Original Article

Effect of Mindful Self-Care Training on Body Image Concern and Self-Esteem of Patients Before and After Orthognathic Surgery

Abstract

Background: Some studies among orthognathic surgery candidates revealed that the patients doing orthognathic surgery suffer from Body Image Concern (BIC) and impaired Self-Esteem (SE) before and after surgery. Despite the merits behind orthognathic surgery, self-care training in such patients seems logical. The present study was performed to outline the effect of Mindful Self-Care Training on Body Image Concern and Self-Esteem of Patients before and after Orthognathic Surgery. **Materials and Methods:** This semiexperimental study with a pretest–posttest design was conducted in Babol-based Shahid Beheshti Hospital in 2020. The eligible patients, who were referred from the Orthognathic Surgery Clinic of Babol-located Shahid Beheshti Hospital, were conveniently divided into two 25-person groups. The BIC and SE were measured using the Body Image Concern Inventory (BICI) and Coopersmith Self-Esteem Inventory (CSEI) before and after holding eight 90-minute mindful self-care training sessions (before surgery) and 3 months after surgery (follow-up**)** in the two groups. The data were analyzed at the significance level of 0.05 using the independent t-test and Repeated Measure Analysis of Variance (RM -ANOVA) by SPSS-26. **Results:** The findings revealed that in the intervention group, the mean score of the overall BIC after training (before surgery) and follow-up (3 months after surgery) decreased. The independent *t*-test showed that the mean score of the overall BIC after training and follow-up was significantly different between the two groups (t_{48} = 1.68, p = 0.02) and (t_{48} = 3.64, p = 0.001), respectively. Also, the mean score of the SE increased after training and follow-up in the intervention group. The independent *t*-test indicated that the mean score of the SE after training and follow-up meaningfully differed between the two groups (t_{48} = 3.93, $p < 0.001$, t_{48} = 5.40, $p < 0.001$). The RM-ANOVA results displayed significant differences in the overall BIC and SE in the two groups over time ($F_{(2,48)}$ = 71.30, $p < 0.001$) and ($F_{2,48}$ = 38.17, $p < 0.001$), respectively. **Conclusions:** Considering the effects of mindful self-care training on the BIC and SE of the patients undergoing orthognathic surgery, it is proposed that presurgery mindful self-care training is useful and prevents common pre and postsurgery psychological problems among the patients as the orthognathic surgery candidates.

Keywords: *Body image, orthognathic, patient, self-care, self-esteem, surgery*

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Access this article online

Website: https://journals.lww.com/jnmr

DOI: 10.4103/ijnmr.ijnmr_36_24

Quick Response Code:

Introduction

Today, orthognathic abnormalities and deformities are the nuisances of human societies worldwide. In addition to beauty, such abnormalities lead to abnormal functioning in chewing, speaking, breathing, and if not treated, limited interpersonal relationships and psychological disorders.[1] Such abnormality-induced psychological effects can be considered as the most important reason for the surgery requirements.[2] Orthognathic surgery refers to the treatment of a wide range of diseases of orthognathic defects, the aesthetic aspect of which increases the importance of surgery in this part.[3] In this surgery, through slightly changing the position or the volume of the skeleton and modifying the soft tissue, the patient's face gets rid of the abnormal state and gets closer to its normal form in society, and functionally speaking, some vital actions like chewing, swallowing, speaking, and breathing get improved in the patient, which can play the role as an effective factor in enhancing the quality of life.[4-6]

Although the previous studies indicated the psychosocial benefits of orthognathic surgery for patients, there is an inconsistency between the results of some studies regarding such psychosocial advantages.[7-9] The study on the candidates

How to cite this article: Ghanipour FS, Heidari T, Babaei-Darzi A, Mohammadpour RA, Toyeh AR, Ivaki MM, *et al.* Effect of mindful self-care training on body image concern and self-esteem of patients before and after orthognathic surgery. Iran J Nurs Midwifery Res 2025;30:553-60.

