



The Effectiveness of a Group-based Therapeutic Programme for Obese Women Who Need to Improve Eating Attitude and Enhancing Self-esteem

Xiaoping Liu^{1*}, Lan Wen², Min Jia³

ABSTRACT

This study evaluated a group-based therapeutic programme to obese women who need to improve eating attitude and enhancing self-esteem. The therapeutic programme was conducted in a university-affiliated therapeutic diet centre in China. The sample of 30 women with overweight (BMI 25-35) was randomly assigned between BGBT group (n =20) and control group (n =18). We used an experimental 2 (experimental-control) × 2 (pretest-posttest) design, with follow-up. Measures involved: Initial Interview; Rosenberg Self-esteem Scale; Eating Attitude Test-26; and Emotion and Feelings State Questionnaire. In the intervention group, we observed an increase in overall self-esteem, personal value, slimming, oral inhibition and perceived control of emotions and feelings and a decrease in overeating. Therefore, we observed data significant improvement in positive interaction from the intervention group obese women at after the programme, compared with the control group. The results also show that a group-based therapeutic programme can protect women with overweight from an increase in perceived feedback and behaviors of sickly eating.

Key Words: Obese Women, Eating Attitude, Self-Esteem, Buckroyd Approach

DOI Number: 10.14704/nq.2017.15.4.1156

NeuroQuantology 2017; 15, 4:114-120

114

Introduction

Over weight and obesity, as a risk factor for health, is defined by high and abnormal fat (WHO, 2011) and caused by the lack of diversity, proportion and balance of food diets, genetic problems, environmental factors, metabolic diseases such as hypothyroidism, nervous and musculoskeletal disorders, bone and joints diseases, hormonal disorders, use of some medications and psychological factors (Mokdad *et al.*, 2000). According to the WHO report, obesity is one of the 10 most common health problems in the world (WHO, 2011). Obesity is a serious risk factor for non-communicable

diseases, such as the diseases cardiovascular, blood pressure, stroke, diabetes mellitus and various types of cancer (WHO, 2000). The prevalence of obesity is increasing in all age groups and in most countries (WHO, 2011).

In the medical and psychiatric community, obesity and overweight are one of the interventions between body and mind that has been observed in the literature. Obesity has a two-way relationship with emotional stresses, psychological disturbances and psychiatric status of individuals (Fattahi *et al.*, 2017). Psychiatric disorders, acute psychological stress and more chronic psychological and personality issues

Corresponding author: Xiaoping Liu

Address: ¹School of Education Science, Neijiang Normal University, Neijiang, 641112, China; ²The First Affiliated Hospital of University of South China, Hengyang, 421001, China; ³Guangzhou Chest Hospital, Guangzhou, 510095, China
e-mail ✉ starmuxiao@126.com

Relevant conflicts of interest/financial disclosures: The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

Received: 12 November 2017; **Accepted:** 7 December 2017



can all cause to obesity and overweight. Many of the psychological issues as a primary and constant cause can cause the appearance of obesity. Meanwhile, obesity leads to many adverse psychological outcomes and dissatisfaction with life (Brownell, 2004, Blum *et al.*, 2015).

Some studies have identified the determinants of obesity as well as the effects of obesity on many psychological problems (Blank *et al.*, 2006; Perri and Corsica, 2003; Latzer and Tzischinsky, 2005; Fisher *et al.*, 1994; Golden, 2003; Littleton and Ollendick, 2003; Gargari *et al.*, 2010; Omidvar *et al.*, 2002). Perri and Corsica (2003), in an epidemiological study using a widespread scale, indicated that obesity correlates with major depressive disorder and suicide thoughts and attempts in women, unlike men. They concluded that reducing the health and psychosocial consequences of obesity and its economic costs are remarkable, the possibility of hiring or job promotion is lower among obese women, they are evaluated more negatively in job performance, issues of social crises, physical image and as well as lower quality of life that appear due to reduced physical and vitality performance, often affect obese people (Perri and Corsica, 2003).

