

A systematic literature review on quality of life in adult patients with psoriasis

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Abstract

Background Systematic literature reviews play a significant role in health-related decision making providing valuable information to the research community on effectiveness, the patient reported outcomes, and the cost of treatment if conducted properly. In this study, we conducted a systematic review with the aim to summaries research reported on psoriasis patient's quality of life and investigating the social and psychological impairment of patients with psoriasis.

Methods A systematic literature search on the electronic databases (PubMed, EMBASE, and Web of Science) was conducted to identify research carried on quality of life impairment in patients with psoriasis during the period 1st January 2007 till 30th September 2017. Selection criteria were defined, and studies were included accordingly. All the editorials, letters to the editor, and commentaries were excluded from the study.

Results 128 articles were found that met the inclusion criteria and only 30 articles were included in this systematic literature review. Studies showed that psoriatic patients reported low self-esteem, pain/discomfort, and limited daily and social activities along with impaired sexual life.

Conclusion Quality of life is significantly impaired by psoriasis and disease severity was associated with lower quality of life. Different dimensions including sexual functioning, work productivity, economic burden, and psychosocial activities are broadly addressed in the research and have been found to be significantly impaired by psoriasis.

Key words

Quality of Life; Heath Related Quality of Life; Psoriasis; Systematic Literature Review.

Introduction

Psoriasis is a common, chronic, recurrent, and inflammatory skin disease leading to the appearance of red scaly patches on the skin. This disease often arises between the ages of 15 and 35 years based on the geographical region and 2-3% of the population is affected by it.¹ However, psoriasis is generally more severe if begins in

childhood as compared to the appearance of the disease in adulthood.² Systemic treatments, phototherapy, and topical treatments are available for psoriasis, however, there is no cure for it, and it requires lifelong monitoring of the patients. Moderate to severe cases of psoriasis are treated with phototherapy and systemic treatments while topical treatments are recommended for mild to moderated cases of psoriasis.³

Psoriasis is a serious condition affecting the skin appearance and the severity varies among different patients.⁴⁻⁶ Rash, itching, dry skin,

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constant peeling skin, pain⁷, physical discomfort, emotional distress, and limitation in daily activities can adversely affect patients and their family member's daily lives.⁸⁻¹⁴ These conditions have a significant negative effect on a patient's quality of life (QoL) even though psoriasis is a benign disease.^{15, 16}

QoL is the understanding of how a patient's health condition positively or negatively affects the social, physical and psychological functioning in daily life.¹⁷ Patients of psoriasis experience both emotional and physical instability that directly affects their daily life.^{12, 18} Moreover, the income of a psoriasis patient has a negative correlation with psoriasis and can diminish the QoL of psoriasis patients.¹⁹ It is the reason that QoL has been considered for the chronic skin diseases that is a significant measure for dermatological conditions in clinical practice and trials of interventions.^{20,21} Various QoL measurement tools are used to examine the efficacy of treatments that includes psoriasis specific, skin-specific and generic. The understanding and assessment of disease severity and effectiveness of interventions using QoL have become very important for advancing patient's care.²²

Extensive research has been conducted on the patient's QoL due to its popularity in dermatology, however, the patient reported outcomes (PRO) can also affect a patient's QoL. PRO is the direct response of a patient without interpretation by the clinician or anybody else about treatment satisfaction, quality of life (QoL) and preferences of treatment²³, and the effect of PROs on QoL has also been studied in recent years. The objective of this review was to assess and summarize the most related and recent data on QoL in psoriasis patients. Also, to identify the main factors that significantly influence QoL and to establish the impact of the disease in the patient's QoL.

Material and methods

Three international electronic databases (PubMed, EMBASE, and Web of Science) were searched for the research conducted between 1 January 2007 till 30 September 2017. The main keywords used were "Psoriasis" ("Psoriasis", "Psorias?s"), "Quality of Life", and "Health-Related Quality of Life". MeSH terms and keywords are combined using the Boolean operators (OR, AND, NOT). The search was limited to research reported in English-language only and studies on humans.

All studies that examined the HRQoL or QoL in patients with Psoriasis were included. Studies whose primary object was to describe HRQoL or QoL, testing QoL questionnaires, and examining efficacy and safety of treatment for psoriasis were included in the study. All the studies that were published before the year 2007, and those that do not deal with QoL in psoriasis patients, and in non-English language were excluded from this review.

The search yielded 765 citations and a total of 637 were excluded based on their irrelevancy or duplicity. On the remaining 128 citations, the inclusion/exclusion criteria were applied and 58 full articles on HRQoL or QoL on psoriasis patients were retrieved. After reviewing the retrieved articles 30 were found to have examined the QoL in patients with psoriasis while the remaining 28 studies reported different treatments for patients with psoriasis (**Figure 1**). Thus, this systematic literature review describes 30 original articles that examined the HRQoL or QoL on patients with psoriasis published over the last 10 years and the research reported was in the English language.

Results

A. Characteristics of Included Studies

The maximum number of studies included in the review were cross-sectional studies (73.3%) followed by retrospective studies (13.3%) and only 3.3% were prospective design studies. The selected studies used 7 different instruments for measuring QoL in patients with psoriasis. The most commonly used instruments were the Dermatology Life Quality Index (DLQI), EuroQoL 5D (EQ-5D), and 36-item short-form survey (SF-36) (Table 1).

