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Evaluation of metaphors (life and self) of obese and overweight individuals in comparison with normal weight's

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Summary. *Introduction:* Obesity and overweight have become an epidemic & health's public problem. Studies on obese individuals have shown associations between harms and disadvantages of obesity on physical and mental health as well as interpersonal relations. Metaphors in personal & social life make images of health-related issues. *Methods:* Study samples were selected from adults who referred to nutrition and diet therapy clinics in Tehran and baseline data were collected. After completing the questionnaires, quality control was re-examined. *Results:* In assessing the metaphors, the participants' metaphors of life and self were analyzed by statistical calculations. On this basis, women with obesity have more negative "self metaphor" than the ordinary population and these women have more negative "life metaphor" than the ordinary population. Checking the content of incomplete sentences of life metaphors and self metaphors in all subjects confirm the fact that most codes with more negative metaphorical content have more repeat in obese subjects than normal weight subjects that psychological condition is very different in obese people. *Conclusions:* In all groups, there is a direct relationship between their attitude to life and to themselves (self) and overweight and obesity, and the more negative their attitude is, weight control is more difficult.

Key words: obesity, metaphor, mental health

Introduction

Overweight and obesity have become an epidemic and a community health problem (1-3). Overweight is used for body mass index (BMI) over 25, but obesity for BMI greater than 30 which corresponds to 120% weight greater than normal weight (4-6). During the recent years world populations have been critically experiencing obesity and weight gain as a severe epidemic health problem which has been drastically increasing throughout the world. Overweigh & obesity lead to many debilitating and life-threatening conditions such as hypertension, cardiovascular diseases (7-8), gout, apnea during sleep, respiratory failure (9-11), musculoskeletal disorders (especially osteoarthritis) (12), hyperglycemia, ischemic stroke hyper-cholesterolemia, and type 2 diabetes mellitus (13), some cancers (14), psychological and social problems (15). Thus, weight loss may not only help control diseases worsened by obesity, it may also help decrease the likelihood of developing these diseases. Treatments for obesity include: Diet for weight loss, lifestyle change (16), behavioral therapy (17-18), pharmaco-therapy (19), as well as surgery (3).

However, these treatments like diets for weight loss or lifestyle change either have not impact on it in

a long time or like surgery are risky or invasive procedures (7, 19). In spite of increasing awareness to the Obesity as an acute clinical disorder, this phenomenon is still prevalent around the world (1,19). According to a cohort study conducted in Iran, the prevalence of obesity is increasing dramatically (20). A meta-analysis (2008) showed that the prevalence of obesity in Iranian adults was 21.5/% (13.7 for men & 27.3% for women) (21). Genetic, environmental, physiological, psychological as well as socio-cultural factors influence the development of obesity (22, 7). During the last three decades, attention to quality of life as an important factor in the evaluation of treatment outcomes and effectiveness of treatment for psychological and physical diseases such as obesity and eating disorders has been increased. On the whole, quality of life covers physical, mental and social aspects of obese people's life. While the cost for obesity treatment on health is increasing, accordingly, the presence & nature of the relationship between obesity & mental health is less obvious. In relation to physical-mental health & some aspects of interpersonal relations, numerous studies have shown the losses & disadvantages for obese people (7, 22-28).

The psychological quality of life includes issues such as: the joy of life, sense of meaningfulness in life, power of concentration, self-satisfaction and experiencing situations such as sad mood, hopelessness, anxiety and depression. From the perspective of mental aspect, obesity is an incorrect behavioral pattern which learning processes play an important role in creating and continuing it (26).

Metaphor is to name something or to describe something so that that name or description belongs to something else conventionally or contractually. Metaphors are found in everyday human thoughts & action; they reflect the person›s thinking process& ultimately, affect the performance (20-30).

Metaphors in personal life (like when we say «body's defense mechanism ") and social life (such as when we say «national fight against cancer») make images of health issues. The use of metaphors is so common that people are not aware of their role in thinking and expression of these images. Metaphors are found in humans› perception, statesmanlike behaviors, and social relations (30). Metaphors can be either positive or negative, or can be sedative or stressful. Metaphors of person with obese of "self» and «life "are representation of adaptive and non-adaptive cognition of the person about his body. Up to date, related studies support the metaphors' role in formation and arrangement of cognition system (31).A metaphor is the relationship between mind and language. Recent studies about cognitive linguistics indicate that the metaphor is based on physical and neurological processes (32), so the body-related concepts are better represented by metaphorical language.

