

## Original Article

# The Impact of Cognitive Behavioral Therapy on Self-Esteem and Quality of Life of Hospitalized Amputee Elderly Patients

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### ABSTRACT

**Background:** No study is available on the effect of cognitive behavioral therapy (CBT) on self-esteem and quality of life (QOL) of amputee elderly patients. **Objectives:** This study aimed to examine the effects of CBT on self-esteem and QOL of hospitalized amputee elderly patients. **Methods:** A randomized controlled trial was carried out on a sample of 64 amputee elderly patients. The subjects were selected consecutively and then were randomly assigned into either the experimental or the control groups (32 patients in each group). The data collection instrument consisted of a demographic data form, the Rosenberg self-esteem scale, and the short form of the World Health Organization QOL Questionnaire (WHOQOL). Patients in the intervention group participated in six sessions of CBT and the control group received routine care. At the start and after the 3<sup>rd</sup> week, all patients answered the Rosenberg self-esteem scale and the WHOQOL-short form. Descriptive statistics, Chi-square, Fisher's exact, and *t*-tests were used to analyze the data. **Results:** No significant differences were found between the intervention and the control groups regarding their baseline mean scores of self-esteem and QOL. The observed changes in the QOL and self-esteem of the control group were not statistically significant. However, significant statistical differences were observed between all mean differences in the two groups that indicate the positive effect of the intervention. **Conclusion:** The CBT employed in the present study could significantly improve the self-esteem and QOL in amputee elderly patients. The same protocol is suggested to be added into the rehabilitation process for amputee elderly patients.

**KEYWORDS:** *Elderly, Quality of life, Self-esteem*

## INTRODUCTION

The elderly population is increasing worldwide.<sup>[1,2]</sup> The rapid growth of the elderly population and the effects of aging on the communities' socioeconomic conditions made the aging as an important social and health issue in most societies.

Although aging is not synonymous with disease and disability,<sup>[3,4]</sup> compared to younger age groups, the elderly people are more susceptible to diseases<sup>[5-7]</sup> and their complications and mortality.<sup>[8,9]</sup> Vascular problems are of chronic diseases which may lead to amputation in elderly patients. The incidence of lower extremity amputation increases after the age of 55 and people with 80 years or over are especially at higher risk for

amputation because of the increased rate of peripheral vascular diseases.<sup>[10]</sup>


Any permanent changes in the patient's physical form and function would result in changes in their self-concept and low self-esteem and ultimately reduce their quality of life (QOL).<sup>[11,12]</sup> Evidence shows that amputation, especially in older adults, can have devastating effects on all aspects of their health and life and might lead them toward disability and premature death.

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Self-esteem is one of the important indicators of mental health in older people.<sup>[13]</sup> It is the individual's feeling of being valued and the degree of ratification and being approved by others.<sup>[14]</sup> Several studies have shown that high self-esteem is associated with favorable psychological conditions such as perceptual accuracy and appropriate compatibility with aging and its aftermaths. On the contrary, low self-esteem is significantly correlated with many mental health problems and often leads to psychological trauma. Therefore, confronting a complex condition such as amputation, with changes in body image, and also due to the many constraints faced by the elderly, seriously threatens their self-esteem.

A number of strategies, such as family-centered empowerment,<sup>[15]</sup> mental exercises,<sup>[16]</sup> regular exercise therapy,<sup>[17,18]</sup> and Orem's self-care model,<sup>[19]</sup> have been implemented to increase the self-esteem and QOL of elderly patients.<sup>[20,21]</sup>

Recently, the cognitive behavioral therapy (CBT) is introduced as a method for increasing the people's adaptability with chronic health conditions and complex life situations. Through focusing on patients' emotional, cognitive, and behavioral reactions, these interventions help clients to identify and modify their distorted thinking patterns and inefficient behaviors. The positive effects of CBT have been shown on older adults' psychological conditions such as anxiety,<sup>[22]</sup> depression,<sup>[23,24]</sup> and death anxiety<sup>[25]</sup> and in the improvement of their sleep quality. CBT was also effective in the improvement of self-esteem and QOL of patients with heart diseases,<sup>[26]</sup> beta thalassemia,<sup>[27]</sup> and hypertension<sup>[28]</sup> and also in the improvement of self-esteem and body image of women who had undergone mastectomy. However, no study is available on the effect of CBT on self-esteem and QOL of elderly patients and especially in amputee elderly patients. Given the fact that the results of the studies conducted on other age groups might not be generalized to the older adults,<sup>[15,16]</sup> this question comes to mind that "can CBT improve the self-esteem and QOL of amputee elderly patients?"

### Objectives

This study aimed to examine the effects of CBT on self-esteem and QOL of hospitalized amputee elderly patients.