Studies show that obesity and its unpleasant faces can reduce self-esteem in people who appearance image, acceptance by community and others who are important for individuals, has a great impact on their self-esteem (Crocker and Wolfe, 2001; Miao *et al.*, 2017). Quinn and Crocker (1998) reviews of female university staff showed people with overweight and self-esteem under the influence of their appearance and acceptance of others have a lower self-esteem. When the apparent condition of individuals does not coincide with the cultural ideals of society, it leads to a feeling of shame and sin; therefore, the positive or negative impression of weight can affect the level of self-esteem of individuals (Power and Crocker, 2004; Khurshid *et al.*, 2017). A study on high school girls found that high self-esteem is related to fruit, vegetable, fat and sweetness consumption at an optimal level, and inappropriate diet and smoking are related to low self-esteem (Sahebzamani *et al.*, 2010; Shehadeh *et al.*, 2016). Yoko *et al.* (1998) conducted a study on 63 patients with eating disorder (34 patients with nervous anorexia, 29 patients with nervous appetite) and 45 healthy people and examined the relationship between eating attitudes and their psychological states. They used four tests in this

study, including eating attitude, anxiety, depression, and impulsivity. Their study results showed that psychological, anxiety; depression and impulsivity levels among patients with eating disorder are higher compared with patients in the control group.

As mentioned, the empirical observations confirm the success of cognitive-behavioral therapies in changing the negative body image of obese people and people with a bad physical form disorder (Rosen, 1996). On the other hand, the effect of cognitive-behavioral interventions on promoting self-esteem has been proven in various researches (Ilkhchi, Poursharifi & Alilo, 2011; Hall and Tarrier, 2003), but despite the great importance that body image plays in improving psychosocial, improving marital relationship and even the acceleration of women's medical treatment, the researchers have been less concerned, and despite the proven role of self-esteem in the development of personality and improving the quality of life of women, until the time of writing this report, there was no study specifically aimed at assessing the effectiveness of cognitive-behavioral interventions in improving body image and, consequently, promoting women's self-esteem.

In this regard, the purpose of this experimental study is to test the effects of a group-based therapeutic programme (Buckroyd's Group-Based Therapy (BGBT)) on perceived feedback and behaviors of sickly eating and perceived self-esteem for obese women. We used the variables overall self-esteem and personal value as indicators of perceived self-esteem (Rosenberg, 1965; Rather *et al.*, 2017; Barrow, 2007) and the variables slimming, overeating and oral inhibition as indicators of perceived feedback and behaviors of sickly eating (Garner and Garfinkel, 1979). Furthermore, we included perceived control of emotions and feelings as an important emotion and feeling-related outcome variable (Evans, 1980). We developed the following three hypotheses:

1. We expected an increase in overall self-esteem and personal value in the BGBT group, but not in the control group.
2. We expected an increase in slimming and oral inhibition and a decrease in overeating in the BGBT group, but not in the control group.
3. Perceived control of emotions and feelings should increase in the BGBT group, but remain unchanged or even decrease in the control group.

Methods

Participants

A total of 38 women with obesity disorder selected from three institutions Diet & Fitness Center in China participated in the intervention. Participants were housewife (about 23.5%), employed (about 43%) and university student (about 33.5%). The researcher randomly assigned participants to a Buckroyd's Group-Based Therapy (BGBT) group (n = 20) and control group (n = 18). Participants' age ranged from 20 to 35, and averaged 26.57 years (SD =3.45). The inclusion criteria were: age 20-35 years, Body Mass Index (BMI) between 25-35, not pregnancy, and having physical health. The exclusion criteria were: age less than 20 years or more than 35 years, difficult to communicate, hesitate to participate in the study, and having physical or psychological problems.

