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Effectiveness of a School-based Body Image Intervention on Eating Problems and Self-Esteem in Female Adolescents with Eating Disorders

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Abstract: Social media can cause body dissatisfaction by presenting social ideals about appearance. This dissatisfaction can lead to eating problems and low self-esteem, which is frequently seen in adolescents. Therefore, intervention in this situation can be valuable for research and treatment purposes. The present study aimed to investigate the effectiveness of the school-based intervention "Dove Confident Me" on eating problems and self-esteem in female adolescents with eating disorders. This quasi-experimental research was performed using a pre-test-post-test design with a control group. The statistical population of the research included all female high school students in Bandar Abbas (Iran) in 2021. A total of 47 female students were selected by purposive sampling and randomly assigned to experimental (23 people) and control (24 people) groups. Eating Disorder Diagnostic Scale (EDDS) and Rosenberg Self-Esteem Scale (RSES) were used to collect data. Research hypotheses were tested using multivariate covariance analysis (MANCOVA). The results indicated that the school-based intervention "Dove Confident Me" had a significant effect on the improvement of symptoms of eating disorders ($F = 6.41$, $p < 0.05$) and self-esteem ($F = 5.35$, $p < 0.05$) in female adolescents with eating disorders. According to the findings, the "Dove Confident Me" intervention can improve eating problems and self-esteem of female adolescents with eating disorders by correcting social ideals about appearance and improving media literacy. Furthermore, it can be applied as an effective treatment and training method.

Keywords: Eating disorders; Self-esteem; Dove Confident Me; Body dissatisfaction; School-based intervention

Introduction

Dissatisfaction with the body is a universal phenomenon and it is estimated that 25 to 61% of female and male adolescents satisfied with their body image and appearance (Al Sabbah et al., 2009). McLean et al. (2021) reported severe body dissatisfaction in 6.8% of boys and 19.6% of girls, which can cause widespread psychological problems. Therefore, this issue requires a lot of clinical attention. Dissatisfaction with one's body and appearance may cause problems in eating and be the basis for eating disorders in adolescents (Laporta-Herrero et al., 2018). Freire et al. (2020) stated that body dissatisfaction can be the basis of high-risk behaviors for eating disorders, which should be taken seriously. Chen et al. (2021) indicated that body dissatisfaction in adolescents is very intense and may directly and indirectly affect their eating behavior and involve them in many problems, which require extensive clinical interventions. Body dissatisfaction was significantly associated with higher emotional eating, restrained eating and binge eating (Zakhour et al., 2021).

According to the fifth edition of the Diagnostic and Statistical Manual of Mental Disorders (DSM-5), eating disorders are defined as a group of disorders characterized by severe deviations in eating. DSM-

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5 introduces four types of eating disorders including anorexia nervosa, bulimia nervosa, binge eating disorder, and specified/unspecified eating disorder. Anorexia nervosa is a mental disorder in which a person refuses to maintain a minimum normal weight and is extremely afraid of gaining weight and has a great deal of misconceptions about his body and its image. In bulimia nervosa, a person first eats a large amount of food and then tries to prevent weight gain by causing intentional vomiting or taking laxatives or diuretics. Binge eating disorder is a serious eating disorder in which a person consumes abnormally large amounts of food, often excessively. It happens to almost everyone to overeat sometimes, for example on holidays, but in the case of people it is considered as binge eating disorder, which becomes a normal and regular thing for the person and is usually done secretly (The American Psychiatric Association, 2020).