Submitted: 27-Jan-2024. **Revised:** 28-Dec-2024. **Accepted:** 03-Feb-2025. **Published:** 24-Jul-2025.

for orthognathic surgery found body image concerns and low self-esteem as common psychological problems.[2] Body image encompasses the thoughts, feelings, and behaviors of an individual related to appearance.[10] A negative body image creates other problems in life, and a relationship exists between body image and self-esteem.[11] Body image concerns include being intensely concerned and preoccupied with appearance defects, excessively examining or concealing such defects, social avoidance, and reassurance seeking. The research conducted by Littleton *et al*. (2005)[12] reported that body image concerns included 2 types of concerns, i.e., appearance dissatisfaction and interference in social functioning. The BIC poses a global burden, with higher levels of risk among vulnerable groups. Body image concerns exist all over the world due to getting exposed to intense pressures in order to follow appearance ideals. Although such concerns may vary by cultural context, their prevalence and association with poor mental and physical health are universal.[13] Pursuant to social psychology studies, physical appearance is a key factor in making judgments about other people. Those who are more physically attractive are rated more positively in terms of some variables like personality, emotional compatibility, and intelligence.[14]

Orthognathic surgery requires rapid integration of new facial features into the patient's self-concept and the new body image. Studies report that most people benefit physically and psychologically, while the process of reconciling one's inner perception with changing one's facial appearance is sometimes problematic.[7,8,15,16] In addition, being excessively dissatisfied with appearance may hide the patient's psychological conditions, and neglecting it may result in serious medical consequences.[17] Psychiatric disorders can be exacerbated by orthognathic surgery. In one study, about 7% of new cases of psychiatric disorders were reported after surgery.[18] As stated by Coopersmith, self-evaluation defines self-esteem and shows how capable, important, successful, and worthy a person is.[19] Self-esteem is one of the remarkable topics in modern psychology. The considerable focus on self-esteem is likely because of being once believed to play a causal role in many important life outcomes.[20] Self-esteem affects major life outcomes such as academic performance, social acceptance, and physical health. It is now vividly understood that self-esteem is closely associated with subjective well-being and psychological adjustment.[21] A facial difference may affect one's self-worth, self-esteem, and confidence, particularly if the difference emerges around the communication triangle (eyes, mouth, and nose) in face-to-face interactions.[22] Orthognathic surgery brings about many emotional changes that must be taken into account before and after the surgery because the patient's mental state may be favorable and/or unfavorable during recovery and may influence their quality of life, self-esteem, and apparent satisfaction.[23,24] The majority of the performed studies confirmed the need to provide pre-and post-surgery psychological care along with physical care in the candidates of orthopedic surgery.[18,25,26]

Based on the above results, it is necessary to be aware of and consider the pre and postsurgery psychological concerns of such patients.[27] Mindful self-care is an iterative process that involves the conscious awareness and evaluation of internal and external demands and also deliberately engaging in specific self-care practices to address the required demands in such a way that serves one's well-being and effectiveness.[28] The mindfulness interventions developed by Kabat-Zinn were effective in reducing stress in various situations, the technique which can allow an individual to react wisely rather than responding involuntarily and in an ill-considered manner and to evaluate and manage their problems more powerfully.[29]

Regarding the abovementioned high rates and the negative effects of body image concerns, it is essential to make more efforts to prevent and reduce such concerns worldwide.[13] Considering the importance of orthognathic surgery in the treatment of this class of patients, it seems necessary to use mindfulness-based self-care training as a new approach in these patients. Therefore, this study was conducted to investigate the effect of Mindful Self-Care Training on Body Image Concern and Self-Esteem of Patients before and after Orthognathic Surgery.

Materials and Methods

The present study as a semiexperimental study with a pretest–posttest design was performed from March to September 2020 in Babol-based Shahid Beheshti Hospital. The study subjects were patients referring to the Oral Maxillofacial Surgery Clinic of Orthognathic Surgery Clinic of Babol-located Shahid Beheshti Hospital of Babol University of Medical Sciences (Mazandaran province, Iran).

The inclusion criteria were: the requirement for orthognathic surgery as diagnosed by the specialist and with therapeutic and aesthetic motivation, lack of psychological disorders requiring immediate treatment, such as the symptoms of psychosis, depression, drug addiction, and suicide (using the information in the file or interviewing with the patient regarding the history of psychiatric illness), not taking psychiatric drugs, not suffering from chronic physical diseases (blood pressure, diabetes, and thyroid) and not receiving any psychological intervention and other information through the media, books, etc., in the recent months. In addition, all recent problems and injuries demanding immediate surgery, benign tumors (cysts and oral abscesses) of the jaw and face that required outpatient surgery, malignant orthognathic tumors requiring chemotherapy and radiation therapy, and facial cosmetic and reconstructive surgeries like rhinoplasty, blepharoplasty,

and other facial organs which were operated again. The exclusion criteria included not attending three training sessions, not complying with the training assignments presented in the previous sessions, and facial cosmetic and reconstructive surgeries like rhinoplasty, blepharoplasty, and other facial organs that were reoperated. The sample size was calculated as 23 in each group considering the confidence level of 95%, the power of 80%, and the results of the study done by Zamani and Fazilatpour.[30] According to the potential loss to follow-up, 25 subjects were selected in each group.