A detailed summary of the randomization and number of participants in the control and BGBT groups was illustrated in Fig. 1. Among the 56 women with obesity disorder, 45 agreed to participate in the study, 38 completed the measures before the BGBT program, 32 completed the measures after the BGBT program and 30 completed the follow-up (one month after the BGBT program).

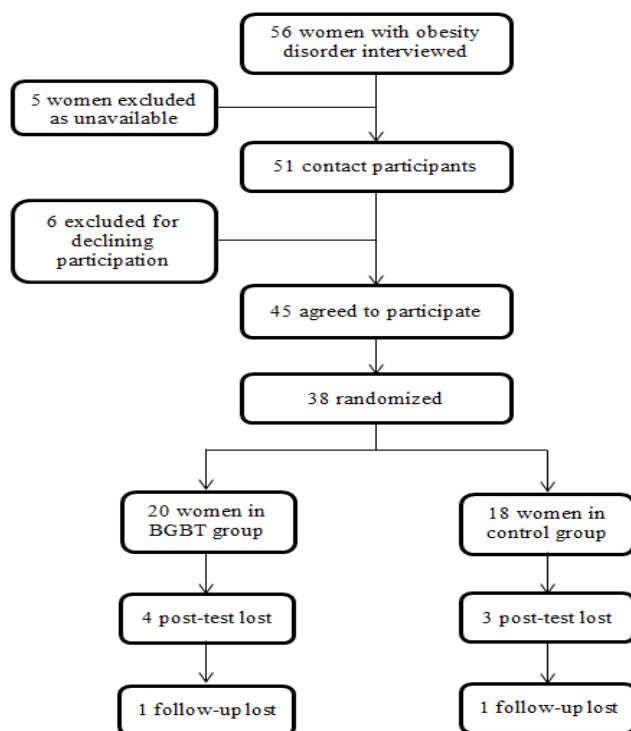


Figure 1. Flow diagram on participants' recruitment

Measures

Body Mass Index (BMI), this index is obtained by dividing weight by height squared. We measured the participants' height using a tape meter and the participants' weight using a high-sensitivity digital scale in both groups before the BBT intervention programme.

Rosenberg Self-Esteem Scale (RSES), quoted from Barrow (2007), we used this scale for the variables overall self-esteem and personal value as indicators of perceived self-esteem. The scale covers positive aspects of perceived self-esteem and consisted of 10 items. Empirical evidence supported the reliability and validity of the Rosenberg Self-Esteem Scale (Tinakon and Nahathai, 2012; Piyavhatkul *et al.*, 2011).

Eating Attitude Test-26, adapted from Garner and Garfinkel (1979), we used this scale for the variables slimming, overeating and oral inhibition as indicators of perceived feedback and behaviors of sickly eating. The scale consisted of 26 items. The scale ranged the items 1-25 from 1 (mostly) to 3 (always). For the item 26, the scale ranged from 1 (sometimes) to 3 (never). Empirical evidence supported the reliability and validity of the scale Eating Attitude Test-26 (Rivas *et al.*, 2010; Al-Subaie *et al.*, 1996; Ahmadi *et al.*, 2014; Pope *et al.*, 2015).

Emotions and Feelings State Questionnaire, adapted from Evans (1980), we used this scale for the variable perceived control of emotions and feelings as an important emotion-related outcome variable. The scale measures individual control level on their feelings and emotions and consisted of 30 items. The scale ranged from positive attitude (score 1) to negative attitude (score 3). In this scale, a low score indicates much control over emotions, and participants with a low score are relaxed. Participants with a high score are aggressive. The alpha coefficient of the Emotions and Feelings State Questionnaire was acceptable with 0.78 at before the intervention, 0.81 at after the BBT intervention and 0.85 at follow-up.

Procedure

The researcher of this study used two groups with before and after intervention and follow-up experimental design, and approved the study by a university-affiliated therapeutic diet centre in China.