According to the findings of numerous studies, body dissatisfaction is more severe in girls than in boys (McLean et al., 2021). Studies were conducted on the prevalence of eating disorders have also mentioned the rate of eating disorders in girls and women more than boys and men. In a review of 94 studies, Galmiche et al. (2019) revealed that the prevalence of eating disorders was 8.4% for women and 2.2% for men. They also indicated that the prevalence of eating disorders has been increasing because the prevalence of these disorders was about 3.5% between 2000 and 2006, but it reached about 7.8% between 2013 and 2018. However, in the study conducted by Rozzell et al. (2019), the prevalence of eating disorders was 1.4%. In the general belief, eating disorder is considered specific to Western culture, which emphasizes fitness, while it is also of particular importance in developing and Eastern societies, including Iran, Pakistan, and Japan. Safarzade and Mahmoody Khorandi (2015) in a research on adolescents aged 13-18 years old showed that 15.7% of students were exposed to eating disorders. These researchers reported the prevalence of anorexia nervosa and bulimia nervosa in this sample as 11.1% and 3.2%, respectively, where a higher prevalence was observed in girls compared to boys. Roustaee et al. (2013) in a survey among high school students showed that the prevalence of mild syndrome of eating disorders (people who did not meet the full criteria of anorexia or bulimia) was 6.5% and bulimia 1.2%.

Eating disorders are associated with high comorbidity of many disorders and can lead to other behavioral and emotional problems and disorders. Keski-Rahkonen and Mustelin (2016) indicated that out of 70% of people who had eating disorders, about 50% had anxiety disorders, 40% had mood disorders, 20% had self-harm, and 10% had substance abuse. Souto et al. (2017) believed that adolescence is a special period and risky behaviors in adolescents are very high and make them prone to eating disorders. Adolescents and especially girls in most cases pay special attention to their body weight and image, and often in trying to face the pressures associated with the changes of the critical

and challenging period of puberty, they adopt incorrect attitudes towards themselves, and these attitudes may lead to eating behavior problems (Chamay-Weber et al., 2005). In fact, these adolescents move towards eating disorders due to low self-esteem (Iannaccone et al., 2016; Naeimi et al., 2016).

Cooper-Smith (1968) introduced self-esteem as an individual evaluation that is usually maintained with regard to the self. Thus, self-esteem is an individual judgment of competence that is a general characteristic of personality, not momentary attitude specific to particular situations. According to Eckert (2007), self-esteem simply refers to how we think and feel about ourselves and how we consider ourselves. In another definition, self-esteem is the degree of approval, validation and value that a person feels about himself or the judgment that a person has about his values (Smith et al., 2003). People with low self-esteem are often isolated and avoid communication with others and they desperately try to show others and themselves that they are a worthy person (Kaplan and Sadok, 2007). Poor self-esteem can lead to personal devaluation, the development of destructive attitudes, psychiatric vulnerability, social problems, and risky behaviors (Mann et al., 2004; Frank and de Raet, 2007).

Cruz-Sáez et al. (2020) indicated body dissatisfaction had both direct and indirect effects through self-esteem and negative affect on disordered eating. Kim (2018) shows media and social networks lead to body dissatisfaction in people by transmitting messages about human appearance and especially the lives of famous people. Therefore, it is necessary for people to be informed about the effects of these media and their idealization and devaluation. One of the school-based programs designed to improve body image is the "Dove Confident Me" program, which is implemented in either a 90-minute session or a 5-session format. This program is used for approximately a class of 25-30 students aged 11-14 (Diedrichs et al., 2015). Of course, Dove Company considers this program suitable for ages 8 to 16. This intervention is derived from the key concepts and activities of the "Happy Being Me" program (Bird et al., 2013; Richardson & Paxton, 2010). The "Confident Me" specifically focused on the unrealistic nature of societal ideals about appearance, media literacy, and appearance comparison; while the "Happy Being Me" program, in addition to these topics, also examines conversations related to appearance and harassment related to appearance (Diedrichs et al., 2015). "Dove Confident Me" program is actually a part of the Dow Self-Esteem Project, which launched in 2004, and its purpose was to help the next generations with the aim of developing self-esteem, helping to improve body image, and developing people's potential abilities, and it has been effective in different countries and cultural contexts (Craddock et al., 2021).

