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Original Article

Relationship between quality of life and disease severity in patients with psoriasis

Kobra Soltandehghan[1], Tahereh Najafi-Ghezeljeh[2*]

[1] Department of Medical-Surgical Nursing, School of Nursing and Midwifery, Iran University of Medical Sciences, Tehran, Iran
[2] Department of Critical Care Nursing, School of Nursing and Midwifery, Iran University of Medical Sciences, Tehran, Iran

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ABSTRACT

Background & Aim: Besides the disease severity of Psoriasis, the quality of life is highly important; however, the relationship between the two is not clear. This study was carried out with the aim of determining the relationship between the quality of life and disease severity in patients with psoriasis**.**

Methods & Materials: This cross-sectional study was conducted on 99 patients with psoriasis who referred to Razi hospital, Tehran University of Medical Sciences, Tehran, Iran in 2015. The patients who met the inclusion criteria of the study were recruited by convenience sampling. The data was collected, using Dermatology Quality of Life Index and Psoriasis Area Severity Index **.**Data was analyzed using Pearson correlation coefficient, independent t-tests, one-way ANOVA, and linear regression analysis via SPSS v.21 at a significance level less than 0.05**.**

Results: The mean scores (standard deviation) of psoriasis severity and total quality of life were 14.26 (9.41) and 14.13 (6.47), respectively. There was a positive, strong, and significant relationship between psoriasis severity and total quality of life ($r= 0.622$, $P < 0.0001$). Psoriasis severity was found to be mostly associated with the dimensions of psoriasis effects on daily life activities, symptoms, and emotions, respectively.

Conclusion: As the results revealed, the higher the psoriasis severity indicated the lower the quality of life. This study showed the significance of addressing quality of life along with psoriasis severity in the process of assessing and treating patients. The results can serve as a foundation for interventional studies aiming at improving the quality of life in patients with psoriasis.

Introduction

Nowadays, chronic diseases have become a global challenge, involving both rich and poor countries. Psoriasis, classified as one of such diseases, develops in response to immune-inflammatory process (1); however, it is often considered as an autoimmune disease (2). The worldwide prevalence of psoriasis is estimated to be 3.1% (3). An only founded study in Yazd province of Iran, it is estimated to be 1.3-2.5 % (4). This disease imposes a heavy economic burden on health care system, patients, and their families4 in such a way that in United States of America the direct and indirect health care costs of psoriasis are over 11.25 billions of dollars per year (5).

Depending on the severity and the location of lesions, patients with psoriasis suffer from a considerable physical discomfort and disability. Itching, pain, lesions on the hands and feet, and cracked skin on sole of feet pose problems on self-care, walking, and performing daily tasks (6). Pain and discomfort of skin can disturb sleep and change one's mood (7). Moreover, an increase in the severity of symptoms along

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* Corresponding Author: Tahereh Najafi Ghezeljeh, Postal Address: School of Nursing & Midwifery, Rashid Yasemi St., Valiasr St., Tehran, Iran. Email: najafi.t@iums.ac.ir

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with physical discomfort engenders a sense of stigmatization (8). This may result in behavioral changes, e.g. avoiding public places, which, consequently, leads to deficits in social interactions and acquiring job opportunities (9).

It is worth pointing out those patients with psoriasis experience different emotional reactions (10). Regardless of the disease severity, depression occurs in over 30% of the patients. It has been reported that more than a third of the patients had anxiety and 10% of the patients had suicidal thoughts (11). This disease has negative social and psychological impacts on daily life activities, including sleep disorder (48%); interference with sexual activity (29%); and difficulty in using hands (36%) (12). Psoriasis, through interfering with daily activities and sexual function, causes psychological distress and social relations breakdown. As a matter of fact, a vicious cycle is developed, which leads to deterioration in the condition of patients (6). For patients, psoriasis is not simply a matter of appearance only. In patients with severe manifestations of the disease, life expectancy decreases due to the increased risk of heart disease (13). In other words, psoriasis is a severe and debilitating skin disease that affects physical, emotional, and economical aspects of patients' lives, in such a way that the quality of life of patients with psoriasis is comparable with that of patients with heart diseases, diabetes, and cancer (14).

In addition to the disease severity, measuring the quality of life is of great importance in skin diseases, and it is considered as the secondary index in evaluating the effects of treatment (15). Although these diseases do not often decrease survival, they affect one's quality of life by different means, such as itching and pain, psychological stress, decline of confidence, problems in family and social relationships, treatment and financial burden (16). Over the last two decades, there has been a growing interest in assessing and improving the quality of life of chronic patients, in a way that the improvement of daily function and the lives of patients have become a purpose in itself (17). Because human beings not only tend to extend lifespan, but also demand improved quality of life; hence, it is essential to study the quality of life and put emphasize on its various aspects (18).