Although metaphors take verbal shape, they originate from its emotional experiences. Analysis of metaphor doesn't include its meaning by itself, but it is meaning expansion for the person who created it (33). In the process of perception, we always deal with metaphors as they are based on concepts and cognition. The use of metaphors in treatment is a strategy to help behavior change facilitation during therapy sessions (34). Sojcher et al.'s studies (2012) that mind-body therapies, especially mindfulness treatments increase the success rate in obesity prevention and treatment (35). Also, Paulo› and Rees› (2006) studies investigated the eating disorders in women using archetypal narratives and metaphors. Research showed that women with eating disorders participate in the creation and expansion of stories actively as it creates a resonance between the body and the mind, which the two are often experienced separately. When the connection between mind and body is established through writing the stories, communication and symbolic thinking were given to local women. Given the role of maladaptive cognitions in weight disorders, the role of metaphors in these disorders is not far-fetched. According to the metaphors role which play as diagnostic tool in "how to think', diagnostic framework for person with obese & overweight were evaluated using the metaphors compared to persons with normal weight in current study.

Materials and Methods

Study samples were selected of adults who referred to Tehran's nutrition and diet therapy clinics. Obese and overweight samples were selected of those

Table 1. Average of attitudes to self.

Self metaphor			BMI_Cats1			Total
			Normal	Overweigh	Obese	
Self Group	Under80	Count	11	9	18	38
		% within BMI_Cats1	42.3%	30.0%	56.3%	43.2%
	Over80	Count	15	21	14	50
		% within BMI_Cats1	57.7%	70.0%	43.8%	56.8%
Total		Count	26	30	32	88
		% within BMI_Cats1	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests: 4.36
p=0.113

who were referred for weight loss, and normal weight samples were of those who referred to clinics for other reasons.

Study data were collected in a stage (at the first of study). After interviewer explained the purpose of the study and how to implement and given their information (which were provided for questioner) would remain confidential, those interested in participating in the study, completed consent form consciously. Demographic questionnaires were completed by volunteer. To check self and life metaphors, first the concept of metaphor was described to participants by the questioner familiar with psychological concepts, Osgood semantic differential test questionnaire & GHQ mental health questionnaire were completed by the interviewer for each participant. After the questionnaires were completed, quality control was done. If there was problem, questionnaires were re-examined and recompleted.

Results

To assess the participants' metaphors in current study, life and samples' metaphors were examined. Accordingly, two hypotheses were proposed for metaphors of these individuals and finally they were determined by statistical calculations.

Life and self metaphors test:

- Hypothesis 1: women with overweigh and obesity have more negative "self metaphor" than the ordinary people. Table 1 shows the results of Chi-square test for independent groups' in order to compare the average "attitudes to self" of three ordinary women groups and person with overweight and obese. According to the results presented in Table 1, there is no significant difference in "self metaphor" averages for above-mentioned 3 women groups.
- Hypothesis II: women with overweight and obesity have more negative "life metaphor" than the ordinary population. Table 2 indicates the results of Chi-

Table 2. Average of attitude to life.

Life metaphor			BMI_Cats1			Total
			Normal	Overweight	Obese	
Life Group	Under80	Count	10	9	20	39
		% within BMI_Cats1	38.5%	30.0%	62.5%	44.3%
	Over80	Count	16	21	12	49
		% within BMI_Cats1	61.5%	70.0%	37.5%	55.7%
Total		Count	26	30	32	88
		% within BMI_Cats1	100.0%	100.0%	100.0%	100.0%

Chi-Square Tests: 7.14p = 0.028

Table 3. Topics of incomplete sentences in life metaphor.

	Obese group		
Metaphor	theme	code	similarity with life
Flowers in the desert/ season	nature	257	At the same time, it is beautiful but so transient that its beauty disappears.
Hot water kettle / stew pot	object	257	Having been closed and pressurized, with a sense of heat and no way out
Hot Fire / mountain climbing	sense	257	Task that is accompanied with heat, burns and doubles the sense of difficulty.

Square test in order to compare the average "attitude to life" for three ordinary women group and with overweight and obese.

According to the results of Table 2, there is significant difference between "life metaphor" for the above-mentioned 3 groups. As a result, women with overweight and obesity scored lower than normal weight women in the "life metaphor". It represents their more negative attitude to the life.

Results of "life metaphor" incomplete sentences

Studying the topics of incomplete sentences in life metaphor showed that 3different concepts were seen in the metaphor of life which include as follows: nature, object, sense.

To compare the concepts of 3 groups based on open and open-dead and being open-closed, each has been received a 3-digit code that examples of these metaphors with codes are presented in the following table in order to clarify more.