The one-session "Dove Confident Me" program examines the main topics, including the influence of the media, peer pressure, and ways to improve body image and self-esteem, and is taught to teenagers,

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who are mostly students, in the school environment. Students learn through class discussions, group activities, videos, and worksheets. In fact, this intervention has three main purposes: 1. Students understand the concept of apparent ideals and know where the pressure to achieve them comes from. 2. Acquire media literacy and explore how images and messages, from advertising in cinema and social media, manipulate truth. 3. Develop strategies to resist appearance pressures, avoid self-comparison, challenge appearance ideals, and build body confidence (Craddock et al., 2021; Diedrichs et al., 2015). In their research, Diedrichs et al. (2015) showed that the "Dove Confident Me" program has short-term benefits for girls' body image, diet stability, improved eating disorder symptoms, and some psychosocial outcomes among girls and boys. They found that the five-session version of this intervention is likely to be better for lasting results. Atkinson et al. (2017) investigated the effectiveness of the five-session version of this program, and concluded that this program can improve body self-esteem and reduce appearance-related annoyances. Also, Garbett et al. (2021) showed the effectiveness of this intervention in Indian schools.

According to the mentioned findings, eating disorders are more common in girls and this shows that girls are more damaged and suffer from eating problems. Eating and self-esteem problems caused by body dissatisfaction can lead to more disorders and problems. Eating disorders appear to be largely caused by society and the media, which propagate ideal and unrealistic thoughts about body and appearance, targeting female adolescents, especially (Galmiche et al., 2019; Laporta-Herrero et al., 2018). Therefore, it is necessary to examine and test programs to improve these situations. Yager (2019) states that dissatisfaction with the body can cause many problems in the field of eating behaviors and self-esteem for adolescents, which should be intervened, and schools are the right place where such interventions can be implemented in the best way. Therefore, schools provide a good opportunity for interventions and psychological training. The "Dove Confident Me" is among the programs that have been proposed in this field and it seems that it can have good effects. According to the search of the authors, so far no research in Iran has investigated this intervention program, and due to the novelty of this intervention, limited researches in the world have examined this program. Therefore, it is necessary to investigate its effectiveness and if its effectiveness is confirmed, it should be used as an effective intervention in schools. Therefore, the current study was conducted with the aim of investigating the "Dove Confident Me" on the improvement of eating disorder symptoms and self-esteem in female adolescents with eating problems.

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Material and Methods

This quasi-experimental research was performed using a pre-test-post-test design with a control group. The statistical population included all female high school students in Bandar Abbas (Iran) in 2021. To select the sample, first, the questionnaires was distributed among 180 students, and of these people, 60 students who met the criteria for entering the research were selected by purposive sampling. Then they were randomly assigned to experimental and control groups (30 people in each group). But in the end, due to sample dropout, non-completion of the post-test and incomplete questionnaires, suspicion of covid-19 and also the possibility of receiving interventions apart from the training course, the data of 47 people (23 people in the experimental group and 24 people in the control group) were analyzed. It is worth mentioning that due to the single session and the expectation that the treatment is not going to show its effect immediately, a week after the end of the intervention, the post-test was conducted and with a short interview in order to control the intervening variables, the people who received interventions other than current study intervention in this one-week, were excluded from the research. Participants in the experimental group received a single session of the "Confident Me" program, while participants in the control group received no training during this period. This program was a single session and was conducted in 90 minutes based on the protocol of Diedrichs et al. (2015) (Table 1). It should be mentioned that the inclusion criteria included having the characteristics of eating disorders and low self-esteem based on the research questionnaires, not having the covid-19, not taking psychiatric drugs and not receiving related interventions other than the current study intervention. The purpose of the research was clearly explained to all participants and they were informed that they can withdraw from the study if they wish. Also, before the beginning of the study, the informed consent form was completed by all participants.

Table 1. Summary of the "Confident Me program" based on the protocol of Diedrichs et al. (2015).

Session	Aim	Content	Process
Introduction (5 minutes)	Introduce the workshop and set the rules	Rules (for example, everyone is encouraged to participate and to value and respect different opinions) and explain the learning outcomes	Presentation of educational PowerPoint
Appearance Ideals (20 minutes)	Decreasing Internalized Societal Ideals	Define current societal ideals about appearance and present behaviors to them as unrealistic and highly constructed. Difficulties (e.g., emotional, financial, time losses) associated with trying to achieve these ideals. Sources of ideals, including media, advertising, friends, and family.	Small group work with activity sheets, class discussion