Different studies have reported the low quality of life in patients with psoriasis. Milčić et al.1 showed that psoriasis negatively affects the patients' quality of life. Ansar et al. (19) and Zandi et al. (20) reported that the total score of quality of life in patients with psoriasis is significantly lower than healthy people. On the other hand, it is claimed that there is a reciprocal relationship between disease and quality of life. Physical disorders and symptoms exert direct impact on all dimensions of quality of life (21), especially in case of the chronic patients who have to deal with many issues throughout their lifetime. It seems logical to suggest that there is a direct and significant relationship between disease severity and quality of life, as this hypothesis is verified by the findings of some studies (20, 22). However, this has not been confirmed in some other researches (23-25). A systematic review reported paradox results, weak relationship between quality of life and clinical disease severity and stronger association between quality of life and subjective symptoms. They recommended study for deeper insights about the correlation between these two variables (26). This study was carried out with the aim of determining the relationship between quality of life and clinically disease severity in patients with psoriasis.

Methods

This cross-sectional study was conducted on 99 patients with psoriasis who referred to Razi hospital of Tehran in 2015. The patients who met inclusion criteria were recruited by convenience sampling: confirmation of the psoriasis diagnosis by physician; aged 18 years or above; having psoriasis for at least 3 months; having reading and writing literacy in Persian language; and willingness to participate in the study. Based on a pilot study on 30 patients with the similar eligibility criteria (not included in main study), the sample size was calculated at 99 individuals, assuming a 95% confidence level, 80% power, and a correlation coefficient 0.3.

Followed by obtaining the approval of ethics committee (No: 93/D/105/5473) and getting research permission from Iran University of Medical Sciences and presenting them to the authorities at Tehran University of Medical Sciences, the researcher explained the purpose of the study and its course of action to the Razi hospital officials for getting their agreement and permission. Subsequently, the researcher attended in dermatology units, and introduced herself to the section supervisor and the eligible patients with psoriasis and clarified the purpose of the research to them. Then, a written informed consent was obtained from patients who met the inclusion criteria. The researcher administered the questionnaire to the participants of the study and asked them to complete the demographic information form and Dermatology Quality of Life Index (DLQI). Moreover, Psoriasis Area Severity Index (PASI) was completed by a co-researcher.

Data collection procedure was based on observation and self-report. In this study, three instruments were used to collect data: a) disease and demographic information form; b) DLQI; c) PASI. The disease and demographic information form was completed by patients.

In this study, the patients' quality of life was assessed by DLQI. This questionnaire was designed by Finlay and Khan and then was used widely worldwide (27). The questionnaire is composed of ten multiple-choice questions, measuring the symptoms and feelings (questions 1 and 2); daily activities (questions 3 and 4); leisure time (questions 5 and 6); work and school (question 7), personal relationships (questions 8 and 9); and treatment (question 10) of the patient within the past week. The choices for each question were: very much (3 points), a lot (2 points), a little (1 point), and not at all (0 point) 27. DLQI scores ranged from zero (not effect at all on patients' life - ideal quality of life) to 30 (extremely large effect- poor quality of life) (28). The final score of the questionnaire, with regard to its effect on patients' life, is classified as below: from 0 to 1: not effect at all (ideal quality of life); from 2 to 5: small effect (suitable quality of life); from 6 to 10: moderate effect (moderate quality of life); from 11 to 20: very large effect (unsuitable quality of life); and from 21 to 30: extremely large effect (poor quality of life) (27). The validity and reliability of the Persian version of the questionnaire was reviewed and confirmed in a study on 70 patients with vitiligo, entitled "DLQI scores in vitiligo: reliability and validity of the Persian version", in which the Cronbach's alpha coefficient was 0.77 (28). In current study, its content validity was confirmed by 2 dermatologists and 3 nursing professors. Also, the questionnaire was administered to 30 patients with psoriasis, whose data was not considered in the main research. The Cronbach's alpha test of the questionnaire was calculated at 79%.

