Assessment of the Relationship between Tehran Women's Quality of Life, Depression and Anxiety with Their Body Mass Index

Giti Zarei [1+], Hadi Bahrami Ehsan [2], Syed Saeed Pournaghash Tehrani [3], Hamidreza Azizi[4]

[1] Dept. Psychology Roudehen Azad Islamic University, Tehran, Iran
[2, 3] Dept. Psychology, Tehran University, Tehran, Iran
[4] Dept. Public Health, Iran University, Tehran, Iran

Abstract. The purpose of this study was to explore association between depression, anxiety and quality of life with body mass index in women 20-50 years in Tehran. Our sample was selected by quota sampling method that in the 22 regions of Tehran was divided in to five geographical areas: North, south, center, east and west. One region was selected randomly from each area .North (region 2), South (region 16), Center (region 6), East (region 13) and West (region 9). In the next step population 20-50 years old group and their ratio of each to the entire population of women in this age group were determined in all parts of Tehran. given the proportion of each region, the intended number of people for each region was specified. In the fifth step, because people's distribution in terms of BMI groups varies in different regions and in order to use all groups in the study, a pilot test was first administered in 5 selected regions, and the relative frequency of each BMI group was determined. Then three questionnaires include Beck depression inventory, SF-36 quality of life inventory and Spielberger state- trait Anxiety inventory were performed. The results displayed increased values of body mass index in women increase their depression and decrease their quality of life. Extra analysis showed, there was significant different between mean scores of depression in obese persons and normal people also a significant difference was detected between obese women's quality of life scores with normal and underweight people. Also the results revealed that obese persons experience lower mood than other body mass index groups. There was significance different between body mass index and physical health dimension, but there was no difference in mental health dimension .The results of current study emphasis on essential of preventive programs for conflict with outcomes of women's obesity in psychological dimension.

Keywords: Anxiety, Depression, Quality of Life, Body Mass Index

1. Introduction

Obesity is one of the most important public health problems. Based on studies, its prevalence is doubling by 2030. Prevalence of overweight and obesity in Iranian adults have been reported respectively 23% and 40%. World health organization has been reported prevalence of overweight and obesity in men and women respectively 54% and 70% in 2005. 70% of deaths have been reported in 2002 related to chronic diseases that overweight and obesity are one of the main causes of that. In other words based on these report cardiovascular diseases due to overweight and obesity is one of the main causes of death in Iran [1]. Body mass index is a reliable index to measure body fat in most people and it is a cheap, quick and applicable method for the screening of different weight groups of adults (twenty years and higher)[2].Several studies have been assessed relationship between body mass index and quality of life[3][4], depression and anxiety.

The results of large number of studies have been shown a positive and significant relationship between obesity and overweight with depression and anxiety and a negative association with quality of life and also the results of some studies indicate that obese and overweight boys are experiencing more anxiety than other body mass index groups. There is no significant difference between the girls [5].In a longitudinal study BMI

[+] Giti Zarei. Tel.: + (09126349238); fax: + (021-22519407).
E-mail address: (zarei.psychology@gmail.com).

was positively associated with depression in women but there is an inverse relationship in men [6]. As well as in other longitudinal study obese people have been reported more low mood and hopelessness than normal people [7].

Research findings are completely fixed about impact of obesity on health related quality of life in physical dimension. But the relationship between obesity and health related quality of life in mental dimension is different and unclear [8]. Based on some clinical and epidemiological studies health related quality of life in mental dimension are the same in obese and overweight people with normal weight [9], [10]. Although the prevalence of obesity in American men and women is almost identical, women are affected more than men by obesity , follow the treatment of obesity , have more dissatisfaction from their body , they are under pressure for weight loosing , and also experience more taboo associated with obesity. Assessment of prevalence of obesity and its related problems can be effective in well-being of individual not only at personal level but also it can stop enormous costs that directly and indirectly imposed on individual and society[11]. This study in three levels primary, secondary and tertiary prevention can be valuable results. The relationship between overweight and obesity with quality of life, depression and anxiety has been considered in foreign countries but has not done any research in this field in Iran .With this description it is essential assessing of its outcomes at least about relationship with depression and anxiety with body mass index. This research is trying to provide necessary information and compare it with international findings.

2. Methods

This cross-sectional study was conducted on 376 women, ranging between 20 to 50 years, living in Tehran, in winter and spring 2011, using the quota sampling method. Sampling was carried out on a step by step basis. In the first step, the 22 regions of Tehran were divided into five geographical areas. In the second step, one region was selected quite randomly from each of the areas: North (2), South (16), Centre (6), East (13), and West (9). In the third step, population of 20- to 50-year-old groups and their ratio of each to the entire population of women in this age group in all parts of Tehran were determined. In the fourth step, given the proportion of each region, the intended number of people for each region was specified. In the fifth step, because people's distribution in terms of BMI groups varies in different regions and in order to use all groups in the study, an pilot test was first administered in 5 selected regions, and the relative frequency of each BMI group was determined, and, moving on, given the proportion of each group, intended individuals were selected using the quota sampling method.

The questionnaires were included four sections. First section contains information about age, education number of children martial status height and weight. Second part was included beck depression inventory. Concurrent validity of questionnaire with clinical rating of psychiatric patients showed moderate to high correlation coefficients(r=0/72, mdn=0/55-0/97). Chegini is achieved positive correlation coefficient (r=0/54) to investigate correlation between beck questionnaire and rate of depression in M.M.P.I questionnaire. Part 3 includes a positive correlation coefficients between state and trait anxiety with B.A.I are respectively 0/64 and 0/5.the results indicate that correlation between state and trait anxiety with B.A.I anxiety test is very strong. Reliability of the test has been calculated equal to 0/94. The fourth section contains SF-36 quality of life questionnaire composed of 36 statements that assessing eight different areas of health (general health, physical function, limited role-playing caused by physical reasons, limited role-playing due to emotional reasons, physical pain, social functioning, energy and vitality, and sub mental health. The lowest and highest scores in this questionnaire are 0 and 100 respectively. The score of each aspect is obtained through the scores of titles in that aspect and also validity and reliability of Persian version of questionnaire has been confirmed by Montazeri in Iran(r = 0.7 – 0.9).