### METHODS

A quasi-experimental study with pretest-posttest design was carried out on a sample of 64 amputee elderly patients admitted to the Vascular Surgery Unit of the Al-Zahra Hospital, Isfahan, Iran. The subjects were selected consecutively and then were randomly assigned into either the experimental or the control

groups (32 patients in each group). The inclusion criteria were age of 60 years and over, ability to read and write in Farsi language, being conscious and aware of time and place, having no psychological disorder, having no mental, visual, and hearing problem. The exclusion criteria were confronted with any problem, i.e., disability or death that interferes with participating in the study. However, none of the patients was excluded from the study.

The sample size was calculated using the results of a previous study,<sup>[29]</sup> in which the posttest score of QOL in the control and the experimental groups was  $46.08 \pm 22.67$  and  $63.15 \pm 19.03$ , respectively. Hereby, the effect size calculated as 2.25. Moreover, considering type I error probability of 0.05 and a power of 0.82, the sample size was determined to be 25 patients for each group using G-power software (Bonn, FRG: Bonn University, Dep. of Psychology). However, 32 subjects were included in each group [Figure 1].

The eligible subjects were identified through daily referring to the vascular surgery unit of the aforementioned hospital and going through their hospitalization records alongside consulting with the treating physician. When a patient agreed to participate in the study, the study instrument was given to him/her to be answered. While the patient was answering, the first researcher was present in the patient's room for any clarification, if needed. The data gathered at this time were considered as the pretest.

### The study instrument

The data collection instrument consisted of three parts. The first part included a demographic data form, including questions on the patient's age, sex, marital status, education level, place of residence, and monthly income. The Rosenberg self-esteem scale and the short form of the World Health Organization QOL Questionnaire (WHOQOL-short form) were used as the second and third parts of the study instrument.

The Rosenberg self-esteem scale consists of 10 items, and all items are responded on a four-point Likert scale ranging from strongly disagree (scored 1) to strongly agree (scored 4), summing up a score between 10 and 40. Higher scores indicate higher self-esteem. Shahbazzadegan *et al.*<sup>[17]</sup> have tested the reliability and validity of the Persian version of this scale, and the reliability coefficient was reported as 0.85.

The WHOQOL-short form consists of 26 items in four subscales of physical health, mental health, social relationships, and environmental health. All items are responded on a five-point Likert scale ranging from 1 to 5 (except for items 3, 4, and 26 that are scored

reversely). Then, the scores of the each subscale are diverted to a standard score ranging from 0 to 100. Higher scores indicate better QOL. Nedjat *et al.*<sup>[30]</sup> have tested the reliability and validity of the Persian version of this scale, and the reliability coefficient was reported as 0.77, 0.77, 0.75, and 0.84 for the physical health, mental health, social relationships, and environmental health subscales, respectively.

### The intervention

The intervention group was divided into small subgroups of 3–4 patients and each subgroup participated in six sessions of CBT according to the Turkington and Kingdon model.<sup>[31]</sup> The CBT sessions were held twice a week, in 3 successive weeks. All the sessions were held in a comfortable room in the surgical ward. The outline of the CBT sessions is presented in Box 1. The control group received routine care. After the 3<sup>rd</sup> week, all

patients in the both groups were invited to the surgical ward and answered the Rosenberg self-esteem scale and the WHOQOL-short form for the second time. Data collection lasted from September 2015 to Jun 2016.

### Ethical considerations

This study was approved by the Ethics Committee of Isfahan University of Medical Sciences (grant no. 194041). The study was also registered at the Iranian Registry of Clinical Trials (IRCT number: IRCT2016092730002N1). The necessary permissions were also received from the officials in the university and the Al-Zahra Hospital. All participants were briefed about the study aims and the voluntary nature of their participation and that they can withdraw from the study at any time. They all signed written informed consent before participation and were assured of the anonymity and confidentiality of their personal data.

### Data analysis

Statistical analysis was carried out using SPSS software version 13 (SPSS Inc., Chicago, IL, USA). Descriptive statistics (i.e., frequencies, percentage, mean, and standard deviation) were calculated. The Chi-square and Fisher's exact tests were used to compare the two groups in terms of their qualitative demographic characteristics. Independent samples *t*-test was used to compare the mean scores of self-esteem and also QOL in the two groups.  $P < 0.05$  was considered significant in all tests.

## RESULTS

The two groups were not significantly different regarding their demographic characteristics such as gender, marital status, place of residence, and monthly income [Table 1]. Furthermore, no significant differences were found between the intervention and the control groups regarding their baseline mean scores of self-esteem, overall QOL, and its four subscales [Table 2].

