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Original Article

The effect of self-management education on the quality of life and severity of the disease in patients with severe psoriasis: A non-randomized clinical trial

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ABSTRACT

Background & Aim: The quality of life (QOL) in patients with psoriasis is low. little evidence was available for the effect of self-management intervention in patients with psoriasis.
Aim: This study aimed to investigate the effect of the self-management education on the QOL and the severity of the disease in patients with psoriasis.
Methods & Materials: This non-randomized clinical trial was conducted with 99 patients hospitalized in a dermatology ward in a hospital in an urban area of Iran in 2015. They were selected using a convenient sampling method and randomly assigned into the intervention (n=50) and control groups (n=49). While the patients in the control group received routine care and education, those in the intervention group received self-management education consisting of three sessions of group education lasting between 20 and 30 minutes, discussions, educational booklet and telephone follow up one, two and three months after discharge from the hospital. Data was collected using the demographic data form, the dermatology life quality index, and psoriasis area and severity index.
Findings: The means of the QOL after education in the control and intervention groups were 7.69 (SD= 6.49) and 6.46 (SD= 6.04), respectively. There were significant differences between the intervention and control groups in terms of changes in the severity of psoriasis (P value=0.025, effect size= -0.46, 95% CI= -0.86, -0.059) and QOL (P value= 0.035, effect size=-0.43, 95% CI= -0.83, -0.03) before and 3 months after the self-management education. Accordingly, the reduction of the severity of psoriasis and improvement of QOL after the self-management education was higher than the control group.
Conclusion: Healthcare providers can use the self-management program as a low-cost approach along with the routine care for improving the QOL in patients with psoriasis.

Introduction

In the recent decade, the pattern and type of diseases has changed, so that according to the World Health Organization (WHO), about two-third of all deaths worldwide are caused by non-communicable diseases (1). Psoriasis is a disease with the spread of 1.3 percent across the globe (2,3). Studies show that the frequency of this disease in two provinces of Iran is estimated 3.1-5.2 percent (4, 5). This disease imposes an economic burden on the healthcare system, patients and their families including the cost of treatment and laboratory tests, medical examinations and loss of productivity (6, 7). Psoriasis impacts on the lives of people due to the severity and location of lesions, patients with psoriasis experience physical discomfort and significant disability (8, 9, 10).

Itching, pain, skin lesions and cracks in the palms and soles hinder self-care and can lead to sleep disturbances and mood changes (9, 11). The manifestations of this disease is associated with a sense of notoriety, which can cause behavioral changes in public places and prevent the presence of weakness in the social interactions and business opportunities (12). However, patients with psoriasis usually have

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different emotional reactions such as anxiety, depression, the feelings of shame and guilt and helplessness (13).

Psoriasis as a skin disease affects patients' physical, emotional, economic and quality of life (QOL) (14). Milčić et al. (15) showed that psoriasis has a negative impact on patients' QOL. Ansar et al. (16) and Zandi et al. (17) reported that the QOL of patients with psoriasis is significantly low. It should be noted that, besides the severity of the disease and secondary indexes in the treatment of skin diseases, the patients' QOL has special significance (6). The goal of health care system is to increase human longevity and improve the QOL, the improvement of daily functioning and life of patients with chronic diseases is the goal of healthcare systems (18).

Currently the improvement of the QOL in patients with psoriasis is an important goal (19). Nurses as the frontline healthcare providers have the most important role for improving patients' QOL, because they are able to guide patients toward a balanced life and directly affect their QOL (20). Nurses might improve patients' QOL through education, because they spent the most time with patients and families, and they have many opportunities for educational activities (21, 22).

