

Original Article

The Relationship between Anxiety and Psychological Distress with Adherence to Treatment in People with Overweight after Surgery

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Abstract

Background and Aim: One of the main concerns of health psychology is the follow-up of patients regarding to treatment adherence. Anxiety related to weight and psychological distress are the factors that play important roles in people with overweight after surgery. The present study aimed to investigate the relationship between anxiety and psychological distress with adherence to treatment in people with overweight after surgery.

Materials and Methods: The research method utilized in this study was descriptive correlational. The statistical population included all obese patients who had undergone sleeve gastrectomy surgery at the Endocrine and Metabolism Research Center. 147 of them were selected by available sampling method. Research instruments included Beck Anxiety Inventory, Kessler Psychological Distress Scale and General Adherence Scale. Data were analyzed using structural equation modeling method.

Results: The results of this study demonstrated that anxiety and psychological distress are related to adherence to treatment among women with overweight after surgery ($p \leq 0/05$). Further, the regression analysis suggested that anxiety and psychological distress predict, respectively, 54% and 58% of the variance of changes in treatment adherence.

Conclusion: It can be stated that targeting psychological constructs such as anxiety and psychological distress during treatment process can be an effective way to enhance treatment adherence among people.

Keywords: Anxiety, Psychological distress, Adherence to treatment

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Introduction

As the global epidemic of obesity increases, examining the effect of diet and weight gain on neural function that influences cognition, motivation and emotion has come to the forefront of research. Human obesity is often associated with anxiety and depression, and recent studies indicate that this may be due in part to the effects of diet, weight gain, and associated physiological changes in brain regions that mediate emotional processes (1). According to the mechanistic, and not social, basis of this relationship, diet and obesity can have side effects of anxiety and depression in rodents. For example, a high-fat diet can increase the risk of mental disorders such as anxiety and depression. Highly palatable diets have been demonstrated to be both anxiolytic and anxiety-provoking, depending on a range of factors including the age of animals and whether they become obese. In addition, consumption of sweet and fatty foods is sufficient to alter neural systems involved in cognition and anxiety, including the hippocampus, nucleus accumbens, frontal cortex of the brain and amygdala, in a way that is expected to promote poor mental health (1). Thus, obese people with anxiety and psychological distress who undergo treatment and surgery, are more prone to problems during treatment process and adherence to treatment.

Adherence to treatment is the key to the success for all treatment methods. If the patient does not adhere to the treatment, the optimal benefits of the treatment decrease, which in turn reduces the overall efficiency of the effective treatment. Adherence to treatment is the process during which the patient agrees on the treatment methods and correctly follows medical instructions. The initiation of a treatment process and its successful completion, participation in examinations, the compliance with medications with recommended doses for the treatment period, lifestyle changes and disease management are critical elements of treatment adherence (2,3).

Among these factors, psychiatric disorders such as depression, anxiety and psychological distress are common among obese patients. Existing studies indicate that anxiety and depression are associated with a decrease in quality of life, adherence to

treatment, and longevity of patients (4,5). Moreover, patients with psychiatric disorders have lower quality of life and poor treatment adherence. Based on the foregoing, this research is intended to determine the relationship between anxiety and psychological distress with adherence to treatment in people with overweight after surgery.

A global epidemic has arisen due to poor dietary choices, high-calorie diets, low physical activity, systemic diseases called obesity or overweight. Obesity is defined as a body mass index greater than or equal to 30 kg. Obesity is a major health problem that increases the risk of many chronic diseases, such as diabetes mellitus, hypertension, and cardiovascular disease (6). The worldwide prevalence of overweight and obesity has doubled since 1980, with one-third of the world's population now classified as overweight or obese. The World Health Organization defines overweight and obesity as an abnormal or excessive accumulation of fat that poses a health risk (7).

With a worldwide prevalence and the increase in the diseases caused by obesity, there is a great need to solve this issue. The increased obesity has led to a significant parallel growth in bariatric surgery which has been proved to be a safe, effective, and sustainable way to lose weight while reducing obesity-related diseases (8). About 29 million people in Iran are overweight and obese, and according to statistics, more than 7,000 surgeries are performed in the country every year and the positive results of bariatric surgery are related to carrying out treatment instructions after surgery by patients.

