The effect of cognitive-behavioral treatment on body mass index and body image perception of overweight peoples referring to nutrition-treatment centers of Ilam Province

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Abstract

Obesity is a chronic disease that if is not treated, in addition to cause physical and mental disease, decreases people's ability and work capacity and makes them more vulnerable against most of disease. Purpose: the research has been conducted aiming at studying the effects of cognitive behavioral therapy on baby mass index and perception of baby image of the overweight people referring to the Health Centers of Ilam province. The research methodology was semi-experimental of the kind of pre test- past test and following up with the control group. Among the eligible male and female volunteers, 30 people were simple randomly selected and divided into two groups of experiment (30 people) and control (30 people). The tools of collecting data in this research were body mass index and Body Image Concern Inventory (BICI) of Littleton. By using the treatment protocol of Cooper Zefra, translated by Kheirollah Sadeghi, the experiment group were treated during 11 months (24 sessions during 44 weeks) in two phases of weight loss and weight maintenance (the phase of weight lose during 30 weeks and the phase of weight maintenance during 14 weeks) in 5-45 minutes sessions, and the control group did not receive any treatment after finishing the sessions, the post test was conducted and analyzing data was performed based on multi-variables covariate analysis. The research results showed that the cognitive behavioral treatment has significantly influenced on body mass index and body image perception of the experimental group. Cognitive behavioral therapy has an effect on body mass index and body image perception and can be used to control and lose weight.

Keywords: body image perception, overweight people, cognitive behavioral treatment, body mass index.
Introduction

Obesity is a chronic disease that in addition to cause physical and mental disease, decrease people's ability and work capacity and makes them vulnerable against most of diseases (Khoda Panah, 2010). Having too much fat especially in abdominal area known as Android obesity is associated with metabolic complications such as hypertension, Insulin resistance, and metabolic syndrome (Bidadian, 2012).

Decrease physical activity due to life style change in recent years and unsuitable nutrition patterns of are some major causes of obesity (Dvade et.al, 2006). The rate of fat tissue in obese people is high and can be measured by methods. The method used widely for adults is body mass index (BMI). In adults, this index is strongly associated with the amount of body fat (Brownel, Faren and Flawen, 2005) and is obtained by dividing weight in kilograms by square of height in centimeter. Obesity is not a mental disorder, but creates a broad anxiety in the obese people. The feedback of the current societies to obesity is one of the major causes of anxiety (Cooper, z and Fairburn, C.G, 2001). Obesity has a mutual relationship with psychological distress and stresses (Brownel, 2004). One of the factors that is influenced by overweight and obesity of people is body image perception. In fact, body image is a mental image and includes positive and negative emotions that an individual has of his body shape and size (Gromel et.al, 2000). Lack of control in eating and obesity is often accompanied with the negative attribute of dissatisfaction with body that in turn creates a negative body image and isolation of the person. Diverse factors such a social-cultural values, social comparisons, society's emphasis on appearance attraction and etc intensify such concerns and perpetuate them (Blowers, L.E et.al, 2003). When a person experiences negative evaluation or being ridiculed by others, a negative body image is formed in his mind that operates as a schema. This in turn causes extreme care, negative interpretation of other's behavior, avoidance behavior and social anxiety, and trying to hide the body. (Cash T.F and Grant, 1996, quoted by Kent, 2000). Since the roles of psychological factors is important in people's getting obese, psychological interventions can help considerably reduce body weight and change body perception of body image and naturally self-concept and social anxiety of obese and overweight people. So far, various treatments have been made to reduce weight of obese peoples. Some of these methods are surjury, drug therapy, and others methods. But now, there is no satisfactory treatment for it. Recently, a new approach to cognitive-behavioral analysis of obesity has emerged (Shafran, R and Desilva, P, 2005; Labins et.al, 2012). The research have concluded that cognitive processes and people's beliefs, have major roles in people's following diet and completing weight-lose process. In the cognitive-behavioral treatment correcting the cognitive errors is firstly done following by determining targeted exercises to maintain and establish new beliefs (store and Ebel, 2007). After weight-losing by changing the pattern of lifestyle, the people's mental states will be improved (Cooper and Firburen, 2010). In this research, the efficacy of the cognitive-behavioral treatment on body mass index and body image perception of overweight people referring to the Health Centers of Ilam province is studied.
Research Background