Patient education aims to motivate people with chronic diseases for self-management (23). Self-management education is one of the useful methods in the management of chronic diseases. Since many skin disorders are complex and require treatment and behavioral changes, the self-management education can be considered a useful method (24). For patients with psoriasis, the self-management education is of utmost importance. In recent years, the relationship between the disease activity and lifestyle factors are well known (25-27). In a systematic review of 111 studies published between 1980 and 2012, only 6 studies focused on the self-management education. Also, only four studies assessed the effect of the self-management education on the QOL and two studies reported the impact of self-management on the QOL in patients with psoriasis. However, in these studies, methodological weaknesses such as the effect size were reported. This systematic review showed that little evidence was available for the effect of self-management intervention in patients with psoriasis (26). Therefore, this study aimed to investigate the effect of self-management education on the QOL in patients with psoriasis.

Methods

This was a clinical trial study (registration code: IRCT2015020220916N1) in the dermatology wards of Razi hospital in an urban area of Iran from March to November 2015 (Figure 1).

The research population was hospitalized patients with psoriasis. Samples consisted of 99 male and female hospitalized patients in dermatology wards selected using a convenient method. The inclusion criteria were the confirmation of the diagnosis of psoriasis by a dermatologist, age over 18 years, the history of psoriasis at least for three months, being able to read and write in Persian, the use of childbirth control methods, since symptoms improve by increasing hormonal level (28) and willingness to participate in this study. Failure to attend one education session and readmission were considered exclusion criteria. The sample size was determined based on a preliminary study with 30 patients other than those recruited in the current study. The mean and standard deviation of the QOL in this preliminary study were 23.63 and 3.65, respectively. Given 95% confidence interval, power= 80% and the mean difference of the quality of between the group= 2, the standard deviation= 2.8 and the probability of attrition= 10% and using the following sampling formula, the sample size was determined 55 people in each group: $n= (Z_{1-\alpha}+Z_{1-\beta})^2 \times 2s^2 \div d^2$

Of patients hospitalized in the dermatology wards of the hospital, 55 male and female patients with psoriasis were chosen using the convenient sampling method. The patients were assigned into the control and intervention groups using simple randomization. Accordingly, the patients hospitalized in the first and second half of each month were recruited in the intervention and control groups, respectively. If the patients in one of the groups were hospitalized in the dermatology ward, no more recruitment was performed for the other group until the patients were discharged (Figure 1).

While the patients in the control group received routine care and education, those in the intervention group received self-management education consisting of three sessions of group education lasting between 20 and 30 minutes, discussions, booklet and telephone follow up one, two and three months after discharge from the hospital.

During the educational sessions, group discussions were held with five patients in each group. The first researcher taught the patients regarding the definition of the disease, symptoms, diagnosis, causes and forms of the disease, treatment methods, medications, side effects of the treatment, nutrition and stress management, lifestyle changes, self-management activities and home health behaviors based on the content of the educational booklet. Also, the patients were provided with the opportunity to share their questions and concerns. Next, the patients were provided with an educational booklet entitled 'how can we live with psoriasis'? developed by the researchers based on a thorough literature review. This booklet included information regarding the definition of the disease, symptoms, diagnosis, causes and forms of the disease, types of treatment, the use of medications, side effects and how to manage treatment, nutrition and stress management, changes in the lifestyle, self-management activities and healthy behaviors at home. Telephone follow ups were performed by the first researcher one, two and three months after discharge from the hospital at 10 a.m. until 21 p.m. The aim of the follow ups were the assessment of the patient's functional status and provision of answers to patients' questions about the compliance with the self-management education with the duration of 15 minutes on average. Also, the patients were requested to feel free to call the researcher, if needed. It was noted that the patients in the control group only received an educational pamphlet as the routine education and some education presented in an individual manner. The patients in the both groups were asked to refer to the hospital three months after the provision of education for the control of the treatment process and data collection. At the end of the data collection, the patients in the control group were provided with the same educational booklet provided to the intervention group.

Data was collected using the demographic data form, dermatology life quality index LQI), and psoriasis area and severity index (PASI).The demographic data form included questions about age, gender, the marital status, level of education, duration of psoriasis, type of psoriasis, the family history of psoriasis, a history of other diseases and the treatment method.

This section was completed using the patients' files and performing interviews with the patients by the co-researcher who was unaware about the study.