Adherence to treatment is an important factor for weight loss in obese patients after surgery. For positive effects and prevention of medical complications in patients undergoing bariatric surgery, it is recommended that they adhere to four main areas of behavioral recommendations after surgery: 1) proper eating and drinking behaviors 2) regular exercise 3) taking medication and required supplements 4) participation in post-surgery visits.

However, adherence to these guidelines is generally poor. Successful adherence also requires both an understanding of behavioral recommendations and the ability to overcome the obstacles related to implementation of these behaviors in daily life (9,10).

Sarwer et al. (11) found that patients who followed the diets and guidelines after surgery lost more weight, by 28%, than those who did not follow them properly.

Evidence shows that several risk factors are involved in non-adherence to treatment, including sociological characteristics (aging, male gender, low education and financial conditions), physical and mental health (cognitive disorders, functional dependency, depression and anxiety), pharmacological factors (complication and multiple prescriptions, high costs) and factors related to the health care system (access to pharmacies, lack of follow-up) (12).

The risk of non-adherence to medication increases with an increase of one unit in anxiety (12). Moreover, psychological distress is associated with adherence to treatment (13). Anxiety is a multi-dimensional concept with various scopes that manifests itself as a physical, cognitive, emotional, and interpersonal phenomenon. It is a negative mood state with physical symptoms and thinking about the future (14). In the description of individual psychopathology, psychological distress refers to non-specific symptoms of depression and anxiety symptoms and maladaptive psychological behaviors during stressful life events (15).

Given the importance of psychological factors in adherence to treatment in patients, investigations revealed that limited studies have examined the role of psychological factors in adherence to treatment among these patients. Therefore, this research seeks to answer the question as to whether there is a relationship between anxiety and psychological distress with adherence to treatment in people with overweight after surgery.

Methods

This study was a descriptive and correlational design. Various questionnaires were utilized for data collection. Statistical analyses were used to screen the data and to investigate the hypothesis of the study. Pearson correlation coefficient and multiple regressions were used to describe the association between study variables and to show if independent variables can predict the adherence to treatment in people with overweight after surgery significantly. Participants of the study were 147 obese

people who underwent bariatric surgery in Tehran, Iran who were selected by applying a convenience sampling method. 61 (41.5%) of the participants were single and 86 (58, 5%) were married. The age of the participants ranged from 24-46 ($M = 34.21$, $SD = 3.37$). 10 (6.8%) of participants had high school Diploma, 74 (50.3%) had bachelor's degree, 42 (28.6%) had master's degree and 21 (14.3) had PhD.

Materials

Beck Anxiety Inventory: This questionnaire contains 21 questions presented by Beck et al (3), which are scored on a 4-point Likert scale, ranging from not at all (0) to severe (3). The final score is between 0 and 63. A higher score indicates greater anxiety. Its internal consistency coefficient and test-retest reliability with a one-week interval have been reported to be 0.92 and 0.75, respectively, and the correlation of its items varies from 0.30 to 0.76(16). In the study of psychometric properties in the Iranian population, Khesht-Masjedi, Omar, KafiMasoleh (17) have obtained the validity coefficient, test-retest reliability coefficient with a one-month interval and Cronbach's alpha to be 0.72, 0.83 and 0.92, respectively(17).

Psychological Distress Scale: This questionnaire contains 10 questions that were provided by Kessler and his colleagues (18). The questions are scored on a 4-point Likert scale, ranging from never (0) to always (3). The maximum score is 30. Various studies have demonstrated that the questionnaire has good validity and reliability. In the research by Ya'qoubi (18), factor loadings were obtained between 0.65 and 0.84. Cronbach's alpha coefficient of the questionnaire was reported to be 0.93(18).

General Adherence Scale: General Adherence Scale has been provided by Hayes (19). It contains 5 questions which are scored on an 8-point Likert scale, ranging from always (6) to never (1). Internal consistency coefficient and the correlation of the scores in this tool with a two-year interval have been reported to be 0.81 and 0.60, respectively (19). Bokaiyan obtained Cronbach's alpha coefficient to be 0.68(20).

Results

According to table (1), the mean scores for anxiety, psychological distress and adherence to treatment are 32.95 ± 19.48 , 16.90 ± 10.04 and 17.41 ± 4.97 , respectively.

