic medical conditions were less likely to suffer from depressive symptoms (Kuriyama et al., 2006). An inverse relationship was also reported in elderly Chinese women compared to normal weight (Li et al., 2004).

However, in contrast to the studies in elderly Asians, in elderly Caucasians obesity was reported to be positively related to depressive symptoms (Carpenter, Hasin, Allison, & Faith, 2000). Li et al. hypothesized that this difference might be due to the fact that being a little fat in Asian cultures is not regarded unhealthy, rather showed the wealth of an individual (Li et al., 2004). Therefore, obesity might increase self esteem in older adults. On the other hand, in western societies the stigma attached to being obese might cause people to suffer lower self esteem and to have more negative self-images, perhaps resulting in higher levels of depression.

This inverse relationship in women might also have biological origin, as in Postmenopausal women, elderly women with higher levels of adipose tissue have higher levels of estrogen, which might protect against the depressive symptoms (Kim et al., 2010). Our study was limited to women. Also, the cross-sectional of the study made us unable to assess whether obesity is a cause or consequence of depressive symptoms. Nevertheless, this study has several advantages. We compare the depres-

sive disorders including dysthymic disorder between middle-aged and older adults and using random sampling.

In conclusion, we found an inverse relationship between dysthymic disorder and obesity in Iranian elderly women, in consistent with the “Jolly Fat” hypothesis. Public health working against obesity should be cautioned about the potential side effect of depressive symptoms in the elderly women. Prospective studies in middle-aged women are warranted for better understanding of this inverse relationship.

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