Table 4 clearly presents the frequencies for 3 groups, "open, living -dead, open-closed concepts" of life metaphors separately; 3-digit codes show the metaphorical theme's features in the 3 dimensions.

According to the table, code 257 had the highest frequency and the group of obese women had the highest repetition.

Results of "self metaphor" incomplete sentences

Studying the topics of incomplete sentences in self-testing metaphor showed that 4different concepts were seen in their own metaphor which includes as follows: nature, object, animal and human.

Like life metaphor, the concepts of 3 groups based

Table 4. Frequencies for life metaphors.

Life metaphor		BMI_Cats			Total
		Normal	Overweight	Obese	
156	Count	7	9	4	20
	% within BMI_Cats	26.9%	30.0%	12.5%	22.7%
157	Count	2	1	1	4
	% within BMI_Cats	7.7%	3.3%	3.1%	4.5%
256	Count	0	0	1	1
	% within BMI_Cats	0.0%	0.0%	3.1%	1.1%
257	Count	9	8	16	33
	% within BMI_Cats	34.6%	26.7%	50.0%	37.5%
356	Count	2	2	2	6
	% within BMI_Cats	7.7%	6.7%	6.3%	6.8%
357	Count	6	10	8	24
	% within BMI_Cats	23.1%	33.3%	25.0%	27.3%

Table 5. Topics of incomplete sentences in self-testing metaphor.

	Obese group		
Metaphor	Concept	Code	Similarity with Life
restive Ocean/ moss	nature	257	unrest ,anxiety, dissatisfaction with the role, and inefficacity
Chubby pencil / care wheel/ Spring	object	257	Having minor role in the life (not the main and important role), accompanied by pressure & discontent tolerance
chariot horse / elephants	animal	257	To suffer, being huge.
Robot / mother /mountaineer	human	257	To be rigid, Having a closed role, monotony, boredom

on open and open-dead and being open-closed, each has been received a 3-digit code that examples of these "self" metaphors are presented in the obese group.

Table 6 shows frequencies of 3 open, living -dead, open-closed groups in self metaphors; and tried these three aspects of life metaphors to be defined clearly. 3-digit codes show the metaphorical theme features in the 3 dimensions.

According to the table, code 257 has the most frequent and repetition was the highest rate in obese women group.

Discussion

The present study which was conducted on three groups of women with normal weight, overweight and obese shows relationship between effective psychological factors and the individual's weight. In all groups, there is a direct relationship between their attitude to self & the life and to the overweight and obesity, and the more negative their attitude is, the more difficult is raised for individuals to control their weights and subsequently they gain weight. Studying the content of incomplete sentences in life metaphors and self metaphors for all subjects support the fact that most codes with more negative metaphorical content have more repeat in obese and overweight subjects than normal weight subjects and more different psychological condition is dominant in obese people than the normal weight one.

The findings of this study suggest that overweight and especially obese individuals have more negative perceptions of their conditions of self & life, and by

Table 6. Frequencies of self metaphors.

Life metaphor		BMI_Cats			Total
		Normal	Overweight	Obese	
156	Count	7	10	6	23
	% within BMI_Cats	26.9%	33.3%	18.8%	26.1%
157	Count	1	2	2	5
	% within BMI_Cats	3.8%	6.7%	6.3%	5.7%
256	Count	0	0	1	1
	% within BMI_Cats	0.0%	0.0%	3.1%	1.1%
257	Count	7	9	11	27
	% within BMI_Cats	26.9%	30.0%	34.4%	30.7%
356	Count	5	0	2	7
	% within BMI_Cats	19.2%	0.0%	6.3%	8.0%
357	Count	6	9	10	25
	% within BMI_Cats	23.1%	30.0%	31.3%	28.4%

weight gaining, the intensity of the negative perceptions and changes increase in their life metaphors.

Other studies support these results. in studies which were done as multi-dimensional interventions, the impact of psychological factors lonely or in combination with other interventions like diet components and physical activity on weight loss in overweight and obese individuals have been investigated and positive results are reported.