As presented in Table 3, the mean differences of all dependent variables in the control group were negative. However, the mean differences of all dependent variables were positive in the intervention group. These findings suggest that the QOL of the control group was mostly decreased during the study. However, the observed changes in the QOL of the control group were not statistically significant. On the other hand, the mean differences of all dependent variables in the intervention group were positive. Overall, significant statistical differences were observed between all mean differences in the two groups that indicate the positive effect of the intervention.

## DISCUSSION

The present study showed that the CBT could significantly increase the mean self-esteem score of the experimental

### Box 1: The outline of the intervention sessions

#### Number Content the sessions

1	Greeting and introducing the sessions' facilitator and the patients to each other; briefing the patients on the numbers and the structure of the educational sessions; introducing the cognitive-behavioral intervention; presenting the concepts and the importance of self-esteem and QOL and provide examples of these concepts; providing some assignments (i.e., identifying instances of self-esteem and quality in him/her life)
2	Greeting, reviewing the content of the previous session, and receiving the patients' feedback; presenting the concept of self-knowledge (familiarity with him/her thoughts and how to analysis them); providing strategies to identify him/her strengths and weaknesses; providing some assignments (i.e., identifying examples of the real strengths and weaknesses of him/herself)
3	Greeting, reviewing the content of the previous session, and receiving the patients' feedback; introducing the factors affecting self-esteem and QOL; teaching the patients about self-control and problem-solving; providing some assignments (i.e., identifying instances affecting self-esteem and QOL of the patients in their real life)
4	Greeting, reviewing the content of the previous session, and receiving the patients' feedback; presenting some strategies for cognitive restructuring and how to reorganize his/her thoughts and beliefs; providing some assignments for cognitive restructuring and exercises for reorganizing his/her thoughts and beliefs
5	Greeting, reviewing the content of the previous session, and receiving the patients' feedback; presenting methods for logical behavior analysis, behavior change, relaxation, visual imagery; providing some assignments for behavior change, relaxation, visual imagery by the patients
6	Greeting, reviewing the content of the earlier sessions, and receiving the patients' feedback; presenting some strategies to reinforce positive thoughts and negative behaviors, improvement of coping skills, and providing some assignments to be done at the end of the session

QOL: Quality of life

**Table 1: Demographic characteristics of the patients in the intervention and control groups**

Variable	Group		P
	Control	Intervention	
Age (year) mean±SD	73.51 ± 10.50	70.41 ± 9.20	0.21 <sup>a</sup>
Gender n (%)			
Male	20 (62.5)	22 (68.7)	0.6 <sup>b</sup>
Female	12 (37.5)	10 (31.3)	
Residence			
Home	31 (96.9)	29 (90.6)	0.61 <sup>b</sup>
Family	1 (3.1)	3 (9.4)	
Marital status			
Married	28 (87.5)	29 (90.6)	0.50 <sup>b</sup>
Widowed	4 (12.5)	3 (9.4)	
Income			
Without income	14 (43.8)	8 (25)	0.26 <sup>b</sup>
Income less expenses	5 (15.6)	8 (25)	
More revenue than expenses	13 (40.6)	16 (50)	
Education			
Illiterate	2 (6.3)	3 (9.4)	0.69 <sup>b</sup>
Primary education	20 (62.5)	20 (62.5)	
Middle school	7 (21.8)	8 (25)	
Diploma	1 (3.1)	1 (3.1)	
Bachelor	2 (6.3)	0 (0)	

All data are presented as n (%) or mean±SD. <sup>a</sup>Independent t-test, <sup>b</sup>Chi-square test. SD: Standard deviation

**Table 2: Baseline comparison of mean of dependent variables in the intervention and control groups**

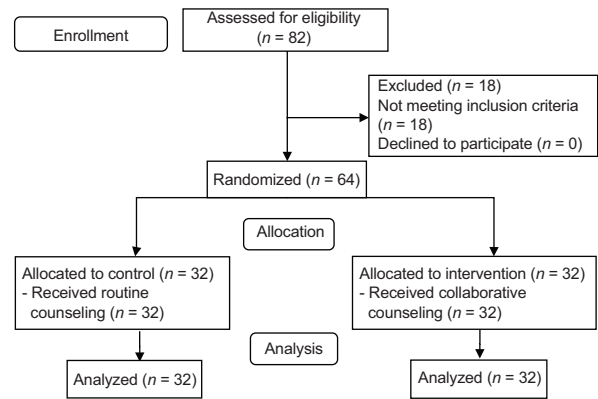
Variable	Group <sup>a</sup>		95% CI <sup>b</sup>	P <sup>c</sup>
	Control	Intervention		
Self-esteem	27.78 ± 3.31	27.94 ± 6.62	-2.8-2.5	0.91
Physical health domain	16.87 ± 1.81	16.75 ± 1.72	-0.76-1	0.78
Psychological domain	15.0 ± 2.23	14.34 ± 1.89	-0.38-1.7	0.21
Social domain	9.50 ± 1.83	9.06 ± 1.43	-0.38-1.3	0.29
Environmental domain	22.34 ± 4.07	21.53 ± 3.11	-1-2.6	0.37
Overall QOL	52.26 ± 6.6	50.50 ± 5.0	-1.2-4.7	0.24