The Persian version of the DLQI was used for data collection regarding the patients' QOL. This questionnaire was developed by Finlay and Khan (29) for the assessment of patients aged over 16 years. Aghaei et al. (31) assessed the validity and reliability of the DLQI with 70 patients suffering from vitiligo in Shiraz, Iran and reported an alpha's Cronbach's coefficient of 0.77. In our primary study with 30 patients, the alpha's Cronbach's coefficient was reported 0.79.

This questionnaire measured the impact of skin diseases on patient's life and contained ten multiple choice questions related to the patient recent week in terms of the symptoms and feelings (questions 1 and 2), daily activities (questions 3 and 4), leisure (questions 5 and 6), work and school (question 7), personal relationships (question 8 and 9) and treatment (question 10), personal relationships (questions 8 and 9) and treatment (question 10). Each question had the following options: very much (score 3), much (score 2), little (score 1) and none (score 0).

The DLQI scores ranged from zero (no effect on the QOL) to 30 (a very large

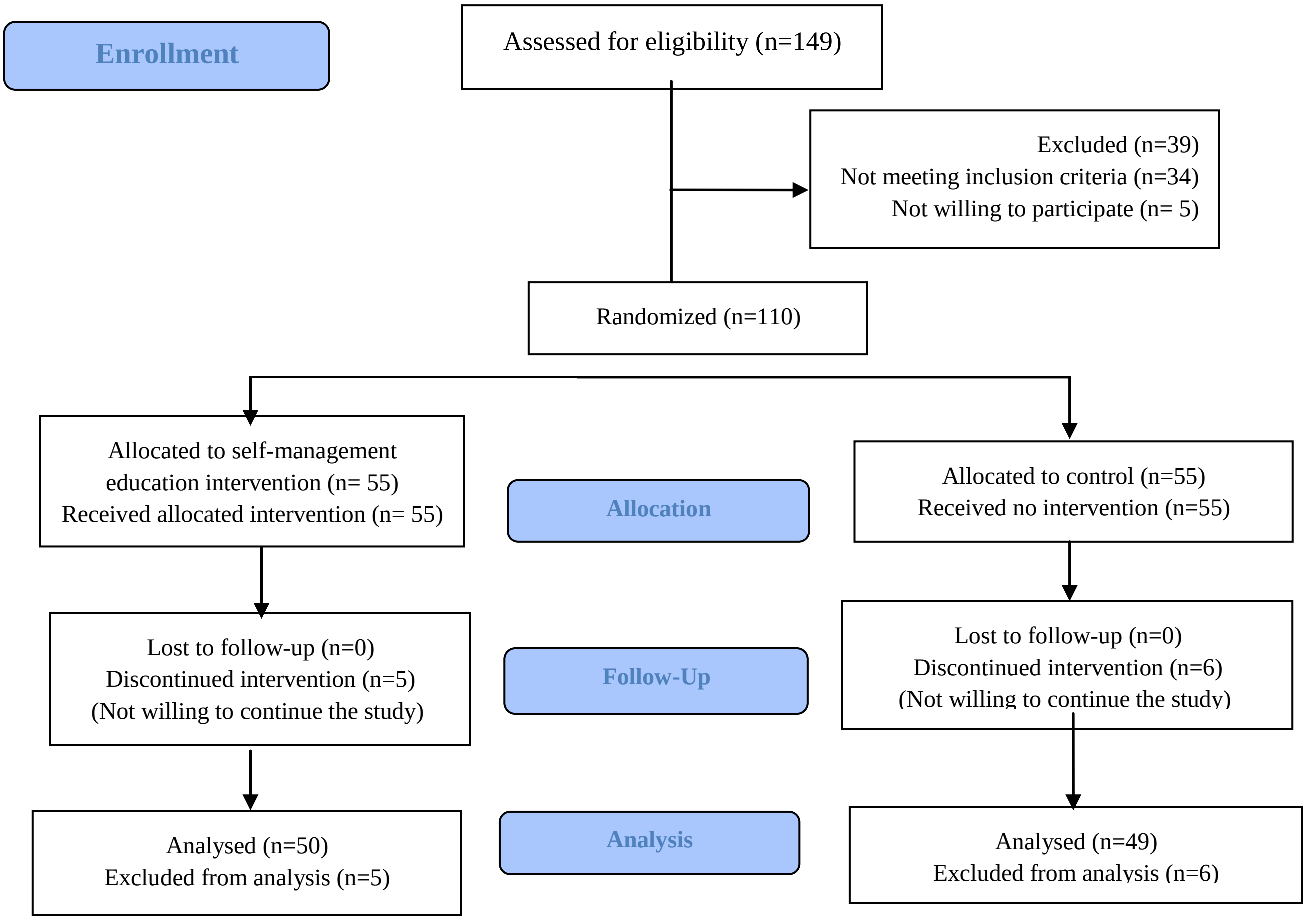

Figure 1. The process of the study

with a higher score indicating the worse QOL. In the DLQI scoring, the score 0-1 showed that the disease had no impact on the patient's life; the score 2-5 showed a low impact, the score 6-10 showed a moderate impact, the score 11-20 indicated a high impact and the score 21-30 indicated a huge impact on the QOL (28).

A nurse filled out this questionnaire for the patients. It was developed by Fredriksson and Pettersson (30) with the aim of the evaluation of patients' clinical severity of psoriasis (31). According to the PASI, the severity and extension of psoriasis were assessed in four regions of the head, trunk, upper and lower extremities separately. For determining the intensity of the redness, stiffness and scaling in the above areas, a score from zero to four was given with the higher score indicating the highest intensity. The percentage of the body's involvement in four anatomical regions were determined using a score from zero to six.