When the due permission was gained from the Research Deputy of Mazandaran University of Medical Sciences and Shahid Beheshti Hospital in Babol, the researcher started sample collection. At first, based on the inclusion criteria, a list of the orthognathic surgery candidates waiting for surgery for a month was selected. Then, the researcher contacted them and gave them brief explanations about the study. In the next step, the persons who were willing to participate in the study were assigned into two groups, i.e., intervention and control using the simple odd and even random allocation method based on the random number table. In this study, efforts were made to adjust the training time according to the participants' work or family conditions. Before running the training intervention, a pretest was taken from both groups. The training sessions for the intervention group were held in Imam Hossein Hall of Shahid Beheshti Hospital equipped with the appropriate educational facilities (suitable for holding group therapy sessions). The training sessions were held in 5 five-person groups twice a week (totally eight sessions), and each session lasted 90 minutes [the training session content is presented in Table 1]. In the control group, the training was conducted in the surgery ward using educational pamphlets and the routine care of the department.

The training was conducted by a psychiatric nurse (researcher) having a valid certificate in mindfulness. At the end of each training session, some assignments were given to the participants. In each session, before starting the new exercises, the researcher and the participants reviewed the previous exercises. The content of the educational booklet was prepared and compiled based on the relevant books and articles about the concepts of mindfulness, self-care, and mindful self-care.[11,31-33] The content's validity was rigorously assessed and subsequently endorsed by a team consisting of a psychiatrist, a psychologist, and a PhD of nursing (with a specialization in psychiatric nursing). This booklet was distributed among the intervention group when the training sessions were over.

The data were collected using the Demographics Questionnaire, Body Image Concern Inventory (BICI), and Coopersmith Self-Esteem Inventory (CSEI). The 11-item demographics questionnaire evaluates gender, age, marital status, the number of children, education, employment, type of health insurance, residence, the motivation for and the purpose of surgery, and disease history and the drug taken by the patients of orthognathic surgery. The second instrument was the Body Image Concern Inventory (BICI). This inventory was designed by Littleton *et al*. (2005).[12] It is a suitable choice due to being short, easy to implement, and the items being consistent with the culture of Iranian society. This inventory is designed to measure a person's dissatisfaction with his/her appearance in body deformity disorder (BDD) and to measure similar patterns at clinical and nonclinical levels. This test contains 19 items examining the individual's concern and dissatisfaction with his/her appearance. The BICI includes 12 items on appearance-related dissatisfaction and 7 items on interference with social functioning.[12] In this inventory, the subject is asked to rate the degree to which that item shows their feelings or behavior on a 1-5 scale, in which each item has five options scored from 1 (Never) to 5 (Always) where the score 1 (meaning I have never had this feeling or I have never done this action) and score 5 (meaning I always have this feeling or I always do this action). A higher score shows an upper level of dissatisfaction with one's appearance or body image. The entire score varies from 19 to 95.[12] In Iran, the internal consistency of the test was calculated as $\alpha = 0.95$.[34] The Cronbach's alpha of this inventory was calculated as 0.94 in the present study. In this study, self-esteem was evaluated with the Coopersmith Self-Esteem Inventory (CSEI) (1967). This inventory is a 58-item self-report pencil-paper scale, 8 of which are lie detectors, and the other 50 are divided into 4 self-esteem subscales including general, social, family, and academic situations. Items number 2, 4, 5,10,14, 18, 19, 21, 23, 24, 28, 29, 30, 32, 36, 45, 47, and 57 with "NO" responses get a score of 0 and with "Yes" responses get score 1. The rest of the items are reversed, i.e., the response "No" is scored 1 and the response "Yes" is scored 0. A person may get zero as the minimum score and 50 as the maximum score. Lie-detecting items were items 6, 13, 20, 27, 34, 41, 48, and 55. It indicates the response validity as low and the subject pretending to look better.[19] This inventory is used to evaluate self-esteem with accepted psychometrics in Iran.[35,36] This instrument's Cronbach's alpha was calculated as 0.81 in the present study.