Table 1. Overview of the purpose, objectives and indicative content of the Buckroyd's group-based Therapy (BGBT) intervention

Session	Purpose	Main Content
0	Introduction	Introducing the program and an overview on it, an explanation of the benefits of group counseling
1	Motivate and strengthen of desire for change	Welcoming, an introduction of participants, group policy guidelines, getting consent from the members and their commitment to participate in group sessions, expressing fears and hopes, discussing obesity and its impact on people's lives, talking about self-confidence and ways to increase it. Homework: writing other ways to raise self-confidence
2	Motivate and strengthen of desire for change	Overview of the previous session, reviewing the homework, introduction of the Prochaska's change theory and discussion about it, explaining the reasons for changing and not changing the weight and dividing it with the group, giving examples of other life cases and determining the point at which they are located. Homework: What do you think we need to change?
3	Motivate and strengthen of desire for change	Overview of the previous session, reviewing the homework, talking about motivation, providing strategies to strengthen motivation, emphasis on goal setting, introducing the idea of self-regulatory, worksheet for food and mood, practicing weight-line/lifeline. Homework: filling the worksheet every day
4	Focus on Emotions	Overview of the previous session, reviewing the homework, providing reasons for filling and filling out the worksheets, talking about emotional eating, difference between emotional eating and normal eating, naming emotions, members' awareness of their emotions. Homework: worksheet for food, mood and identifying their emotions.
5	Focus on Emotions	Overview of the previous session, reviewing the homework, investigating emotions of family members, discussing emotion management, root of negative emotions, providing cognitive-behavioral strategies for managing emotions and overeating caused by them, emotion chamber technique. Homework: worksheet for food, providing new ways to manage emotions
6	Focus on Emotions	Overview of the previous session, reviewing the homework, discussing causes of food misuse, providing stress management and emotional overeating control techniques, relaxation training, technique of imagining a safe face. Homework: practicing the methods presented in this session
7	Food habits and eating attitudes	Overview of the previous session, reviewing the homework, providing a worksheet for food planning and explaining it, study of food beliefs and discussions about mistaken food habits. Food substitution: gradual change of food menu. Homework: reviewing the shopping cart every day, filling the worksheet every day.
8	Food habits and eating attitudes	Overview of the previous session, reviewing the homework, healthy eating ways, recognizing joyous foods, nervous foods, aging foods and diets to have good morals. Homework: notes on the food experience of this session, filling daily worksheet
9	Overview of the previous sessions	Overview of discussions about motivation, emotional eating, food habits and eating attitudes
10	Communications	Group discussions with each other about experiencing group presence, hobbies, use of people instead of food, trusting each other, explaining the attachment theory in a simple language, method of the support cycle. Homework: calling and streaming each other about the topics in the group, filling the worksheets
11	Communications	Overview of the previous session, reviewing the homework, talking about relationship between emotions management and human interactions, attachment from the Buckroyd perspective. Homework: determining type of attachment by individual and a brief explanation about it
12	Activity	Overview of the previous session, reviewing the homework, discussion about history of members' sport activities, a brief explanation of Bandura's self-efficacy theory, benefits of exercise, characteristics of a sports program and design of an appropriate exercise program, disadvantages of inappropriate devices and slimming methods. Homework: Planning for a group walk
13	Self-esteem	Overview of the previous session, What is self-esteem? Difference between self-esteem and self-confidence, relationship between self-esteem and obesity, self-esteem improvement strategies, introducing self-esteem audiobook. Homework: Listen to the audiobooks and providing more ways to raise self-esteem
14	Body image and physical self-esteem	Overview of the previous session, questions about members' opinions about their body, imaging going to a party, defining body image, and mediating factors in body image. Homework: Listen to the audiobook
15	Body image and physical self-esteem	Overview of the previous session, discussions about effects of positive body image, effects of negative body image, correlation between body image and eating behavior, providing solutions for improving body image. Homework: Writing letters to other members of the group
16	Evaluation and Closing	Requesting members to submit reports on progress on topics discussed at the group sessions, reviewing written letters, reviewing suggestions.