According to the percentage of the patient's body involvement, the following score was given to each patient: 1-9 percent = 1, 10-29 percent = 2, 30-49 percent = 3, 50-69 percent = 4, 70-89 percent = 5 and 90-100 percent = 6. The range of the PASI score was from 0-72 with a higher score indicating more severe disease. The final score of the PASI was described qualitatively as follows: PASI < 7 was equal to mild psoriasis, 7 to 12 was reported moderate psoriasis and higher than 12 severe psoriasis (35). The reliability of the PASI was assessed by Faria et al.(34) using the intraclass correlation coefficient (ICC) and reported 0.729 (95% CI: 0.44-0.882). In this study, the PASI was translated into Persian by three translators. Lastly, the final version was sent to 10 faculty members and dermatologists, and were asked to provide feedbacks regarding its items and content, which led to some minor modifications. Also, the ICC was calculated with the data collected from 10 patients by two evaluators with different educational levels and work experiences, which was 0.88.

The researcher obtained approvals from the ethics committee affiliated with Iran University of Medical Sciences (No. 5473/105/D/93) and permissions to enter the research zone. The patients were informed about the study aim and method and their rights. Those patients who willingly agreed to take part in this study were requested to sign the written informed consent form. After the assignment of the patients into the groups, the data was collected using the above-mentioned questionnaires by an assistant researcher who was unaware of the groups' assignments. While the patients in the control group received routine care and education, those in the intervention group received routine care in addition to the self-management education. The patients referred to the hospital three months after the provision of education for the control of the treatment process and data collection.

Descriptive and inferential statistics were used for data analysis via the SPSS software for windows v. 16 (Chicago, USA). The Kolmogorov-Smirnov test was performed to assess the data in terms of the normal distribution, which confirmed the normality of the data. The independent-t test was used to compare the means of the QOL and the severity of psoriasis between the groups and before and after the intervention. Also, the Chi-square and Fisher's exact tests were applied for the comparison qualitative variables such as gender in the two groups. The linear regression analysis assessed the effect of the duration of psoriasis (independent variable) on the severity of psoriasis and the QOL. $P < 0.05$ was considered statistically significant.