In Lewis et al. (2010) study, the relationship between healthy behaviors and beliefs with the severity of obesity was studied. In this research, an interview & schematic analysis method were used in this qualitative-descriptive study so that the beliefs and healthy behaviors for 141 American adults with mild obesity to moderate (40 BMI≥) and severe (39.9- 30) BMI will be compared. The interview consisted of 60-90-minute semi-structured telephone interviews and interview questions was open and in different areas; the analysis of the data focused on 3 areas: 1- Participants' beliefs about their obesity reasons and the its consequent risks on health, 2- Participants' last explanations about their tries to change health behaviors and weight loss, and 3-Participants' perspective to the stimulus's and barriers to change the behavior. Individuals with mild obesity felt little need to change health behaviors or lose weight. These individuals believed that they could lose weight and not become obese at any time. Very obese individuals felt urgent need to change health behaviors, but they did not have the potency to change. They blamed themselves for their weight, and used abstract language to describe their health behaviors, for example, they were saying that are for their bodies (36).

Jones et al. (2010) studied the relationship between psychological and behavioral to express the weight status with grade 2 obesity in 173 volunteers.

Participants filled out online questionnaires of eating disorder self-monitoring, Eating Disorder Examination-Self-Report (EDE-Q), Three Factor Questionnaire (TFEQ), and Beck Depression Inventory as well as Rosenberg self esteem scale. Studied key words were eating frequency, weight history and individuals' expression about current weight (normal weight, overweight and obesity). Actual weight status was determined by the NIDDK / CDC classification. 50.9% of these obese participants wrongly stated their status as overweight not obese; while 49.1% properly assumed that they were obese. The inaccurate participations (who assumed themselves overweight, not obese), significantly reported lesser eating psychopathological disorder. Despite similar BMI, inaccurate participants had less irritation in lack of over eating control and overeating. Therefore, the results of less obesity estimation were related to lesser eating psychopathological disorder. Underestimating the obesity may be followed with unpleasant consequences in diagnosis and response to the overweight (37). In Howard et al (2008) study, the individuals' expressions in their weight were compared in different socioeconomic and cultural contexts. 2780 subjects were interviewed by telephone and responded to the questions about their health and social conditions. Participants were asked whether you became very skinny, a little skinny, with normal weight, slightly overweight or severely overweight in terms of your weight. Participants' expressions of their weight were compared to their BMI. Binary logistic regression was used to compare obese people (30 BMI≥) which expressed their weight as "slightly overweight". Also, Socioeconomic profile, birth country and household income were also examined. Among the participants who underestimated their weight, 41.5% & 32% were men & women respectively. Most bad assortment belonged to (59.6%) subjects with BMI greater than 30 that expressed their obesity as "slightly overweight". Chance of being obese (BMI≥30) was compared to the chance of being "slightly overweight". While being obese, those who wrongly expressed their weight were more likely to be in the lowest quintile. According to the authors, socio-psychological, socio-cultural as well as social context impacts are related to express everybody's weight situation. In addition, the authors suggest the need more research in order to understand the process which caused the individuals not to be aware of their weight problem (38).

Gibbs and et al.(2004) identified that the concept of physical hunger are essentially referred to the metaphors which were found in everyday physical experiences basically. Accordingly they investigated metaphors' semantic themes in physical experiences and they assume their origins in everyday human life which the personal sense of body in activities are originated

from. Results showed that it should be a relationship between body and metaphor in terms of language and cognition so that we understand how the patterns of physical experience relate to the thoughts and metaphoric language (39).

Paeratakul and colleagues (2002), examined the individuals expression of their obesity on the basis of gender, race, socioeconomic status and BMI. Study took place in America on 5440 adults with normal weight, overweight and obese. The data included individuals' reports of their height and weight, interpretation of each individual of weight status and socio-economic and demographic status. More women than men and more whites than blacks thought of themselves as overweight. Both incorrect and correct expressions of overweight among women with a healthy weight or overweight were more than black women. Given the multivariate logistic regression analysis, the chance of expression ratio in overweight women, whites, individuals with higher BMI, higher incomes and education was significantly higher. The study authors believe that the wrong perception of overweight may have adverse effects on health, and especially overweight men are at greater risk of obesity as they think their weight is optimal (40).

Donath and colleagues study (2000), compared the medical definition of overweight with general definition; the study population comprised 10,652 Australians over age 18. BMI and individuals' understanding of weight were investigated in this study. Among those with BMI = or >25, 72% of women and 49.3% of men assumed themselves as overweight. Among those with BMI<25 12.4% of women and 3.4% of men considered themselves as overweight. Older women described their overweight lesser than younger women.

The lowest BMI=26 to <27that half of the population thought of themselves as overweight were 59-18-year old women, and the lowest BMI=28 to< 29 that half of the population assumed themselves as overweight were older men and women.