Pre-programme evaluation

The primary outcome determined in this study was the level of BMI (measured by height and weight), self-esteem (measured by the Rosenberg Self-esteem Scale) and eating attitude (measured by the Eating Attitude Test). The women with obesity disorder participated in both groups were interviewed face-to-face by two psychologists at before the BGBT intervention as pretest.

Programme implementation

Participants in the BGBT group received the Buckroyd's group-based therapeutic intervention, while women in the control group did not receive any intervention or training. A summary of the therapeutic intervention content is presented in Table 1.

Post-programme evaluations and follow-up

All the outcomes measures were applied to participants in the BGBT and control groups: RSES, EAT-26, and EFSQ (session 17) following the same guidelines of before the BGBT intervention programme. The women with obesity disorder participated in both groups were followed once, directly 4 weeks after the BGBT intervention.

Data analysis

To investigate the BGBT programme' effects, differences in demographic characteristics (age) and the non-parametric variables (marital status, history of obesity in family, number of children, educational level, income) between the BGBT group and the control group were assessed by one-way ANOVA or Chi-square test.

To determine the BGBT programme' effects over time ($G \times T$ interaction effects), we used analysis of mixed models for data with repeated measures for the variables overall self-esteem, personal value, slimming, overeating, oral inhibition and perceived control of emotions and feelings.

Results

The results of descriptive statistics showed that there were no differences between the groups for age groups 20-25 years (BGBT group: $M = 27.34$, $SD = 3.37$; control group: $M = 27.45$, $SD = 3.25$), 26-30 years (BGBT group: $M = 26.14$, $SD = 3.44$; control group: $M = 26.12$, $SD = 3.33$) and 31-35 years (BGBT group: $M = 28.26$, $SD = 3.22$; control group: $M = 28.81$, $SD = 3.13$). Also, there were no differences concerning marital status, history of

obesity in family, number of children, educational level and income between the groups.

The major differences between the BGBT group and control group in overall self-esteem, personal value, slimming, overeating, oral inhibition and perceived control of emotions and feeling scores at before and after the BGBT intervention programme, and follow-up were illustrated in Table 2. The scores showed that, in the MBSR group, there is a significant increase for the variables overall self-esteem (before the BGBT intervention: $M = -3.29$, $SD = 2.11$; after the BGBT intervention: $M = 4.25$, $SD = 2.48$; follow-up: $M = 6.87$, $SD = 3.15$), personal value (before the BGBT intervention: $M = 0.38$, $SD = 1.23$; after the BGBT intervention: $M = 5.22$, $SD = 1.17$; follow-up: $M = 8.57$, $SD = 2.34$), slimming (before the BGBT intervention: $M = 0.24$, $SD = 0.84$; after the BGBT intervention: $M = 6.37$, $SD = 0.26$; follow-up: $M = 10.22$, $SD = 1.36$), oral inhibition (before the BGBT intervention: $M = 0.72$, $SD = 0.46$; after the BGBT intervention: $M = 7.28$, $SD = 0.22$; follow-up: $M = 11.29$, $SD = 1.12$) and perceived control of emotions and feeling (before the BGBT intervention: $M = 3.14$, $SD = 1.49$; after the BGBT intervention: $M = 6.97$, $SD = 1.28$; follow-up: $M = 9.64$, $SD = 2.04$), but no significant decrease in the control group. While overeating decreased in the BGBT group (before the BGBT intervention: $M = 8.42$, $SD = 1.22$; after the BGBT intervention: $M = 2.26$, $SD = 1.37$; follow-up: $M = 0.08$, $SD = 0.54$), no changes occurred in the control group (before the BGBT intervention: $M = 9.07$, $SD = 1.38$; after the BGBT intervention: $M = 8.46$, $SD = 1.66$; follow-up: $M = 9.11$, $SD = 1.44$).