Results

The analysis of data was performed on the data collected from 50 patients in the intervention group and 49 patients in the control group. It was noted that six patients were readmitted (four patients from the intervention and two patients from the control group) and five other patients (one patient from the intervention and four patients from the control groups) were unwilling to continue this study and were excluded from data analysis (Figure 1).

The majority of the samples was in the age range of 30-44 years. The means (SD) of the patients' age in the control and intervention groups were 39.387 (12.379) and 42.26 (13.673) years, which were homogenous in the groups ($t= 1.095$, $P= 0.276$). The patients were mostly male, married and had the academic degree less than diploma. The patients in the two groups were homogenous in terms of all demographic characteristics, types of psoriasis, arthropathy and psoriatic nails (Table 1). The two groups had statistically significant differences in terms of the scalp of psoriasis. Given that this variable had no statistically significant correlation with the QOL ($P= 0.569$), it was not considered a confounding variable. The mean (SD) duration of the disease in the intervention and control groups were 8.545 (8.285) and 14.463 (8.449), respectively. Also, it was shown that the two groups had statistically significant differences in terms of the duration of the disease before the intervention ($t = 3.518$, $P< 0.0001$).

According to the Pearson correlation coefficient, a statistically significant relationship was reported between the duration of the disease According to the linear regression analysis, the duration of psoriasis had no effect on its severity and the Before the intervention, the majority of the patients in the intervention (48%) and control (42.90%) groups suffered from severe psoriasis. There was a statistically significant difference in the intervention group before and after education indicating a reduction in the severity of psoriasis three months after the intervention. The same finding was report for the patients in the control group (Table 2).QOL. After eliminating the effect of the variable, the self-management education still affected the

QOL and severity of psoriasis. Also, the self-management education without the consideration of the duration of the disease affected the QOL and reduced the severity of psoriasis.

The means of the DLQI before education in the control and intervention groups were 12.41 (SD= 6.94) and 16.06 (SD= 11.08), respectively. The intervention and control groups before education had no statistically significant differences in terms of the severity of psoriasis indicating that the groups were homogenous and suffered from severe psoriasis (Table 3).After the intervention, the groups suffered from mild psoriasis and had no statistically significant differences in terms of the severity of the disease. It was reported that the groups were different in terms of the severity of psoriasis before and after the intervention indicating that the reduction of the severity of psoriasis after education was greater in the intervention group compared with the control group. The effect of the intervention on the reduction of the severity of the disease was moderate.

and the QOL indicating that the duration of the disease was associated with the increase of the QOL (r= -0.204, P= 0.043).

higher impacts of the disease on the job and school were reported in the intervention groups. With regard to the other aspects of daily activities, symptoms and feelings, leisure, personal relationships, and treatment of patients, the patients in the groups had no statistically significant differences before education. After education, no statistically significant differences were present between the intervention and control groups in terms of the overall QOL and its dimensions. The means of the QOL before education in the control and intervention groups were 12.96 (SD= 6.02) and 15.28 (SD= 6.75), respectively. No statistically significant relationship was reported between the groups before the intervention.

The groups had statistically significant differences in terms of job and school (P= 0.023), and The two groups before and after education had statistically significant differences in terms of the changes in the QOL.

The QOL in the intervention group was greater compared with the control group. The average effect size of the intervention on QOL was moderate (Table 3).

The patients in the two groups had statistically significant differences The groups had significant differences Also, 20.40% and 26.50% of them reported that the average life impact of the disease on their lives were moderate and severe, respectively. In the control group, before and after the intervention, there were statistically significant differences in the overall QOL and its dimensions. Three months after the intervention, the QOL and its dimensions in these patients were increased.

Most of the patients (50%) in the intervention group reported that their QOL was poor before the self-management education. Also, the disease had a great impact on their lives. After the self-management education, they stated that the impact of the disease on their lives was low (38%) and moderate (28%). Also, before and after the intervention, statistically significant differences were reported in the overall QOL and its dimensions indicating an increase in these variables after education (Table 3).