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Media (30 minutes)	Increasing media literacy, developing skills to counter negative appearance pressure from the media and create positive body image content in social media	Media, including professional media (e.g., advertising, cinema) and personal media (e.g., social media), often promote appearance ideals, prevalence and nature of cosmetics, why and how media and advertisers manipulate images and messages to influence consumers and sell products, and why this is a problem. Practice coping strategies for responding to appearance pressures in professional and personal media.	Class discussion with interactive PowerPoint presentation, Dove Evolution movie, Brainstorming to deconstructing advertising such as small group work with activity sheets
Rest (5 minutes) Comparisons (25 minutes)	Increase understanding of appearance comparisons and how they can affect self-esteem and body image. Developing skills to identify, avoid, and challenge appearance comparisons	People often make comparisons to gain an understanding of where they stand in relation to others. Cognitive biases towards high-level comparisons can lead to a downward spiral in comparison and negative body image experience. Learning how to identify comparisons and challenge them can improve body image and self-esteem. Practice strategies to avoid and challenge comparisons.	Presenting the Dove Change One Thing movie, class discussion, PowerPoint presentation, Role play
Summarizing and commitment (5 minutes)	Review of the main messages of the workshop. Commitment to engage in behaviors related to positive body image and future activity.	Identify key messages. Make a written commitment to take future actions to promote a positive body image in yourself and others.	Class discussion, individual completing the activity sheet

Eating Disorder Diagnostic Scale and self-esteem scale were used to collect data, which are introduced in detail as follow.

Eating Disorder Diagnostic Scale (EDDS): The Eating Disorder Diagnostic Scale measures eating disorder symptoms. This tool was created by Stice et al. (2000) and includes three subscales that are designed to test the symptoms of anorexia nervosa, bulimia nervosa, and binge eating disorder and provide diagnosis for these disorders at two clinical and non-clinical levels; Therefore, it provides the possibility of identifying the seven diagnostic classes of anorexia nervosa, bulimia nervosa, binge eating, sub-threshold anorexia nervosa, sub-threshold bulimia nervosa, sub-threshold limit of binge eating and undiagnosed. This scale includes a combination of Likert scores, dichotomous scores, frequency scores and open-ended questions such as height and weight. The first 4-question subscale is the attitudinal scales of anorexia nervosa and bulimia nervosa in the past three months, such as fear of obesity and weight overestimation on a seven-point scale rated from 0 (not at all) to 6 (extremely). The next four items measure the frequency of consuming large amounts of food by focusing on the number of days per week during the past 6 months (binge eating disorder) and the number of days per week

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during the past 3 months (bulimia nervosa), the results of these 4 items measure the frequency of behaviors that assesses the components of binge eating during the past 3 months, including vomiting, laxative use, fasting, and vigorous exercise. Finally, participants are asked to record their height and weight and to answer two questions about missed periods (menstruations) and contraceptive pill use. Khabir et al. (2014) in the psychometric analysis of this scale showed that this scale measures three factors. These researchers reported 0.84, 0.82 and 0.83 as internal consistency coefficient, Spearman-Brown and Guttman reliability, respectively. The results of the agreement of this tool with the clinical expert's diagnosis, confirmatory factor analysis and the correlation of each item with the total score were favorable. Cronbach's alpha coefficient of this tool in the present study was 0.86.

Rosenberg Self-Esteem Scale (RSES): Rosenberg Self-Esteem Scale was used to measure self-esteem. This questionnaire was prepared and introduced by Morris Rosenberg, which consists of 10 items and is used to measure general self-esteem (Rosenberg, 1965). The scoring method of this scale is based on a 4-point Likert scale from completely agree to completely disagree. The scoring method of this scale for questions 1 to 5 is completely disagree = zero, disagree = 1, agree = 2 and completely agree has a score of 3. Also, for questions 6 to 10, completely agree = zero, agree = 1, disagree = 2 and completely disagree has a score of 3. Higher scores indicate higher self-esteem. This questionnaire has stronger correlation coefficients than the Coopersmith Self-Esteem Inventory and has more validity and reliability in measuring self-esteem levels. Mohammadi (2005) investigated the psychometric indicators of this tool in the Iranian society, and after verifying the face validity; he reported the reliability of this scale through Cronbach's alpha coefficient, retest and dichotomization as 0.69, 0.78 and 0.68 respectively. In Mohamadi et al. (2014) study, Cronbach's alpha coefficient of this scale was reported as 0.71. Cronbach's alpha coefficient of this tool in the present study was 0.83.