Ethical considerations

This study resulted from a master's thesis approved by the Ethics Committee of Mazandaran University of Medical Sciences, Iran (Ethics code No: IR.MAZUMS.REC.1398.1291). The written informed consent was acquired from the patients, and the study objectives and method were described for the participants. In addition, the research subjects were assured of their responses being used for the research objectives and their information being kept confidential based on the principle of anonymity.

Table 1: Intervention protocol

Session Number/Session Title	The session's main content
1- Introduction and orientation	Introducing the group members, giving explanations about the training sessions' content. A brief explanation about the concepts of self-esteem and body image and their role in mental health and quality of life, conducting pretest
2- Explaining the concept of self-care and its benefits on health	Feedback from the previous session, explaining the importance and application of physical and psychological self-care in the face of postsurgical challenges and postsurgical care.
3. The concept of mindfulness, acceptance, and commitment-conscious self-care, and some techniques to increase acceptance and focus on the present	The necessity to use mindful self-care training, briefly presenting the previous studies' results about the use of self-care, Full awareness of thoughts and emotions, introducing the concept of acceptance, accepting unpleasant events while being non-judgmental, and commitment to practicing motions consciously: Meditation or walking, positive and motivating subjects, question and answer.
4-Body image and a brief review of the stages of acceptance of the body image mindfully.	Discovering personal body image, mindfully accepting body image experiences, mindfully modifying mental mistakes about one's own body, facing one's body image avoidance behaviour and overlooking body image rituals, paying attention to one's own body well, and preserving a positive body image in life.
5- Self-esteem and a brief review of the stages of acceptance of self mindfully:	The self-esteem checkup, taking care of your body, familiarity with the concept of self-esteem, and some concepts related to self-esteem such as acceptance, self-confidence, forgiveness, humility, self-compassion, selfishness, cost-benefit analysis (advantages and disadvantages of self-dislike) and assessing the personal advantages and disadvantages, recognizing and replacing self-defeating thoughts, the reality of unconditional human worth.
6- The techniques of attention and awareness	Feedback from previous sessions, types of meditation, focusing on physical emotions, anxiety-related relaxation training, and practical suggestions on self-care in orthognathic surgery with mindfulness techniques.
7- Types of meditation	Providing a list of enjoyable activities and activities dominating the person, practice, self-compassion meditation, sitting meditation, breathing awareness, learning to respect one's own body, listening to one's own voices and thoughts, and communicating with their thoughts and feelings.
8- Free discussion and summarizing	Discussion on the positive reasons and possible obstacles to applying exercises after the end of the training sessions, open discussion, sharing the successful experiences of participants, and conducting the posttest.

Results

Pursuant to the present study results, 32% of the participants in each of the two groups were men. Regarding employment, 29.2% were self-employed and 33.3% were jobless in the control group. All individuals in the control group and 84% in the intervention group had motivations for surgery. The subjects' demographic characteristics in the two groups are presented in Table 2, which depicts that as revealed by the independent *t*-test and Chi-square test, the two study groups were not significantly different in terms of quantitative and qualitative demographic variables ($p > 0.05$).

As depicted in Table 3, the *t*-test showed that after the intervention, the mean score of body image concern, appearance dissatisfaction, and interference with social functioning were meaningfully lower in the intervention group than those in the control group. As observed in Table 3, the mean score of the pretraining self-esteem in the two groups did not display any tangible difference ($p > 0.05$), while in the first and second stages after the intervention, the mean of this variable in the training group was considerably more than that of the control group ($p < 0.05$).

To investigate the trend of changes in the BIC and self-esteem in different stages of the two study groups, the repeated-measures ANOVA was employed to determine whether this difference resulted from time or the intervention, which is presented in Table 4.