Discussion

It was reported that the mean of the severity of psoriasis before the self-management education was greater than the control group, but it was not statistically significant. It suggested that the severity of the disease, the severity of physical disability, anxiety and depression could affect patients' social functions. Milčić et al. (15) reported that the ability to perform occupational activities, absence from work and unemployment were associated with the severity of the disease. The study by Korman et al. (34) showed that with increasing the severity of the disease, absenteeism was increased. According to this study, in the intervention group the

Table 1. The demographic characteristics of the patients

Groups variable		**Control (n=49) frequency (%)**	**Experimental (n=50) frequency (%)**	**Test**	**P value**
Gender	**Male**	32.00(65.30)	36 (72.00)	Chi-square= 0.516	0.473
	Female	17.00(34.70)	14 (28.00)		
Marriage	**Single**	12 (24.50)	7 (14.00)	Fisher exact test	0.472
	Married	35 (71.40)	38 (76.00)		
	Death of spouse	1 (2.00)	2 (4.00)		
	Divorce	1 (2.00)	3 (6.00)		
Education	**Under diploma**	20 (40.80)	20 (40.00)	Chi-square= 0.199	0.905
	Diploma	19 (38.80)	18 (36.00)		
	Academic degree	10 (20.40)	12 (24.00)		
Family history of the disease	**Yes**	9 (18.40)	9 (18.00)	Chi-square= 0.002	0.962
Type of psoriasis	**Plaque**	43 (87.80)	38 (76.00)	Fisher exact test	0.186
	Pustular	5 (10.20)	5 (10.00)		
	Erythrodermic	1 (2.00)	6 (12.00)		
	Gutate	0 (00.00)	1 (2.00)		
Arthropathy	**Yes**	6(12.20)	8(16.00)	Fisher exact test	0.774
	No	43(87.80)	42(84.00)		
Nail	**Yes**	21(42.90)	14(28.00)	Chi-square= 2.39	0. 122
	No	28(57.10)	36(72.00)		
Scalp	**Yes**	19(38.80)	31(62.00)	Fisher exact test	0.027
	No	30(61.20)	19(38.00)		
Method of treatment	**Local**	4 (8.20)	10 (20.00)	Fisher exact test	0.076
	Phototherapy	2 (4.10)	1 (2.00)		
	Systemic	14 (28.60)	6 (12.00)		
	Local and systemic	29 (59.20)	33 (66.00)		
Other comorbidities	**Cardiovascular**	7 (14.30)	4 (8.00)	Fisher exact test	0.813
	Respiration	1 (2.00)	2 (4.00)		
	Metabolic	2 (4.10)	3 (6.00)		
	Others	3 (6.10)	2 (4.00)		
	More than one comorbidity	1 (2.00)	3 (6.00)		
	No comorbidity	35 (71.40)	36 (72.00)		

Table 2. The comparison of the severity of psoriasis before and three months after the self-management education

Groups		**Control (n=49)**	**Experimental (n=50)**	**Independent t-test**	**P value**	**Effect size (95% CI)**
	Time	**Mean (SD)**	**Mean (SD)**			
Psoriasis severity	**Before**	12.41 (6.94)	16.06 (11.08)	-1.957	0.053	
	After	2.35 (2.05)	1.79 (1.94)	1.397	0.166	
	Paired t-test	t=-9.778 P< 0.001	t=-9.359 P< 0.001			
	Changes	-10.063 (7.203)	-14.272 (10.783)	2.279	0.025	-0.46 (-0.86, -0.059)

SD: Standard Deviation

Table 3. The comparison of the quality of life before and three months after the intervention