In this research, statistical indicators of mean and standard deviation were used to describe the data, and multivariate analysis of covariance (MANCOVA) was used to test the research hypotheses. Also, before analyzing the data, the normality of the distribution of scores and checking the basic assumptions for parametric tests were done. Data analysis in this research was done using SPSS-22 software.

Results

According to the descriptive findings, the mean and standard deviation of age in the experimental group was 13.43 ± 0.89 and in the control group was 13.83 ± 1.09. The mean and standard deviation of the experimental and control groups in the pre-test and post-test are presented in Table 2.

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Table 2. Mean and standard deviation of experimental and control groups in pre-test and post-test

Variable	Phase	Group			
		Experimental		Control	
		Mean	SD	Mean	SD
Eating disorder symptoms	Pretest	24.65	4.82	22.79	4.37
	Posttest	18.82	3.63	21.08	4.56
Self-esteem	Pretest	3.56	1.87	4.25	1.77
	Posttest	6.65	2.18	5.08	2.22

Table 2 shows the mean and standard deviation of eating disorder symptoms and self-esteem in both control and experimental groups. According to Table 2, there are slight differences in the pre-tests of the control and experimental groups and a considerable difference in their post-tests. Comparing the pre-tests, the results showed that there is no significant difference between the experimental and control groups in symptoms of eating disorder (p = 0.173, t=1.38) and self-esteem (p = 0.205, t=1.28). In order to compare the post-tests, multivariate covariance analysis was used. The results are presented in Tables 3 and 4. Before performing multivariate covariance analysis, its assumptions were checked. In checking the normality of the distribution of scores, the results of the Kolmogorov-Smirnov test showed that the distribution of the scores of the research variables in the pre-test and post-test stages in both control and experimental groups is normal. Also, in order to check the homogeneity of variances, Levin's test was used. The results showed the homogeneity of variances. Box M test was used to check the equality of covariance matrices. Since the Box M test was not significant with a value of 4.79 and a significance level of 0.207 (P > 0.05), the assumption of the equality of the covariance matrix was confirmed. Based on this, the multivariate covariance analysis test can be used.

Table 3. The results of multivariate covariance analysis for comparing the mean scores of eating disorder symptoms and self-esteem of the experimental and control groups

Effect	Test	Value	F	Hypothesis DF	Error DF	p
Group	Pillai's Trace	.197	5.16	2	42	.010
	Wilks' Lambda	.803	5.16	2	42	.010
	Hotelling's Trace	.246	5.16	2	42	.010
	Roy's Largest Root	.246	5.16	2	42	.010

According to Table 3, the significance level of all four multivariate tests is less than 0.05. Therefore, it shows that there is a significant difference between the two experimental and control groups, at least in one of the variables of eating disorder symptoms and self-esteem in the post-test stage. For a more detailed examination, the analysis of one way analysis of covariance embedded on MANCOVA was performed. The results are presented in Table 4.

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Table 4. The results of the one way analysis of covariance embedded on MANCOVA

Source	Variable	SS	Df	MS	F	*p*	Eta
Intercept	Eating disorder	256.38	1	256.38	16.55	.001	.278
	Self-esteem	.887	1	.887	.214	.646	.005
Group	Eating disorder	99.28	1	99.28	6.41	.015	.130
	Self-esteem	22.12	1	22.12	5.35	.026	.111
Error	Eating disorder	665.94	43	15.48			
	Self-esteem	177.78	43.	4.13			
Total	Eating disorder	19591	47				
	Self-esteem	1857	47				

According to Table 4, the value of F for eating disorder symptoms was 6.41 and for self-esteem was 5.35 and both of which are significant at the 0.05 level. Based on this, the school-based intervention has been effective on the symptoms of eating disorder and self-esteem and has been able to improve the symptoms of eating disorder and self-esteem.