BMI scores were obtained based on the information reported by the participants on their heights and weights and through dividing weight (kg) by square root of height (m²). Standard weight groups related to the body mass index (BMI) include underweight group with BMI < 18.5, normal weight group with $18.5 \leq$ BMI ≤ 24.9, overweight group with $25 \leq$ BMI < 29.9, and obese group with BMI ≥ 30. Finally, individuals were divided into four underweight, normal, overweight, and obese groups based on the number received.

In this study, body mass index (BMI) is the independent variable and quality of life, depression and anxiety are the dependent variables. In order to analyze data in this study, frequency distribution tables, mean,

one-way ANOVA, Chi square method, Tukey's non-parametric tests, and Pearson's correlation coefficient were adopted.

3. Results

3.1. Demographic characteristics

Based on demographic information obtained from this study, mean of the body mass index increased with age and also percent of frequency overweight and obesity decrease with increasing level of education. Married people have higher body mass index than single people and other groups. Obese women have more children than others.

Table.1: Demographic characteristics

variable	Sub group	BMI				p.value
		Under	normal	Over	obesity	
Age	mean	24.94	30.83	34.12	37.52	0.000
	S.D	4.07	7.80	8.92	9.52	
education	<diploma	10.5	8.4	12.1	39.2	0.000
	Diploma	26.3	44.2	53.4	47.1	
	License	52.6	40	29.3	11.8	
	>license	10.5	7.4	5.2	2	
Martial status	Bachelor	84.2	32.1	16.4	13.7	0/000
	Married	15.8	64.7	81	86.3	
	Other	0	3.2	2.6	0	
Number of children	0	94.7	55.8	30.2	43.1	0.000
	1	5.3	24.2	34.5	17.6	
	2	0	16.8	24.1	19.6	
	3	0	3.2	11.2	19.6	

3.2. Relationship between dependents variables and B.M.I

As seen in table 2 correlation between dependent variables (depression and quality of life) with dependent variable (body mass index) according to Pearson correlation coefficient (r) are respectively (0/15 and -0/16) and its significant(p<0/003).

Correlation coefficient regarding to depression variable and body mass index showed a positive linear relationship, but about quality of life correlation coefficient represented a negative linear relationship. Regarding to variable anxiety based on Pearson correlation coefficient that are 0/062 and 0/055 and close to zero, they don't show a significant linear relationship.

Table.2: Pearson correlation between dependent variable and B.M.I

		Depression	Quality of life	anxiety	anxiety
Body Mass Index	r	0.151	-0.161	0.055	0.062
	p.value	0.003	0.002	0.283	0.227
	n	376	376	376	376

3.3. Quality of life dimensions and B.M.I

As you can see in table 3 based on rate of F coefficient, there is a significant difference in physical dimension of quality of life, as an important result, there is significant difference between Body Mass Index groups in physical dimension but the results showed that there is no difference in mental dimension.

Table.3: ANOVA results for quality of life dimensions

		Sum of squares	d.f	Mean of squares	F	P
Physical	Between	6756	3	2252	7.3	0.000
	Within	11434	372	307		
	Sum	121097	375			

mental	Between	2169	3	723	1.9	
	Within	138170	372	371		0.122
	Sum	140339	375			

4. Discussion

The results suggest that there is a positive significant relationship between body mass index and depression, that also these results is along with foreign findings[3,4,6,7,11,12,13,14,15,16,17,18,19,20].

Complete understanding mechanisms of relationship between depression and obesity isn't clear and obvious, depression can cause obesity by changing in eating or decreasing in physical activity [21,22], but also obesity may causes depression. For example it can cause negative image of body due to obesity [19]. Numerous studies suggest that successful weight loosing is associated with reduced depression, and also depression can be effective in less successful weight loss [23, 24, and 25]. Other result from this study is that there isn't relationship between anxiety and body mass index, that this result is the same as other results [8, 9, 10, and 26].

Also, results of study showed a negative relationship between body mass index and quality of life that these are the same studies, and, results represent that physical dimension of quality of life have a negative and significant relationship with body mass index. (p=0.000, r=-0.223), but we do not see the same relationship in mental dimension of quality of life .This result, with numerous pervious published results [9, 10,27,28,30, and 31] showed that there isn't relationship between body mass index and mental dimension of quality of life or they are very poor. Based on previous published studies, self-reported of weight and height is associated with lower estimation of weight and higher estimation of height regarding to obesity and overweight, that rate of error changes based on social and economic status. And negative significant relationship between quality of life and B.M.I [27]. Current results regarding to higher depression and lower quality of life in obese women compare with others body mass index groups can be a new finding that has been considered less in Iranian literature.

5. Suggestions and Restrictions

5.1. Restrictions
- One of the limitations of our study is self-reporting of weight and height that based on reliable studies, regarding to weight is recommended by providing manpower and financial resources, weight and height measure directly in the future.
- Also other limitation is lack of assessment of variables in men.

5.2. Suggestions
- Study on various male and female groups and also comparison of them.
- To carry out a longitudinal study during lifetime to clear cause and effect relationship between body mass index with depression and anxiety.
- Based on current results suggest that essential educations were represented in fields of healthy life, nutrition, physical activity and life skills.

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7. References

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