Discussion

The aim of this study is to evaluate a group-based therapeutic programme (Buckroyd's Group-Based Therapy (BGBT)) to obese women who need to improve eating attitude and enhancing self-esteem. An experimental procedure was used with paper and pencil measures from women participated in the study.

The first hypothesis, an increase in overall self-esteem and personal value in the BGBT group but not in the control group, could be partially supported. As expected, women with obesity disorder reported an increase of overall self-esteem and personal value during the treatment in the BGBT group. In the control group we found a tendency of increased overall self-esteem and personal value, but no significant effect. The second hypothesis, an increase in slimming and

Table 2. Outcome measure scores and results of mixed model for repeated measures test ($G \times T$) for obese women participated in two groups from before the BGBT intervention to follow-up

Variables	Pre-test		Post-test		Follow-up		Interaction G \times T	Effect size	
	BGBT group M (SD)	Control group M (SD)	BGBT group M (SD)	Control group M (SD)	BGBT group M (SD)	Control group M (SD)		F	d
	Overall self-esteem	-3.29 (2.11)	-3.46 (2.08)	4.25 (2.48)	-2.92 (2.31)	6.87 (3.15)	-5.16 (2.88)		
Personal value	0.38 (1.23)	0.29 (1.34)	5.22 (1.17)	0.37 (1.45)	8.57 (2.34)	0.03 (0.34)	3.621*	0.281	-3.390; 3.954
Slimming	0.24 (0.84)	0.19 (0.33)	6.37 (0.26)	0.31 (0.35)	10.22 (1.36)	0.15 (0.71)	5.348**	0.159	-0.517; 1.554
Overeating	8.42 (1.22)	9.07 (1.38)	2.26 (1.37)	8.46 (1.66)	0.08 (0.54)	9.11 (1.44)	14.332***	0.389	-1.890; 2.666
Oral inhibition	0.72 (0.46)	0.35 (0.52)	7.28 (0.22)	0.31 (0.11)	11.29 (1.12)	0.25 (0.16)	4.225*	0.315	-2.058; 2.686
Perceived control of emotions and feelings	3.14 (1.49)	3.28 (1.27)	6.97 (1.28)	2.77 (1.44)	9.64 (2.04)	2.51 (1.24)	4.184**	0.168	-0.786; 1.125

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

oral inhibition and a decrease in overeating in the BGBT group but not in the control group, could be partially supported. As expected, women participated in the study reported an increase of slimming and oral inhibition and a decrease of overeating during the treatment in the BGBT group. In the control group we found no significant effect. As a third hypothesis, perceived control of emotions and feelings should increase in the BGBT group, but remain unchanged or even decrease in the control group, participants in the BGBT group reported an increase of perceived control of emotions and feelings, whereas the members of the control group did not.

The results showed that the Buckroyd's group-based therapeutic programme was effective in increasing the self-esteem and eating attitude among the study participants. Having a good feeling about self can effectively affect mental health and how the person can behave. In the programme, participants learned that individuals with high self-esteem have a better understanding of themselves; they more realistically confront with issues and find those who love and appreciate them for their own sake. A person with high self-esteem is able to praise others, grateful and open-faced, independent in offering votes and opinions, a person with a sense of security, sure to do his job. These persons accept their mistakes easily and do not blame others for their obesity or misconceptions. In the current study, the relationship between self-esteem and obesity was noted and participants learned that self-esteem can affect their lifestyle, including receiving food and physical activity.

Also, in order to increase self-esteem, the test group repeatedly repeated the emphasis phrases for self-esteem by providing relevant solutions. The other finding of the present study is the positive effect of the Buckroyd's group-based therapeutic programme on eating attitudes among women participated in the study, which is consistent with the results of similar studies (Rother and Buckroyd, 2004).