The ANOVA with repeated data displayed that the declining process of the overall BIC appearance-related dissatisfaction and social functioning was different in the intervention and control groups. The overall BIC, dissatisfaction with appearance, and social functioning in the intervention group decreased significantly with a meaningful difference in the postintervention and follow-up, but it decreased after increasing in the postintervention stage over time until the follow-up in the control group. Thus, it was found that although mindful self-care training did not exert any tangible effect on improving the overall body image concern, appearance-related dissatisfaction, and social functioning in the orthognathic surgery candidates ($p = 0.14$, $p = 0.19$ and $p = 0.10$, respectively), it accelerated the healing process (interaction with time $F_{2,48} = 71.30$, $p < 0.001$, $F_{2,48} = 60.37$, and $F_{2,48} = 57.06$, $p < 0.001$). The results also demonstrated mindful self-care training significantly affects self-esteem in the orthognathic surgery candidates ($F_{2,48} = 7.10$, $p < 0.05$) [Table 4].

Discussion

In the current research, we dealt with the effect of mindful self-care training on the orthognathic surgery candidates' body image concern and self-esteem. Based

Table 2: Demographic characteristics of subjects in two study groups

Group	Variable	Control Frequency (%)	Intervention Frequency (%)	*p*
Gender	Man	8 (32)	8 (32)	1.00
	Woman	17 (68)	17 (68)	
Marital status	Single	14 (56)	15 (60)	0.59
	Married	10 (40)	10 (40)	
	Divorced	1 (4)	0 (0)	
Education	Secondary level	5 (20)	2 (8)	0.52
	Diploma	11 (44)	11 (44)	
	Associate degree	1 (4)	2 (8)	
	Bachelor's	4 (16)	8 (32)	
	Master's	3 (12)	2 (8)	
	Higher	1 (4)	0 (0)	
Employment	Governmental	5 (20.8)	4 (17.4)	0.72
	Private	4 (16.7)	2 (8.7)	
	Self-employed	7 (29.2)	6 (26.1)	
	Jobless	8 (33.3)	11 (47.8)	
Insurance Type	Social Security	16 (64)	17 (68)	0.20
	Medical Service	8 (32)	4 (16)	
	Free	1 (4)	4 (16)	
Residence	Urban	13 (52)	14 (56)	0.77
	Rural	12 (48)	11 (44)	
Motivation for and purpose of surgery	Medical	0 (0)	4 (16)	0.11
	Aesthetic and therapeutic	25 (100)	21 (84)	
Disease background	Yes	0 (0)	1 (4)	1.0
	No	25 (100)	24 (96)	
Quantitative Variable	**Mean (SD)**		**Mean (SD)**	**Independent *t*-test**
Age	33.08 (9.65)		28.92 (10.16)	0.14
Number of children	1.87 (0.64)		2.11 (1.36)	0.66

Table 3: Mean (SD) of Body Image Concern (BIC) and its subscales and Mean (SD) of self-esteem before and after intervention (immediately after training and follow-up) in two study groups

Group/Variable	Control Mean (SD)	Intervention Mean (SD)	*t*	*p*
Overall pre-intervention BIC	52.80 (14.89)	60.28 (16.47)	1.69	0.09
Overall post-intervention BIC	57.64 (14.54)	47.80 (15.47)	2.32	0.02
Overall BIC in follow-up	43.32 (10.64)	32.20 (10.73)	3.64	0.001
Pre-intervention appearance-related dissatisfaction	29.88 (9.73)	34.92 (10.15)	1.80	0.08
Post-intervention appearance-related dissatisfaction	32.88 (8.96)	27.12 (9.79)	2.17	0.03
Post-intervention appearance-related dissatisfaction in follow-up	24.08 (7.41)	17.41 (6.15)	3.41	0.001
Pre-intervention social functioning interference	22.92 (5.78)	25.36 (6.89)	1.36	0.18
Post-intervention social functioning interference	24.76 (6.07)	20.68 (6.20)	2.35	0.02
Social functioning in follow-up	19.24 (3.81)	14.79 (5.11)	3.46	0.001
Pre-intervention self-esteem	24.33 (5.81)	25.4 (7.31)	0.57	0.65
Post-intervention self-esteem	23.40 (7.16)	31.16 (7.05)	3.93	<0.001
Post-intervention self-esteem in follow-up	32.0 (6.84)	40.45 (3.51)	5.40	<0.001

on the findings, the overall body image concern and its subscales including appearance-related dissatisfaction and social functioning interference after training sessions in the intervention group tangibly declined compared with the control group [Table 3].