According to the information in table (3) to table (5), there is a significant negative relationship between anxiety and adherence to treatment, meaning that as anxiety increases, adherence to treatment decreases.

Further, there is a significant negative relationship between psychological distress and adherence to treatment; that is, with increased psychological distress, adherence to treatment decreases.

Table (3) displays the regression coefficients, beta coefficients and the significance of these coefficients to show the predictive role of anticipatory anxiety extracted in the regression analysis.

The significance of t-statistic in Table (4) also indicates that anticipatory anxiety has a statistically significant

Table 1: Descriptive statistics of the research variables.

Variable	Mean	SD	Minimum	Maximum
Anxiety	32.95	19.48	11	62
Psychological distress	16.90	10.04	6	30
Adherence to treatment	17.41	4.97	6	27

Table 2: Correlation matrix of the research variables.

Variables	1	2	3
1- Anxiety	1		
2- Adherence to treatment	-0.54**	1	
3- Psychological distress	0.60**	-0.58**	1

Table 3: ANOVA.

Model	Sum squares	of Degrees freedom	of Mean square	F	Significance level
Regression coefficient	1063.55	1	1063.55	60.37	0.0001
Residual	2554.13	145	17.61		
Total	3617.68	146			

Table 4: Regression coefficients of predictive factors of attitude toward non-adherence.

Criterion variable	Unstandardized coefficient	Standard error	Standardized coefficient	T	Significance level
Constant	21.97	0.68		32.23	0.0001
Anxiety	-0.133	0.01	-0.54	-7.77	0.0001

Table 5: ANOVA.

Model	Sum squares	of Degrees freedom	of Mean square	F	Significance level
Regression coefficient	1218.64	1	1218.64	73.65	0.0001
Residual	2399.04	145	16.54		
Total	3617.68	146			

Table 6: Regression coefficients of predictive factors of adherence to treatment.

Criterion variable	Unstandardized coefficient	Standard error	Standardized coefficient	T	Significance level
Constant	22.27	0.65		33.82	0.0001
Psychological distress	-0.28	0.03	-0.58	-8.58	0.0001

effect in explaining adherence to treatment. Moreover, the standardized regression coefficient suggests that anxiety can negatively predict adherence to treatment in obese people after surgery by 0.54.

Table (5) provides the regression coefficients, beta coefficients and the significance of these coefficients to show the predictive role of anticipatory anxiety extracted in the regression analysis.

The significance of t statistic in Table (6) also suggests that anticipatory psychological distress has a statistically significant effect in explaining adherence to treatment. Further, the standardized regression coefficient shows that psychological distress can negatively predict adherence to treatment in obese people after surgery by 0.58.

Discussion

The purpose of this study was to investigate the relationship between anxiety and psychological distress with adherence to treatment in obese people after surgery. The results demonstrated that anxiety and psychological distress have a significant negative relationship with adherence to treatment in obese people after surgery. According to these explanations, we will explain the obtained results. Based on the information, there is a significant negative relationship between anxiety and adherence to treatment; that is, with increased anxiety, adherence to treatment decreases. The results of this research are consistent with the studies conducted by Qanbari et al. (21), Golshiri et al (22), Barberis et al (23) and Lai et al (24).

Qanbari et al. (21) concluded that anxiety and depression play an important role in successful outcome of surgery and emotional feedback about the usefulness of surgery. If the surgery solves obesity-related discomforts and has fewer complications and the person can follow the doctor's instructions after the surgery and does not regain weight, then feelings of anxiety and depression decreases which can lead to positive feelings about the result of the surgery (21). Golshiri et al. (22) concluded that patients with severe anxiety reported more non-adherence to medication compared to patients with a normal anxiety level (22). That social functioning had a significant negative relationship with adherence to treatment. Anxiety and

sleep disorders had no significant relationship with adherence to treatment. Hence, it can be concluded that by improving social functioning, it is possible to increase adherence to treatment and thus prevent the complications of diabetes (24). Barberis et al concluded that there is a direct relationship between motivation and dietary adherence, anxiety and depression symptoms and physical performance. Dietary adherence is significantly related to motivation and anxiety and depression symptoms and physical performance (23). Lai et al. concluded that scores of anxiety and social support predict the treatment adherence rate in patients (24).