PASI was developed by Fredriksson and Pettersson (29). Application of PASI score has been frequently recommended for observing and assessing clinical severity of psoriasis (30). In PASI, scoring is based on the percent of the area of skin involved, including head (10% of a person's skin); trunk (30% of a person's skin); legs (40% of a person's skin); and arms (20% of a person's skin). Moreover, it examines itching, erythema, induration, and desquamation of the areas involved. The percent of involvement ranges from 0 to 6. Accordingly, 0 indicates the involvement of 0% of the area; 1 indicates the involvement of 1-9% of the area; 2 indicates the involvement of 1-29% of the area; 3 indicates the involvement of 30-49% of the area; 4 indicates the involvement of 50-69% of the area; 5 indicates the involvement of 70-89% of the area; and 6 indicates the involvement of 90-100% of the area. Each of the symptoms of itching, desquamation, induration, and erythema are graded from 0 to 4; where 0 and 4 show the lowest and the highest severity, respectively. Followed by calculating the severity of the disease in each of the specified areas, the final score is obtained by combining the scores of each area. The final score of PASI ranges from zero (no disease) to 72 (maximal disease) 20. The final score of PASI was categorized and described as mild (PASI <7); moderate (PASI = 12); and severe (PASI > 12) (31). The reliability of this instrument was assessed by Farias et al. (32) in a study entitled "Inter-rater concordance study of the PASI". In this study, the Intraclass Correlation Coefficient (ICC) was 0.729 (95% confidence interval: 0.882–0.440) which was indicative of a considerable correspondence between the raters. In this study, following translation-back translation of the instrument to Persian, its content validity was confirmed by 2 dermatologists and 3 nursing professors. Inter-rater agreement method was used to determine the reliability of PASI. In this way, PASI instrument was given to two raters who had the same level of education and work experience. They were requested to assess 10 patients with psoriasis over the same period of time. Subsequently, the data were analyzed. ICC was calculated to be 0.88 (95% confidence interval: 0.94-0.76). Observation of the involved skin was used to complete some parts of this instrument. Other parts of it were completed by patients' self-report.

Data analysis was performed, using SPSS v.21 at a significance level less than 0.05. Kolmogorov-Smirnov test was applied to assess the normal distribution of data; and the results of this test showed that all the main variables of the research were normally distributed. Afterwards, in order to achieve the purpose of the research, Pearson correlation coefficient, independent t-tests, one-way ANOVA, and linear regression analysis were used to determine the relationship between the variables.

Results

In this study, 99 patients with psoriasis participated. Table 1 presents a summary of the disease and demographic information along with their relationships with total quality of life. The majority of the patients were aged between 30 to 44 years. The mean age of patients was 40.84 (13.06) years and its correlations with quality of life and disease severity were not statistically significant (respectively, r= 0.04, P = 0.691 and r= 0.025, P = 802). The mean duration of disease was 137.6 (106.07) months and its correlation with quality of life was statistically significant (r- -0.204, P = 0.043). However, its correlation with disease severity was not statistically significant (r= -0.077, P = 0.450). The majority of the participants were male, married, and had under diploma education. According to the results, most of the patients had more than one type of psoriasis and most of them had no other comorbidities.

Table 1. Distribution of demographic information and their relationship to quality of life in patients with psoriasis, 2015 (N = 99)

Variables		**Frequency (%)**	**Total quality of life Mean (SD)**	**P-value**	**Disease severity Mean (SD)**	**P-value**
Gender	Male	68(68.70)	14.57 (6.32)	0.316*	15.31 (9.73)	0.09*
	Female	32 (31.30)	13.16 (6.79)		11.94 (8.33)	
Marital status	Single	26 (26.30)	14.72 (6.24)	0.840*	11.98 (5.37)	0.236*
	Married	73 (73.70)	13.90 (6.49)		14.90 (10.26)	
Education	Under diploma	40 (40.40)	15.02 (6.46)	0.250**	16.42 (9.76)	0.059**
	Diploma	37 (37.40)	14.32 (7.09)		14.24 (10.13)	
	Upper diploma	22 (22.2)	12.18 (5.08)		10.33 (5.89)	
Type of psoriasis	Plaque	29 (29.30)	17.08 (5.29)	0.687**	13.48 (10.86)	0.638**
	Pustule	7 (7.10)	14.83 (10.17)		11.48 (4.83)	
	More than one type	63 (63.60)	13.57 (6.64)		14.73 (9.06)	
Comorbidities	Cardiovascular	11 (11.10)	9.73 (5.26)	0.112**	10.58 (6.49)	0.544**
	Respiration	3 (3.00)	14.00 (12.16)		9.17 (4.91)	
	Metabolic	5 (5.10)	12.00 (4.42)		12.58 (9.89)	
	Others	5 (5.10)	18.40 (2.07)		15.48 (4.46)	
	More than one comorbidity	4 (4.00)	17.00 (8.28)		19.10 (12.74)	
	No comorbidity	71 (71.70)	14.51 (6.36)		14.80 (9.91)	

* Independent t test; ** One-way ANOVA

In general, the mean score of psoriasis severity based on PASI was 14.26 (9.41), i.e. it was severe. Most of the participants in the study (45.5%) had severe psoriasis; 36.40% had moderate psoriasis; and 18.20% had mild psoriasis (Table 2). Moreover, the results indicated that 50.5% of patients had stated that the disease has extremely large effects on them, and their quality of life was poor. In this study 24.2% of participants described their quality of life as moderate. Besides, it was revealed that the quality of life was unsuitable in 17.7% of the patients (extremely large effect) and was suitable in 8.1% of participants (small effect) (Table 2).