Conclusion

In conclusion, the favorable results of the present study – positive effects of the Buckroyd's group-based therapeutic programme on self-esteem and eating attitudes among women participated in the study – suggest the potential benefits of this group-based therapeutic programme to women who need to improve eating attitude and enhancing self-esteem. The authors of this study hope that this paper may contribute to an increase in future studies to improve eating attitude and enhancing self-esteem among obese women.

References

- Ahmadi S, Moloodi R, Zarbaksh MR, Ghaderi A. Psychometric properties of the Eating Attitude Test-26 for female Iranian students. *Eating and Weight Disorders-Studies on Anorexia, Bulimia and Obesity* 2014; 19(2):183-9.
- Al-Subaie A, Al-Shammari S, Bamgboye E, Al-Sabhan K, Al-Shehri S, Bannah AR. Validity of the Arabic version of the eating attitude test. *International Journal of Eating Disorders* 1996; 20(3):321-4.
- Barrow AP. Assessing emotional evaluation: A validation study of the Reactions to Emotions Questionnaire. The University of Texas at Austin, 2007.

- Blank MJ, Berg AC, Melaville, A. Growing Community schools: The role of Cross-boundary leadership. Washington (DC): Coalition for Community Schools, 2006.
- Blum K, Braverman E, Waite RL, Archer T, Thanos PK, Badgaiyan R, Febo M, Dushaj K, Li M, Gold MS. Neuroquantum theories of psychiatric genetics: can physical forces induce epigenetic influence on future genomes?. *NeuroQuantology* 2015; 13(1):90-103.
- Buckroyd J. Understanding Your Eating: How to Eat and Not Worry about It: McGraw-Hill Education, 2011.
- Crocker J, Wolfe CT. Contingencies of self-worth. *Psychological Review* 2001; 108(3):593-623.
- Fattahi S, Naderi F, Asgari P, Ahadi H. Neuro-Feedback Training For Overweight Women: Improvement of Food Craving And Mental Health. *NeuroQuantology*. 2017; 15(2): 232-238.
- Fisher M, Pastore D, Schneider M, Pegler C, Napolitano B. Eating attitudes in urban and suburban adolescents. *International Journal of Eating Disorders* 1994; 16(1):67-74.
- Gargari BP, Hamed-Behzad M, Seied Sajadi N, Kooshavar D, Karami S. Relation of body mass index to eating attitude in Tabrizian high school girls. *Medical Journal of Tabriz University of Medical Sciences* 2010; 32(3): 24-29.
- Garner DM, Garfinkel PE. The Eating Attitudes Test: An index of the symptoms of anorexia nervosa. *Psychological Medicine* 1979; 9(2):273-9.
- Golden NH. Eating disorders in adolescence and their sequelae. *Best Practice & Research Clinical Obstetrics & Gynaecology* 2003; 17(1):57-73.
- Hall PL, Tarrrier N. The cognitive-behavioural treatment of low self-esteem in psychotic patients: a pilot study. *Behaviour Research and Therapy* 2003; 41(3):317-32.
- Ilkhchi SV, Poursharifi H, Alilo MM. The effectiveness of Cognitive-Behavioral Group Therapy on self-efficacy and assertiveness among anxious female students of high schools. *Procedia-Social and Behavioral Sciences* 2011; 30: 2586-91.
- Khurshid Z, Najeeb S, Mali M, Moin SF, Raza SQ, Zohaib S, Sefat F, Zafar MS. Histatin peptides: Pharmacological functions and their applications in dentistry. *Saudi Pharmaceutical Journal*, 2017; 25(1): 25-31.
- Latzer Y, Tzischinsky O. Eating attitudes in a diverse sample of Israeli adolescent females: a comparison study. *Journal of Adolescence* 2005; 28(3):317-23.