By studying the mutual effect of appearance based on sensitivity to disapproval of appearance and negative ideas about appearance, Park, Caogero, Harwin and Diraddo (2009) showed that the negative ideas about appearance have often point to weight, shape and size of body, but the positive idea about appearance has often pointed to the total appearance of the person, that has been expressed by friends, or partners of romantic relationships. In the study, Davis and Cooper (2011) showed that obesity has a negative effect on cognitive processes of obese persons and causes they have negative perceptions about their abilities. Zan et.al (2005) by a research concluded that the cognitive therapy behavior can reduce injuries of mental pathology of obese persons and improvement of food consumption patterns. Rechetin, Xaiz, Maravita and Perugini (2011) by a research showed that the explicit and implicit self-esteem is related to the ability of recognition of and satisfaction with different parts of body. In Tvika's study (2011), body dissatisfaction and muscular dissatisfaction are the two components that encourage men to body management behaviors. The study of Frisen and Holmqvist (2010) showed that the people satisfied with their appearances sufficiently, perceive their bodies as more efficient and accept their body defects. Bidel et.al (2006) in his research titled "The effectiveness of group cognitive-behavioral treatment" concluded that this treatment is effective in reducing the symptoms of social anxiety. Le tu, sf and Gray (2009) addressed the relationship of rumination, concern about body image and social anxiety. The results showed that rumination style especially in the area body image can predict anxiety and concern about body image.

In the research by Dorsey, RP, and Eberhardt, MS, on Japanese people, it was shown that body weight perception is contrast to body image in children, teenagers as well as adults. In a similar research in Europe, the overweight men had a false perception of body image than the normal and light weight people. In a research, Sousa (2008) inferred that the teenagers evaluating themselves as obese show less physical activities, weaker family performance, weaker self-concept, higher depression and weaker educational results. Bergeron (2007) conducted a research aiming at studying the relation between body image, dissatisfaction with body and public health of 368 men at the Ohaio University. Results showed that the people satisfied with their body image, are influenced by mental stresses and their public health is decreased. McCabe and Riccardele (2004) by their studies found that people having a high body mass index are dissatisfaction with body image, and there is a relationship among body mass index, body image, and self-concept. Blank et.al (2006), showed that the obese children are worried about presence in community and their body images, and meanwhile, the girls having overweight have more difficulties such as low social interaction and weak presence in society than boys. Wilson, Trrip and Boland (2005) showed that the total body mass index is the best visual predictor of eating disorders and body image. Also, mental perception of weight and shape of body was bigger than real weight and shape that was associated with eating disorders and body dissatisfaction.
Research method

Research method is semi-experimental of pre test-post test kind with control group. After meeting acceptance criteria, the people were selected as subjects and divided in an experimental group and a control group. The experimental group was trained by the researcher for 44 sessions of 45-50 minutes in respect of cognitive-behavioral treatment. The statistical population included all overweight (BMI greater than 25) people referring to nutrition-therapy centers of Ilam province (Ilam, Abdanan, Darreshahr and Malekshahi cities). The statistical sample in this research included 60 overweight people (BMI greater than 25) referring to nutrition-therapy centers of Ilam province to reduce weight, that simple randomly were divided experimental into and control groups. To measure the considered variables of body mass index and body image perception, different tools have been used, that are body mass index (BMI), BMI has been calculated by dividing weight in kilogram by square of height in meter. Weight has been measured using a digital scale with a sensitivity of 100 grams, and height using non-dilatable tape meter with accuracy of 0.5 CM. Littleton body image concern inventory (BICI): Littleton inventory was firstly developed and validated by Littleton, Axom D and Pur Y L.S (2005) and translated and validated by Sajadi nejad and Mohammadi (2006). This inventory is of paper and pencil kind and includes 19 items. The subject should answer Likert 5-points scale, and the range of answers is between 19 to 95 variables. Getting a higher score implies a high rate of dissatisfaction with body image or the person's appearance. Littleton et.al (2005), have examined the factor structure of the inventory. Results showed two important and significant factor, the first factor consist of 11 items (1, 3, 5, 8, 9, 14, 16, 17, 18, 19) and covers person's dissatisfaction with and shame of his appearance, exploring and hiding the perceived defects, and the second factor by eight items (2, 4, 6, 7, 10, 11, 12, 13), shows the rate of interfere with concern about the person's appearance with his social performance. Reliability of the inventory was calculated by Littleton et.al (2008) in a research on a student sample, and the results showed that the inventory's reliability is 0.93 by method of Cronbach's alpha and between 0.32 and 0.73 by correlation item (material) with the whole, indicating the acceptable reliability level of the inventory. In the research by Basak nejad and Qhaffari (2007) on a sample of students, reliability of the inventory of concern about body image by the method of Cronbach alpha is 0.93, 0.95 and 0.95 for boy and girl students and all of the students respectively.