Groups		**Control (n=49)**	**Intervention (n=50)**	**Independent t-test**	**P value**	**Effect size (95% CI)**
Quality of life	**Time**	**Mean (SD)**	**Mean (SD)**			
Total quality of life	**Before**	12.95 (6.02)	15.28 (6.75)	-1.805	0.074	
	After	7.69 (6.49)	6.46 (6.04)	0.978	0.330	
	Paired t-test	t=-4.256*	t=-7.895*			
	Changes	-5.27 (8.66)	-8.82 (7.89)	2.135	0.035	-0.43 (-0.83, -0.03)
Symptoms and emotions dimension	**Before**	3.184 (1.589)	3.620 (1.817)	-1.270	0.207	
	After	2.02 (1.587)	1.660 (1.479)	1.169	0.245	
	Paired t-test	t=-4.244*	t=-7.115*			
	Changes	-1.163 (1.919)	-1.960 (1.947)	2.050	0.043	-0.41 (-0.81, -0.014)
Daily activities dimension	**Before**	2.653 (1.653)	3.380 (2.009)	0.964	0.052	
	After	1.571 (1.428)	1.560 (1.328)	0.041	0.968	
	Paired t-test	t=-3.789*	t=-5.922*			
	Changes	-1.082 (1.998)	-1.820 (2.173)	1.759	0.082	
Vocational times dimension	**Before**	2.674 (1.435)	3.020 (1.889)	-1.026	0.307	
	After	1.592 (1.743)	1.280 (1.678)	0.907	0.367	
	Paired t-test	t=-3.417*	t=-5.611*			
	Changes	-1.082 (2.216)	-1.740 (2.193)	1.486	0.141	
Work and school dimension	**Before**	2.674 (1.435)	1.640 (1.22)	-2.312	0.023	
	After	0.551 (0.765)	0.480 (0.886)	0.426	0.671	
	Paired t-test	t=-3.286**	t=-5.900*			
	Changes	-0.551 (1.174)	-1.160 (1.390)	2.353	0.021	-0.47 (-0.87, -0.07)
Personal relationships dimension	**Before**	1.836 (1.687)	1.860 (1.761)	-0.067	0.947	
	After	1.020 (1.084)	0.700 (1.147)	1.192	0.236	
	Paired t-test	t=-2.862***	t=-4.616*			
	Changes	-0.816 (1.996)	-1.160 (1.777)	0.905	0.368	
Treatment dimension	**Before**	1.51 (1.003)	1.760 (0.960)	-1.267	0.208	
	After	0.94 (0.876)	0.78 (0.864)	0.908	0.366	
	Paired t-test	t=-2.858***	t=-5.758*			
	Changes	-0.571 (1.399)	-0.980 (1.203)	1.558	0.122	

* P< 0.001; **P= 0.002, ***P= 0.006; SD: Standard Deviation.

severity of psoriasis after education was greater than the control group. The results of studies showed that in patients with psoriasis, the unhealthy lifestyle was more common than the general population (35) and these patients had poor medication adherence (36). Recommendations about medication and lifestyle changes may reduce the burden of the disease (35).

The self-management education affects knowledge, beliefs and skills for the management of patients with chronic conditions and help with the development of healthy behaviors. Following the self-management education, the health status, QOL and medication adherence can increase (37). Evidence suggests that medication adherence is associated with the reduction of the clinical severity of psoriasis (35).

In line with this study, Bostoen et al. (38) reported that the education program after three months in the intervention group significantly reduce the severity of psoriasis compared with the control group. The results of a study showed that one month after the self-care education program, the severity of psoriasis was significantly reduced compared with the pre-intervention (39). Fortune (40) concluded that six weeks after the psychological education program (acquaintance with psoriasis, treatment and its effects, stress reduction techniques such as muscle relaxation and cognitive techniques), the severity of psoriasis compared with the control group was decreased. Given the fact that stressful life events can cause or aggravate psoriasis in a significant number of patients, the severity of psoriasis the use of psychological methods is recommended. In the study of Ersser et al. (41) the reduction of the severity of psoriasis particularly in the intervention group was greater than the control group, though it was not statistically significant. The limitations of their study was the short period of follow-up and no investigation of the effects of the education on patients with severe psoriasis.

The self-management education increased the QOL of patients with psoriasis. In the control group, the mean of the QOL was increased indicating that their QOL was increased due to receiving care and treatments (42). However, the improvements in the QOL in the intervention group was greater than the control group. Given the connection between the disease and factors related to the lifestyle (25, 27), and that skin disorders and behavioral changes require complex treatment, the self-management education can be considered an effective method (24). The self-management education can increase accountability and patient participation in their own care that can lead to the control of signs and symptoms and preserves their independence and effectiveness (43).