- Littleton HL, Ollendick T. Negative body image and disordered eating behavior in children and adolescents: what places youth at risk and how can these problems be prevented?. *Clinical Child and Family Psychology Review* 2003; 6(1):51-66.
- Miao MS, Wang T, Liu J, Li Y, Fu ZN, Tian S. The Effect of Leonuri Herba alkaloids on Senile BPH (male and female hormone induced) model rats. *Saudi Journal of Biological Sciences* 2017; 24(3): 630-3.
- Mokdad AH, Serdula MK, Dietz WH, Bowman BA, Marks JS, Koplan JP. The continuing epidemic of obesity in the United States. *JAMA* 2000;284(13):1650-1.
- Omidvar N, Eghtesadi SH, Ghazi TM, Minaie S, Samareh S. Body image and its association with body mass index and eating attitudes in young adolescents in Tehran. *Pejouhesh dar Pezeshki* 2002; 26(4): 257-64.
- Perri MG, Corsica JA. Treatment of Obesity. In: Kennedy P, editor. *Handbook of Clinical Health*. New York: John Wiley & Sons, 2003:181-202.
- Piyavhatkul N, Aroonpongpaial S, Patjanasoonporn N, Rongbutsri S, Maneeganondh S, Pimpanit W. Validity and reliability of the Rosenberg Self-Esteem Scale-Thai version as compared to the Self-Esteem Visual Analog Scale. *Journal of the Medical Association of Thailand* 2011; 94(7):857-62.
- Pope Z, Gao Y, Bolter N, Pritchard M. Validity and reliability of eating disorder assessments used with athletes: A review. *Journal of Sport and Health Science* 2015; 4(3):211-21.
- Power CM, Crocker J. Ups and downs of self-esteem: Appearance contingencies and psychological well-being of male and female college students. Unpublished manuscript, Ann Arbor 2004.
- Quinn DM, Crocker J. Vulnerability to the affective consequences of the stigma of overweight. In J. S. C. Stangor (Ed.), *Prejudice: The Target's Perspective*. San Diego, CA: Academic Press, 1998: 125-43.
- Rather IA, Kim BC, Bajpai VK, Park YH. Self-medication and antibiotic resistance: Crisis, current challenges, and prevention. *Saudi Journal of Biological Sciences* 2017; 24(4): 808-12.
- Rivas T, Bersabé R, Jiménez M, Berrocal C. The eating attitudes test (EAT-26): reliability and validity in Spanish female samples. *The Spanish Journal of Psychology* 2010; 13(2):1044-56.
- Rosen JC. Body image assessment and treatment in controlled studies of eating disorders. *International Journal of Eating Disorders* 1996; 20(4):331-43.
- Rosenberg, M. *Society and the adolescent selfimage*. Princeton, NJ: Princeton University Press, 1965.
- Rother S, Buckroyd J. Experience of service provision for adolescents with eating disorders. *Primary Health Care Research & Development* 2004; 5(2):153-61.
- Sahebzamani M, Fesharaki M, Abdollahi Mofrad Z. Association of life style and self-esteem among adolescent girls of daily public high schools of Tehran. *Medical Science Journal of Islamic Azad University-Tehran Medical Branch* 2010; 20(1):45-51.
- Shehadeh MB, Suaifan G, Hammad EA. Active educational intervention as a tool to improve safe and appropriate use of antibiotics. *Saudi Pharmaceutical Journal* 2016; 24(5): 611-5.
- Taylor TL, Montgomery P. Can cognitive-behavioral therapy increase self-esteem among depressed adolescents? A systematic review. *Children and Youth Services Review* 2007; 29(7):823-39.
- Tinakon W, Nahathai W. A comparison of reliability and construct validity between the original and revised versions of the Rosenberg Self-Esteem Scale. *Psychiatry Investigation* 2012;9(1):54-8.
- World Health Organization. *Obesity, an epidemic*. Geneva: 2000: 1-4.
- World health organization (2011), WHO Global infobase online, Accessed 9 February.