In a research by Pash and Dr.naderi (2011), reliability of body image inventory was calculated by method of Cronbach and Split-half as 0.9, 0.86 respectively reflecting desirable coefficients of the inventory. Convergent validity of this test was studied using calculating by Padowa compulsive-temptation inventory and eating disorders inventory and its correlation coefficients were respectively 0.62 and 0.4 by these tools (p<0.01). In Persian form, internal consistency of the factor of dissatisfaction with appearance and interfere with social performance were estimated 0.84 and 0.84 respectively. Also, the test reliability by method of correlation of the factors and the total score showed that the correlation of the score of satisfaction with appearance and interfere with social performance agents with the total score were 0.85 and 0.82 respectively (Mohammadi and Sajadinejad, 2006).
Treatment Protocol

The cognitive-behavioral treatment of obesity protocol of Cooper Zefra was translated by Kheirollah Sadeghi. So, this method can be conducted both individually and in group. The first phase of treatment lasted the first 30 weeks of treatment and included 8 modules. The second phase lasted 14 weeks and included one module in order to maintain the weight. Appointments were in weekly intervals for the first six weeks and after that, in two-weeks intervals to the week 38, and the two last sessions occur in three-week intervals. Except the evaluation session that lasts more than two hours, each appointment lasts 45 to 50 minutes. The modules of phase one of these treatment methods is as follows:

Module 1: beginning of treatment; module 2: establishing and maintaining weight, module 3: addressing the barriers of weight losing; module 4: decreasing activity; module 5: addressing the concerns about body image; module 6: addressing the goals of weight; module 7: addressing the primary goals; module 8: healthy eating and in the second phase, module 9: maintenance was used. After finishing the treatment protocol and at the end of the 24th session, the two experiments and control groups answered the questions of concerns about body answered again the questions about body concern of Littleton. The weight of each group is measured again. In the end, all the participants at research were appreciated and the findings were analyzed.

Research Findings

To analyze data, the used test in the research was multi-variables covariates analysis. Descriptive indices are observed in table 1.

Table 1: distribution of subjects based on research variables into experimental and control groups

<table>
<thead>
<tr>
<th>variable</th>
<th>Pre-test</th>
<th>Post-test</th>
<th>Pre-test</th>
<th>Post-test</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>mean</td>
<td>Standard</td>
<td>mean</td>
<td>Standard</td>
</tr>
<tr>
<td></td>
<td>deviation</td>
<td>deviation</td>
<td>deviation</td>
<td>deviation</td>
</tr>
<tr>
<td>Body mass index</td>
<td>28/99</td>
<td>1/88</td>
<td>26/67</td>
<td>2/07</td>
</tr>
<tr>
<td>Body image perception</td>
<td>60/26</td>
<td>5/70</td>
<td>51/83</td>
<td>7/67</td>
</tr>
</tbody>
</table>

After obtaining the pre-supposition of multi-variables covariate analysis test, the results of testing this hypothesis that cognitive-behavioral treatment has an effect on body mass index of overweight people are expressed in table 2, the significant level of test for difference of body image index in two groups of control and experiment has become lower than 0.05 significance
level value of the test for comparing these variables in the pre-test and post-test groups has also become lower than 0.05 (p-0.05), that is significant at level 95 percent. So, the above hypothesis has been confirmed and cognitive behavioral treatment has a significant effect on body mass index of overweight people.

Also, after obtaining the pre-suppositions of multi-variables covariate analysis test, the results testing this hypothesis that "cognitive behavioral treatment has an effect on body image perception of overweight people" are shown on table 3.

**Table 2**: the results of one-way covariate analysis in Mankova text on the post-test average of scores of body mass index of experiment and control groups by the pre-test control

<table>
<thead>
<tr>
<th>variable</th>
<th>Changes source</th>
<th>Squares sum</th>
<th>Freedom degree</th>
<th>Squares average</th>
<th>F</th>
<th>Significance level</th>
<th>Eta square</th>
<th>Statistical power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body mass index</td>
<td>Pre-test group</td>
<td>46/813</td>
<td>1</td>
<td>46/813</td>
<td>12/069</td>
<td>0/001</td>
<td>0/094</td>
<td>0/931</td>
</tr>
<tr>
<td></td>
<td></td>
<td>11184/75</td>
<td>2</td>
<td>5592/37</td>
<td>1441/74</td>
<td>0/000</td>
<td>0/961</td>
<td>1</td>
</tr>
<tr>
<td>error</td>
<td></td>
<td>453/83</td>
<td>117</td>
<td>3/879</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The results of table 3 shows that the test significance level for the difference of body image perception between the experiment and control group is lower than 0.05 (p-0.05). Also, the test significance level value for comparing these variables in the pre-test and post-test groups has also become lower than 0.05 (p-0.05) that is significance at level 95 percent. So, the above hypothesis is confirmed and cognitive-behavioral treatment has a significance effect on body image perception of overweight people.