Based on the results of this study, there is a significant negative relationship between psychological distress and adherence to treatment. That is, with increased psychological distress, adherence to treatment decreases. The results of this research are in line with the research by Ansari Moqaddam et al. (13). Ansari Moqaddam et al. maintained that the direct effect of self-efficacy and psychological distress on weight loss and the indirect effect through adherence to treatment were significant (13).

Anticipatory anxiety has a statistically significant effect in explaining adherence to treatment. The standardized regression coefficient suggests that anxiety can negatively predict adherence to treatment in obese people after surgery by 0.54. Anticipatory psychological distress also has a statistically significant effect in explaining treatment adherence. Moreover, the standardized regression coefficient shows that psychological distress can negatively predict adherence to treatment in obese people after surgery by 0.58.

In explaining these results, it can be suggested that obese people who undergo surgery to lose weight need prevention and treatments afterwards and should use special abdominal belt. Therefore, in such a situation, adherence to treatment and care plans may lead to despair in life due to feeling of powerless or sick, and in some cases, lack of quick recovery or the desired result. On the other hand, intensification of these feelings results in various psychological symptoms, especially anxiety, and the individual may refuse to continue the treatment plan and avoid it in different ways, especially in relation to taking medicine or using special abdominal belt in the long term.

It seems that depression, anxiety, and stress can cause

numerous problems by affecting the acceptance of obesity by patients. Other studies also indicate that one of the important approaches in dealing with chronic diseases such as obesity is the patients' effort to become ready (13). Having mental readiness is a facilitating factor in better accepting the treatment. The conducted studies also reveal that patients' readiness plays an important role in their adherence to treatment and causes better management of disease treatment, in addition to reducing the time of accepting the treatment. Accordingly, it can be explained that mental disorders such as depression, anxiety, and stress cause to reduce the acceptance of the disease and adherence to treatment by having a destructive effect on the mental readiness of patients. Although people with psychological distress can experience positive emotions (25), the factor that distinguishes them from people without psychological distress, is the high level of experiencing negative emotions. Affected people are biologically prepared to overreact to negative emotions. This mechanism makes them pay extreme attention to the negative and threatening stimuli of the environment and themselves (26). Cognitive theories concerning psychological distress suggest that attentional bias towards oneself or the surrounding environment aggravates anxiety and depression and distorts the judgment about events (27) and due to these symptoms, they may not be successful in continuing difficult treatments after surgery.

Since psychological distress and anxiety have effective functions in adherence to treatment among patients and the relationship between them has been proved in this research, it can be claimed that after referring and performing surgery, people with anxiety, stress and depression may ignore the doctor's instructions and the conditions they must observe after the treatment or not follow them properly. Thus, such people are prone to not follow the treatment completely. Therefore, it can be stated that psychological distress and anxiety are predictors of adherence or non-adherence to treatment among people.

Some limitations of the present study were the use of convenience sampling, the use of self-report tools, the use of obese people who underwent surgery without considering the reason for this decision, and the use of

only female participants which can limit our ability to generalize the results to into a larger a scale. Among other limitations were the existence of limited studies, which made it difficult to compare the research results with other domestic and foreign studies. It is suggested that both women and men be studied in future studies. It is recommended that the difference between this prediction and the relationship between the two sexes be investigated. It is also suggested to study the effect of training, counseling, and promotion of educational programs related to anxiety and stress and their improvement and the effects of treatment to the end. Further, considering the role of anxiety and psychological distress in adherence to treatment, it is recommended that in hospitals and clinics where this surgery is performed, educational programs be adopted to improve the psychological conditions of patients for better treatment results

Conclusion

In general, it can be stated that anxiety and psychological distress, which indicates more anxiety, depression, and anger, may occur in people after surgery due to pain, difficulty that they must endure for some time in order to recover and achieve the desired result and observe weight loss. Therefore, due to these difficulties people may be unable to make correct decisions and appropriately continue the treatment. Perhaps it can be said providing more emotional and environmental support from family and medical personnel, the anxiety and psychological distress can be prevented so that patients can complete their treatment in the best possible way.

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Conflict of Interest

The authors declare that they have no conflict of interest.

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