Lin et al (2013) studied psychiatric disorders of 841 obese people seeking treatment for weight loss. People who referred to an obesity center in Taiwan comprised the study samples. The treatments composed of Bariatric surgical procedures and non-surgical treatments. All patients were evaluated by two questionnaires and if necessary, a standard check up at the clinic. Psychological diagnosis was conducted through a clinical interview using SCID. 42% of the patients had at least one psychological disorder. Disorders in women were more than in men (28). Fine et al. (2013) surveyed the effects of weight changes on various aspects of health, including mental health. 40,098 women at the age range of 71-46 were evaluated in this prospective cohort for 4 years in terms of 3 weight change models.

Women who their initial weight were about 2.25 kilograms, women who lost 25/2 kg or more weight, and women who gained 2.25/kg or more than their initial weight. Mental Health was evaluated by 5 items including anxiety, depression, and loss of control over sense or control feelings and psychological behavior. In women younger than 65 years, 9 kg weight loss decreased by only 2 points of mental health, but no relevance was not found between weight gain and changes in mental health score in older women. In women older than 56 years of age, 9 Kg weight loss reduced 2 scores for mental health; weight loss in all women showed score reduction in all women. The authors concluded that the greater weight changes are associated with physical health than mental health (9). Jakabek et al. (2011) studied the obesity and eating behaviors in western and Palestinian patients with severe psychiatric disorders. 518 patients from Germany, England and Australia and 147 Palestinians were examined. The results indicated that patients with lower levels of mental health have unhealthier eating habits, behaviors and dietary patterns. They also found that clinical interventions improve the dietary habits and reduce the rate of obesity (42).

Tiffin et al. (2011), modeled the relationship between obesity and mental health in children and adults. Data were collected from 3898 children at the age range of 5 to 16 in a UK health center. The results showed that 17% of obese cases which compared to non-obese 9% children are suffering from emotional problems higher than the threshold. In other words, children with a BMI higher than normal are exposed to greater risk of psychological disorders (43). In a Mc Elroy et al's revie article.(2004), the relationship between mood disorders and obesity were analyzed. Clinical studies showed that 1-children and

teenagers with depression are exposed to the risk of overweight. 2-obese individuals who are losing weight are more likely to develop depression and bipolarity disorder. Community studies have shown that 1-obesity in women with depression 2- abdominal obesity is associated with depression in women and in men. According to the authors, although there is an overlap between obesity and mood disorders, these conditions are interrelated (44).

Conclusion

Secondary results of "metaphors" incomplete sentences: One of the most important topics in the study of metaphors is their content. Classification of metaphors in terms of their contents can be investigated in different ways. In this study, the metaphors of incomplete sentences semantic differentiation in "life" and "self" contents were ultimately determined, and examined in the three dimensions of open, living - dead, and open - closed: A) "Life" metaphor: In this study, a total of 3 contents were determined in individuals' life metaphors: nature (rocks, rivers, etc.), object (notebook paper, makeup boxes, etc.), sense (fear, pressure, etc.). Following results are obtained of the qualitative analysis of 3 groups metaphors:50% of obese individuals used negative and closed metaphors to describe their life which represents lack of diversity in the group's metaphorical "life" concept. Negative and closed concepts of the metaphors suggest lack of freedom and mastery in individuals' lives. Their unpleasant subjective sensation of living and feeling stuck are clearly reflected in metaphors.

In the group with overweight as well-closed and neutral concept, metaphors are repeated in a greater number (33.3%). Neutral (neither positive nor negative) means metaphors used in this group which compared to obesity group are less negative; it's because of the difference in the weight gain of overweight group compared to those in obesity group. This means that this group suffers from overweight than obesity group. B) "Self metaphor":4 themes for subjects' self metaphors have been determined in this study that areas are as follows: nature (green wood, polluted nature ...), object (tractor, pots ...), animals (snakes, chicken...) and human (skinny people, kids ...).

Examination of metaphors for 3 groups had the following results: - 37.5% of obese individuals used negative emotional concept metaphors to describe themselves. Also, 72 percent of self metaphorical concepts, in this group were closed that can in one hand be because of their self dissatisfaction and on the other hand because of their inclination to isolation from others. In the group with overweight, 66.7% of cases had closed concept metaphors. Also, in 30% of cases, metaphors had a negative connotation that is less than the obese group; this can be because of the difference in the overweight between the two groups.

The basic distinction between life and self metaphors for 3 groups can be seen in qualitative analysis. Both in self and life metaphors, the negative and closed metaphors in obese which compared to the normal weight individuals are more frequent. Analyzed contents of metaphors in Tables 3 and 5 express unrest, uneasiness, dissatisfaction of role life, a sense of futility, fatigue, monotony pressure and dilemma in life.

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