<sup>a</sup>Data are presented as mean±SD, <sup>b</sup>CI of the difference, <sup>c</sup>Independent t-test. QOL: Quality of life, CI: Confidence interval, SD: Standard deviation

**Table 3: Between group comparison of mean difference of dependent variables after intervention**

Variable	Group <sup>a</sup>		95% CI <sup>b</sup>	P <sup>c</sup>
	Control	Intervention		
Self-esteem	-0.81 ± 1.31	1.47 ± 6.1	-4.5--0.09	0.042
Physical health domain	-0.16 ± 1.71	1.34 ± 1.7	-2.3--0.65	<0.001
Psychological domain	-0.19 ± 1.15	2.09 ± 1.71	-3--1.5	<0.001
Social domain	-0.06 ± 0.62	0.66 ± 1.1	-1.2--0.27	0.002
Environmental domain	-0.31 ± 0.59	0.53 ± 1.08	-1.3--0.41	<0.001
Overall QOL	-0.55 ± 1.66	-4.54 ± 3.1	3.8-6.3	<0.001

<sup>a</sup>Data are presented as mean±SD, <sup>b</sup>CI of the difference, <sup>c</sup>Independent t-test. QOL: Quality of life, CI: Confidence interval, SD: Standard deviation



**Figure 1: Consort flow diagram of the study**

group. An earlier study has also shown the effectiveness of CBT in increasing the self-esteem of women who had undergone mastectomy.<sup>[32]</sup> A number of previous studies have also revealed the effectiveness of CBT in elderly patients with psychological conditions such as anxiety<sup>[22]</sup> and minor depressive symptoms.<sup>[24]</sup> Several studies have also confirmed that CBT can increase the self-esteem of older adults with drug abuse,<sup>[33]</sup> depression,<sup>[34]</sup> and other health problems.<sup>[35]</sup> Cognitive mechanisms, such as how people perceive their physical appearance and performance, are one of the main factors affecting the development of self-esteem. Perhaps, amputation can negatively affect the individual's cognitive processes and self-esteem through changing his/her physical appearance and body image.<sup>[32]</sup> It seems that CBT has improved the self-esteem of the amputee older adults not only through minimizing their cognitive errors but also by increasing the sense of self-worth and reducing their negative self-image.<sup>[32,36]</sup> However, as this was the first study on the effect of CBT on self-esteem of amputee elderly patients, further studies are still needed to evaluate the role of cognitive factors in self-esteem and mental health of elderly patients and specially the amputee elderly patients.

The present study showed that the CBT could significantly increase the mean QOL score of the experimental group. Consistent with the results of this study, some of the previous studies have also reported that CBT was effective in improving the QOL in patients with chronic conditions such as hypertension<sup>[28]</sup> and cardiovascular diseases.<sup>[37]</sup> Sharma *et al.* have also used CBI in amputee patients and reported that it could significantly improve all aspects of QOL.<sup>[38]</sup> A close relationship seems to exist between the people's perceived QOL and their perception of self, self-confidence, ability to create positive emotions in themselves and to resist negative emotions, positive views about themselves, the world and the future, and the ability to cope with chronic conditions. Then, any

improvement in the aforementioned factors can not only decrease the people's concerns but would also positively affect their life satisfaction and perceived QOL.<sup>[37]</sup>

Despite the present paper sheds more insight into the value of CBT in improving self-esteem and QOL in amputee elderly patients, it has some limitations. The recruited subjects were well representative of the study population; however, the study was conducted on a limited number of subjects, which adds a caution on generalizability of the findings. In particular, self-esteem and QOL are socioculturally driven, and therefore, context dependent constructs which may have substantially different indicators in other societies.

## CONCLUSION

The CBT employed in the present study could significantly improve the self-esteem and QOL in amputee elderly patients. Due to the favorable effect of CBT, the same protocol is suggested to be added into the rehabilitation process for amputee elderly patients. Moreover, further studies are recommended to evaluate the role of cognitive factors in self-esteem, physical and mental health of elderly patients, and specially the amputee elderly patients.

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## Conflicts of interest

There are no conflicts of interest.

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