Table 2. Distribution of disease severity and disease effect on patients' life, 2015 (N= 99)

Variable		**N**	**%**
Psoriasis severity	Mild (<7)	18	18.19
	Moderate (12-7)	36	36.36
	Severe (>12)	45	45.45
	Total	99	100.00
Disease effect on patients' life	No effect	0	0.00
	Small effect	8	8.08
	Moderate effect	24	24.24
	Very large effect	50	50.51
	Extremely large effect	17	17.17
	Total	99	10.00

The results showed that the highest mean score of total quality of life, as measured by DLQI, was observed in patients with severe psoriasis 18.02 (0.77). The mean score of total quality of life in mild and moderate severities of psoriasis was 7.00 (3.93) and 12.83 (5.48), respectively.

The results of the relationship between total quality of life and its dimensions and psoriasis severity is summarized in Table 3. The mean score of total quality of life in participants was 14.13 (6.47), which is indicative of the high effect of the disease on patients. The results of the Pearson correlation coefficient revealed that there was a strong, positive, and significant relationship between psoriasis severity, as measured by PASI scale, and total quality of life and its dimensions, as measured by DLQI scale. Psoriasis severity was found to be mostly associated with the dimensions of psoriasis effects on daily life activities, symptoms, and emotions, respectively.

According to the results of Pearson correlation coefficient, there was no significant relationship between age and total quality of life. However, there was a statistically significant, poor, and negative relationship between disease duration and total quality of life in patients with psoriasis (P = 0.043, r = -0.204), i.e. along with an increase in disease duration, the quality of life increases. The findings showed that there were no significant differences regarding the mean scores of total quality of life based on the DLQI scale among different groups of gender, marital status, educational level, type of psoriasis and comorbidities.

Moreover, in the linear regression analysis (Table 4), there was a significant relationship between total quality of life and psoriasis severity. In general, psoriasis severity had correlation with quality of life, after adjusting for other variables. According to regression analysis, the patients with highly severe psoriasis had lower quality of life.

Table 3. The relationship of quality of life and its dimensions to disease severity in patients with psoriasis, 2015 (N = 99)

Variables	Mean (SD)	Max- Min	Pearson correlation coefficient
Symptoms and emotion	3.40 (1.71)	6.00-0.00	0.53*
ADLS	3.02 (1.87)	6.00-0.00	0.57*
Vocations	2.85 (1.68)	6.00-0.00	0.39*
Work and school	1.37 (1.18)	3.00-0.00	0.44*
Personal communication	1.85 (1.72)	6.00-0.00	0.32*
Treatment	1.64 (0.98)	3.00-0.00	0.33*
Total	14.13 (6.47)	28.00-2.00	0.622*

*significant, P< 0.0001

Table 4. The results of linear regression model of disease severity, disease duration and quality of life of patients with psoriasis, 2015 (N = 99)

Model	Unstandardized Coefficients		Standardized Coefficients	t	P-value
	B	Std. Error	Beta		
(Constant)	8.723	1.913		4.561	<0.0001
Disease Severity	0.418	0.054	0.608	7.708	<0.0001
Duration of disease	-0.010	0.005	-0.161	-2.005	0.048

Dependent Variable: total quality of life

Discussion

This study was carried out with the aim of determining the relationship between quality of life and disease severity in patients with psoriasis. As the results indicated, the quality of life was poor in patients with psoriasis, which is in line with the results from other studies (23,33-36). Psoriasis has provoked many disabilities and can affect skin, head, nails, and joints, which causes pain, itching, irritation, and different symptoms; this will, consequently, affect the quality of life in patients with psoriasis (34). In recent years, there has been an emphasis on the importance of clinical analysis of the disease as well as the assessment of quality of life in order to investigate the effects of treatment; it has been recommended to evaluate psoriasis severity along with quality of life (24, 36).