Discussion

This research was conducted with the aim of investigating the "Confident me program" in improving eating disorders and self-esteem in female adolescents with eating disorders. The obtained results showed that there is a significant difference between the experimental and control groups in the post-test of eating disorder symptoms. Therefore, the result revealed that the single-session "Confident me program" improves eating disorder symptoms. This finding is in line with some earlier studies. Bird et al. (2013) in a review of school-based interventions concluded that this intervention improves body satisfaction, self-appearance comparison, and eating-related behaviors and can reduce destructive social ideals. In a study, Atkinson et al. (2017) concluded that teaching the "Confident me program" improved appearance-related annoyance at post-test and follow-up. Diedrichs et al. (2015) indicated that the "Confident me program" can improve body image diet stability, eating disorder symptoms and some psychosocial outcomes among girls and boys.

According to the findings of this research and previous researches, the "Confident me program" can improve behaviors and symptoms of eating disorders by changing beliefs and ideals. The "Confident me program" specifically focused on the unrealistic nature of societal ideals about appearance, media literacy, and appearance comparison (Diedrichs et al., 2015); In other words, the program teaches people how social ideals related to appearance and the media create unrealistic beliefs about the body. These beliefs lead to dissatisfaction with the body and, as a result, ineffective eating behaviors. Therefore, by changing such beliefs, this program can improve a person's feelings about their appearance and therefore lead less to dysfunctional behaviors related to eating. The "Confident me

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program" examines the main topics, including the influence of the media, peer pressure, and ways to improve body image and self-esteem. The program helps people understand what the concept of appearance ideals is and where the pressure to them comes from, acquire media literacy and understand how images and messages of advertising, cinema and social media, manipulate the truth. They also learn strategies to coping with appearance pressures, avoiding self-comparison, challenging appearance ideals, and developing body confidence. Therefore, such states improve a person's feeling towards his body and also dysfunctional behaviors related to eating.

Furthermore, the results showed that the single-session "Confident me program" improves self-esteem. This finding is in line with some previous works. In a study, Atkinson et al. (2017) indicated that teaching the "Confident me program" improved body self-esteem. Richardson and Paxton (2010) showed in a study that this intervention improves self-esteem and factors related to body image and body dissatisfaction. The research of Garbett et al. (2021) also indicated that this intervention can be useful for students and even teachers, and as a result, improve physical self-esteem and positive emotions.

The "Confident me program" believes that behavioral problems related to eating, body concerns, and low self-esteem are due to social pressures and misconceptions, mainly through the media to promote beliefs related to body appearance. Therefore, the "Confident me program" tries to challenge these false ideas and create a positive image of the body in people's minds. This program teaches people how we are influenced by these media advertisements and hence feel bad about ourselves. This program is based on the hypothesis that comparing the appearance with the appearance of others reduces self-esteem. Therefore, this program improves self-esteem by increasing people's understanding of appearance comparison and the way this comparison can affect self-esteem and body image. Also, developing skills to identify, avoid and challenge the appearance comparison - which is one of the goals and teachings of this program - is effective in improving feelings related to self-esteem. Based on this, by reducing internalized social ideals, this intervention can enhance people's mindset about themselves and their bodies, and thus improve self-esteem.

In general, the results of this research showed that the "Confident me program" can improve the symptoms related to eating problems and also increase the self-esteem of girls with eating disorder symptoms. This result shows that even with a basic and correct training in one session, it is possible to change dysfunctional mentality, behaviors and feelings and increase the self-esteem of girls with eating disorder symptoms. However, the present study had some limitations that should be taken into consideration in the generalization of the findings. Lack of follow-up phase, non-separation of the samples based on the type of eating disorder, single gender and possible biases in answering the

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questionnaire are some of these limitations. Based on this, it is suggested that the effectiveness of this intervention on variables such as body self-esteem, self-image and various types of eating disorders in a sample of male adolescents should be carried out in future researches. It is also recommended that the five-session version of this intervention be examined and its results compared with the one-session version. Considering that today most students use virtual social networks and may be influenced by the messages of these networks about ideals, it is suggested to implement such interventions in schools. School psychologists and counselors are suggested to use this intervention to improve self-esteem and eating disorders in students.

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