A longitudinal study examining the changes in psychosocial well-being during orthognathic treatment indicated that body image improvement lasted from before the treatment until a year after the surgery.[37] Besides, the results of another study investigating the effect of rhinoplasty on women's body image concern, sexual self-esteem, and sexual body image revealed that women's body image increased after rhinoplasty.[38] In addition, the results of another study addressing the level of concern about body

Table 4: Effect of Mindful Self-Care Training on Body Image Concern (BIC) and its subscales, and on self-esteem score in two study groups

Source		df	Mean square	*F*	*p**** ANOVA with repeated data
Overall BIC	Time	2*	489.86	71.30	<0.001
	Time and group interaction	2	1327.51	20.62	<0.001
	Group	1**	976.61	2.22	0.14
Dissatisfaction with appearance	Time	2*	1775.98	60.37	<0.001
	Time and group interaction	2	527.75	17.94	<0.001
	Group	1**	295.36	1.74	0.19
Interference with social functioning	Time	2*	655.72	57.06	<0.001
	Time and group interaction	2	181.33	15.77	<0.001
	Group	1**	197.81	2.75	0.10
Self-esteem	Time	2*	223.08	38.17	<0.001
	Time and group interaction	2	5.77	0.98	0.98
	Group	1**	70.84	7.10	0.01

*The degree of freedom for time is two, as the measurement was taken three times. **Additionally, due to the presence of two distinct groups, the degree of freedom is equal to one. ***$p<0.05$ was considered significant

image in nose surgery candidates indicated the level of concern about body image increased after surgery.[9] In the above stated studies, the patient's postsurgery psychosocial well-being was investigated and no preoperative intervention was performed in the intervention group, while the present study performed intervention before surgery and the patient was ready for surgery and the potential challenges after surgery. Moreover, the focus of the training sessions was on mindful self-care, where the findings indicated a reduction in the overall body image concern. It seems that if the candidates for this type of surgery receive the necessary presurgery preparations, they can achieve the desired results and improve their body image within a shorter period.

Another variable in the present study, i.e., self-esteem and the effect of mindful self-care training on this variable, was investigated. Based on the findings, the two groups' scores of self-esteem did not indicate any significant difference before the intervention ($p > 0.05$), but after the intervention (immediately and three months after the intervention), the mean score of this variable was significantly more than the control group in the intervention group [Table 3]. According to previous studies, most orthognathic surgery candidates come up with an improvement in self-confidence, body image, facial attractiveness, and overall mood,[5,39,40] but the patients who receive inadequate explanations of surgery and are not emotionally ready get only temporarily satisfied.[41] In the present study, the presurgery training sessions were conducted and surgery-related information and mindful self-care techniques were taught to the patients, which had a positive effect on the patient's self-esteem. It seems that providing adequate information and applying suitable techniques for mindful self-care can enhance the self-esteem of the candidates of orthognathic surgery.

To investigate the trend of reducing body image concern in different stages in the two groups, the results confirmed the interaction between training and the time stages of the investigation. After surgery, appearance-related dissatisfaction, social functioning, and overall body image concern decreased significantly immediately after the intervention and 3 months after the intervention (follow-up) in the intervention group, while they increased in the control group after the intervention and then declined until the follow-up phase [Table 4]. It seems that the routine training of the surgery department along with the postsurgery changes over time reduced body image concern in the control group.

In addition, the results displayed that mindful self-care training exerted positive and significant effects on self-esteem in orthognathic surgery candidates ($p < 0.05$). On the other hand, it seems that mindful self-care training prepares a person to face postsurgery challenges, and applying the techniques taught to participants in the intervention group was effective in reducing body image concern and improving their self-esteem.

The strong point of the current study is the pre-operation intervention of the surgery candidates, which made them prepared for the operation. However, the study limitations include concurrent educational and surgical interventions, and patients' poor cooperation after the surgery due to pain and post-operation problems. Thus, it is suggested to conduct similar studies in larger groups to reduce the psychological effects of the patients' new appearance after undergoing orthognathic surgery, as these limitations affect the generalizability of the findings.

Conclusion

According to the present study, mindful self-care training influences the body image concern and the self-esteem of

the patients undergoing orthognathic surgery. Consequently, this training is proposed as a psychological-oriented care for orthognathic surgery patients under treatment.

Acknowledgments

The authors of this study would like to thank the efforts of the management of Babol-based Shahid Beheshti Hospital and all the respected patients who helped us in this study.

Financial support and sponsorship

Mazandaran University of Medical Sciences, Sari, Iran

Conflicts of interest

Nothing to declare.

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