In this study, the quality of life in different dimensions were low, which is in line with a study by Vettuparambil et al. (37), who determined the quality of life in patients with psoriasis in India. They showed that all the dimensions of quality of life, particularly symptoms and feelings, work and study, and daily activities were influenced by psoriasis. A significant relationship was observed between skin problems and social, emotional, and mental tensions as well as sense of loneliness and decline of self-confidence (36, 38). The patients with psoriasis suffer from depression and their quality of life declines in the dimensions of personal, behavioral and psychological well-being (38).

As the results revealed, there is a strong, positive, and significant relationship between the psoriasis severity and total quality of life and its dimensions. In a study with the aim of assessing the quality of life in women (n = 25) and men (n = 77) with psoriasis in Japan, it was indicated that there was a significant relationship between PASI score and itch visual analogue scale and the score of quality of life (36). In a review study, it was highlighted that the clinical trial studies show a relationship between the reduction of severity of physical symptoms in PASI and improvement of quality of life in DLQI (24). In a survey of quality of life in patients with psoriasis in Kerman, Iran, Zandi et al. (20) reported that the patients at severe stages of the disease had lower quality of life. Incompatible with this study, , Cakmur and Dervis (39) carried out a research on 127 patients with psoriasis in Turkey. They showed that there was no significant relationship between the disease severity based on PASI, and the score of quality of life, as measured by DLQI. However, they reported the existence of a linear relationship between the score of psoriasis severity on the scale of Body Surface Area (BSA) and the score of quality of life. Vettuparambil et al. (37) also found no relationship between the quality of life and disease severity of (49) patients with psoriasis. However, they reported a moderately significant and positive correlation between disease severity and the dimensions of daily activities and leisure activities. The difference of results from the current study can be attributed to the small sample size in their study. Inconsistent with the current study, Sompogna et al. (40) found no association between quality of life and clinical severity among patients with psoriasis.

According to the results, there was a positive significant relationship between quality of life and disease duration. In line with this study, a cohort study on 484 patients with psoriasis showed that the disease effect on health-related quality of life decreased over time (41). Incompatible with this study, a cross-sectional study found no relationship between disease duration and quality of life39. Zandi et al. (20) also reported that they did not find a relationship between disease duration and quality of life.

Furthermore, as the results showed there was no relationship between the quality of life and type of psoriasis. Although such a result can be attributed to the small sample size of the different groups of the psoriasis type, further studies should be designed to overcome these inadequacies. Zandi et al. (20) reported the existence of a significant difference among erythrodermic and pustular type of psoriasis in terms of quality of life. In similar studies, it was reported that the patients with psoriatic arthritis had lower quality of life (35); however, in the current study, none of the participants had psoriatic arthritis.

The results showed that there was no significant difference between men and women in terms of quality of life. Furthermore, the result from the research by Lundberg et al. (35, Ghajarzadeh et al. (34), and Zandi et al. (20) showed that there was no difference between males and females with psoriasis regarding quality of life. However, one study reported that women (n = 25) had lower quality of life in comparison to men (n = 77), which can be attributed to their higher scores in symptoms and feelings dimension of quality of life (36).

Based on the findings, there was no relationship between age and quality of life. Besides, the present study showed that different groups of marital status and education were not different in terms of quality of life. In line with this study, Cakmur and Dervis (39) found that there was no relationship between demographic information _i.e. gender, age, marital status, and education_ and the quality of life. Incompatible with this study, Vettuparambil et al. (37) showed that quality of life in illiterate patients with psoriasis was lower than those with university education. The difference in results can be associated with the absence of illiterate patients in this study. According to the results, there were no differences between various groups of comorbidities in terms of quality of life. In consistent with this research, a study in Malaysia showed that patients with different underlying diseases had similar quality of life (42). However, another reason that can be considered is the small sample size in different groups of comorbidities, which may reduce the power of study.

In general, the results suggested the existence of a relationship between psoriasis severity and quality of life and its different dimensions. This study shows the significance of addressing quality of life along with psoriasis severity in the process of assessing and treating patients. The results can serve as a foundation for interventional studies aiming at improving quality of life in patients with psoriasis. The limitations of this study can be noted as its being cross-sectional in design and applying convenience sampling method. Although this research was conducted in just one single center, the Razi hospital is central in dermatology and patients from different parts of Iran refer to this hospital for examination and treatment. In addition, this study focused on pre-treatment quality of life; hence, it is suggested to conduct cohort studies after applying different treatments of psoriasis to determine the changes in quality of life followed by the changes in disease severity. Moreover, this study did not address all the variables affecting quality of life such as body mass index, smoking status, social status, race, psychological conditions, and experienced symptoms, including pain and depression; thus, further study is recommended.

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Conflict of Interest

The authors of this study declare no conflicts of interest.

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