**Table 3**: the results of one-way covariate analysis in Mankova text on the post-test average of scores of body image perception of experiment and control groups by the pre-test control

<table>
<thead>
<tr>
<th>variable</th>
<th>Changes source</th>
<th>Squares sum</th>
<th>Freedom degree</th>
<th>Squares average</th>
<th>F</th>
<th>Significance level</th>
<th>Eta square</th>
<th>Statistical power</th>
</tr>
</thead>
<tbody>
<tr>
<td>Body mass index</td>
<td>Pre-test group</td>
<td>529/20</td>
<td>1</td>
<td>529/20</td>
<td>16/64</td>
<td>0/0000</td>
<td>0/125</td>
<td>0/982</td>
</tr>
<tr>
<td></td>
<td></td>
<td>47458</td>
<td>2</td>
<td>23729</td>
<td>27/746</td>
<td>0/000</td>
<td>0/927</td>
<td>1</td>
</tr>
<tr>
<td>error</td>
<td></td>
<td>3720/2</td>
<td>117</td>
<td>31/797</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>
Discussion about research findings

After controlling the pre-test effect of body mass index based on multi-variables covariate analysis test, research findings showed that cognitive-behavioral treatment has a significant effect on body mass index of overweight people. Also, it is specified that this treatment has a significant effect of body image perception of overweight people.

These findings are consistent with the results of previous studies, such as the study of Park et al. (2009) that showed the negative ideas about appearance have often point to weight, shape and size of body, but the positive idea about appearance has often pointed to the total appearance of the person, that has been expressed by friends, or partners of romantic relationships. In the study, Davis and Cooper (2011) showed that obesity has a negative effect on cognitive processes of obese persons and causes they have negative perceptions about their abilities. Zan et.al (2005) by a research concluded that the cognitive therapy behavior can reduce injuries of mental pathology of obese persons and improvement of food consumption patterns. Rechetin, Xaiz, Maravita and Perugini (2011) by a research showed that the explicit and implicit self-esteem is related to the ability of recognition of and satisfaction with different parts of body. In Tvlka's study (2011), body dissatisfaction and muscular dissatisfaction are the two components that encourage men to body management behaviors. The study of Frisen and Holmqvist (2010) showed that the people satisfied with their appearances sufficiently, perceive their bodies as more efficient and accept their body defects. Bidel et.al (2006) in his research titled "The effectiveness of group cognitive-behavioral treatment" concluded that this treatment is effective on reducing the symptoms of social anxiety. Le tu, sf and Gray (2009) showed that rumination style especially in the area body image can predict anxiety and concern about body image. In the research by Dorsey, RP, and Eberhardt, MS, it was shown that body weight perception is contrast to body image in children, teenagers as well as adults. In a similar research in Europe, the overweight men had a false perception of body image than the normal and light weight people. Bergeron (2007) showed that the people satisfied with their body image are influenced by mental stresses and their public health is decreased. Mccabe and Riccardele (2004) by their studies found that people having a high body mass index are dissatisfaction with body image. Eskandari showed that cognitive behavioral treatment has an effect on body mental image improvement.

In explaining these findings, the cognitive-treatment hypothesis should be noted that is based on change of cognition, emotion and behavior. It means that the intervention cognitive-behavioral treatment in this research causes that in respect of thought and emotion, the subjects using them in communicating with others can have a positive perspective to their body mass index, and also by improving their beliefs and body image perceptions present grounds to reduce it during treatment. Because cognitive-behavioral perspective about body mental image and its negative effect on people's lives (e.g. eating disorders), has focused its interventions on analyzing the corrective of negative evaluation of body and irrational beliefs about the importance, changing them to more positive and accurate thoughts and feelings and promoting adaptive behaviors (Rosen, Reuter, Arosan, 1995). This causes the cognitive behavioral treatment has an effect on body mass image and body image perception. Cognitive-behavioral approach does not focus on
distorted and irrational believes that have been established in the mind. Since the behaviors reflect cognitions and these cognitions influence on mental and body image. Presence of these believes leads to form dissatisfaction with life quality and mental and body image in women the intervention will be effective when the cognitions can be changed and its result is satisfaction with body image perception (Golzari, 2013). Although, it should be admitted that broader studies and consistent intervention following them are needed to generalize the results that has not been considered in this research and is one of its limitations.

Conclusion

Cognitive behavioral treatment can influence on body image index and body image perception of obese people.
References


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