One study showed that one month after the self-care education using the booklet, all aspects of the QOL in patients with psoriasis were significantly improved (40). The limitations of that study was the lack of a control group. Therefore, it was not clear, whether the improvement of the QOL was influenced by factors such as seasonal changes or receiving education. Converse to our findings, in another study six weeks after the self-management education (one session group education and telephone counselling), no statistically significant difference was reported between groups in the QOL in patients with mild to moderate psoriasis (41). The variation of results can be attributed to the differences regarding to the intervention protocols. In the study by Bostoen et al. (38) after three months, the education program improved the QOL in patients with psoriasis. This effect persisted for at least six months after the intervention, but in follow-up after nine months, no statistically significant difference between groups was reported. It indicated that consolidation of results in long-term need the continuation of education. The telephone follow-up intervention has been perhaps one of the reasons for the continuation of the effect of the intervention, however, it needs further exploration by future studies.

According to this study, the improvement of the QOL in terms of symptoms, feelings, job and school in the intervention group was greater than the control group. The self-management education provided information and skills, thereby increased their ability to manage symptoms, health behaviors and drug adherence (37). The self-management education raised their awareness in the intervention group and helped them manage their symptoms such as pain, itching and burning. Since there is a direct relationship between the severity of the disease and employment (44), the alleviation of the symptoms helps with going to work and school.

The results showed that both intervention and control groups had no significant differences in the score changes of personal relationships, leisure and daily activities before and after the program. Factors such as the economic problems, distance, poor family support and expensive drugs hindered self-management. The lack of the evaluation of patients with sufficient income affecting the treatment process was a limitation of this study, which should be considered in future studies. Since the provision of education alone cannot lead to improvement of the QOL in all dimensions, other interventions such as education combined with exercise and complementary therapies should be investigated. A lack of significant relationships in some aspects can be attributed to the short period of the study that need further investigation. This study focused on nursing interventions. It is possible that the improvement of the QOL needs family-centered or multidisciplinary approaches. Bostoen et al. (38) reported the improvement in physical activity, severity of illness and depression in the intervention group compared with the control group using a multidisciplinary approach that affected the physical activity and depression.

The results of studies on the impact of the self-management education on the QOL in patients with other chronic disorders were similar to our findings. YU et al. (45,46) showed that compared with the control group, after the self-management education, the QOL and its dimensions (symptoms, effect of disease on the life and activity) in patients with chronic obstructive pulmonary diseases reduced recurrence episodes. In this study, sending educational texts, recording activities and the presence of family members to help the patients added to the effect of our intervention. In this study, there were several limitations that might affect the results. The allocation of patients was conducted in a non-random method. Therefore, high quality randomized controlled clinical trials with large sample size and random allocation are recommended in future studies. Also, it was a single center study that limited its generalizability. Due to the nature of the intervention, there was no possibility of blinding patients to the intervention type, so there was a possibility of the Hawthorne effect. In this study the effect of baseline information and disease duration were not controlled, therefore; further research is recommended.

This study showed the effect of the self-management education on patients' QOL. Therefore, they are suggested to participate in the self-management education and benefit from the guidance provided in educational booklets for managing their diseases. Nursing staff can use the self-management program as a low-cost approach along with the routine care for improving the QOL in patients with psoriasis. Nurses can teach the self-management program as one part of their care process to help with improving patients' QOL. In this respect, nurses need to get familiar with the QOL and its dimensions, motivational factors and barriers self-management. Nurse managers can help nurses to implement the self-management education through providing facilities and equipment including training courses for nurses, taking into account the learning environment for inpatients and outpatients, and publishing educational booklets. For this purpose, nurses should be educated during in-service programs on the importance of the self-management education.

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Conflict of Interest

The authors of this study declare no conflicts of interest.

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