DLQI is a simple 10-question skin-specific questionnaire and is the most frequently used instrument for measuring QoL in psoriasis. The questions are answered on a 4-point scale where the higher score value will indicate the lowest HRQoL¹⁶. In addition, EQ-5D is used in a wide range of treatments and health conditions as a measure for QoL. This instrument covers 5 dimensions including self-care, mobility, pain/discomfort, anxiety/depression, and usual activities¹⁶. Lastly, SF-36 is a QoL measure that relies upon the patient's self-reporting outcomes and consists of eight sections where each scale can be scored on a value from 0 to 100. The lower score indicates more disability and the higher score of SF-36 indicates less disability¹⁶.

B. QoL Impairment by Psoriasis

The studies included in this review were to understand the significant negative impact of psoriasis on a patient's QoL. A study conducted in Poland on psoriasis patient's quality of life determined that psoriasis significantly impair the patient's QoL¹⁹. They added that disease severity is the main factor that negatively affects a patient's financial status resulting in a lower quality of life. They called their findings as alarming and suggested equal employment opportunities for patients with psoriasis. Similarly, Jankovic *et al.*²⁴ reported that QoL in psoriasis patients are significantly low and specifically in older patients, as compared to the

general population, however, gender and disease severity were not related in lower QoL.

Psoriasis has also been found to have a substantial impact on a patient's physical health²⁵, psychological health²⁶, professional life²⁷, social activities²⁸, and financial status.^{19,29-31} Authors have suggested that each item on QoL instruments should be considered to gain in-depth insight into patient's QoL and to improve it not only physically but also psychologically and socially.¹⁴

C. Impact of Psoriasis Severity, Age, and Gender, and Geography on QoL

Psoriasis Severity More than half of the studies (16 out of 30 studies) have investigated the effect of psoriasis severity on the patient's QoL. The results were very consistent in case of disease severity and reported that the disease severity is related to lower QoL in psoriasis patients.^{19,32-34}. In addition, moderate to severe psoriasis were found to have significantly affected QoL in patients. Psycho-social factors affecting patients QoL like stigmatization, lower self-esteem, poor social interactions were also found to be associated with disease severity.^{31,35,36} These factors were mostly impaired with patients with moderate to severe psoriasis. However, Petraškienė *et al.*³⁷ found that psoriasis has a significant negative impact on patient's quality of life regardless of the severity of the disease.

Disease severity also has an impact on the physical factors of psoriasis including severe itching, pain, and scaling on skins of patients. Both, the disease severity and these factors were found to have a direct relationship where moderate to severe psoriasis patient has severe itching and pain on the affected areas of the body.³² Moreover, work productivity and patient's financial status were also affected by

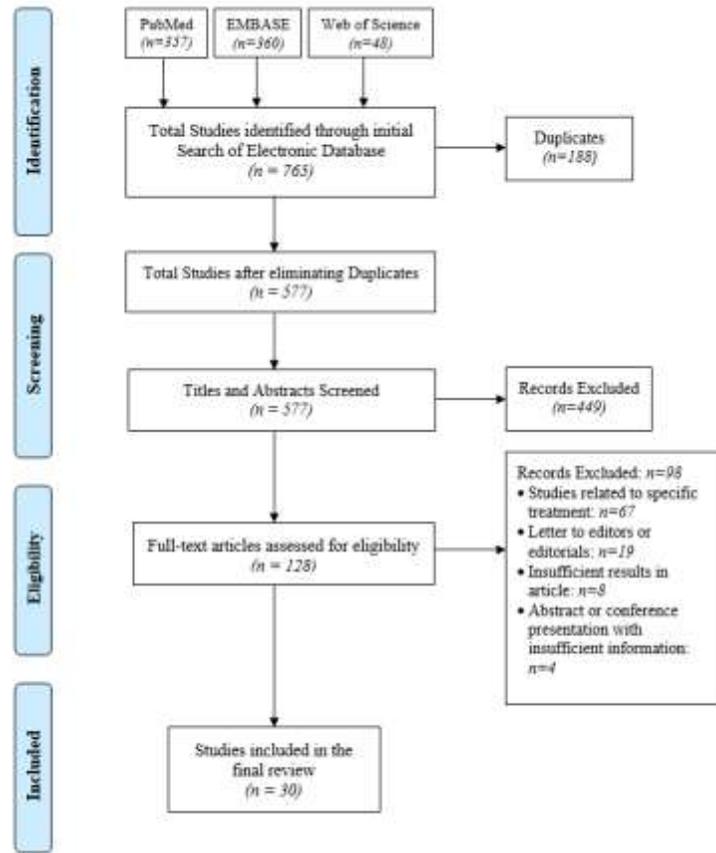


Figure 1 Prisma Flowchart

disease severity and in turn, resulted in lower QoL in patients with psoriasis. Studies have found that patients with moderate to severe psoriasis have substantially impacted their work productivity and have put an economic burden on patient.^{27,31,32,38}

In the case of nationality, the results were also consistent, and studies showed that disease severity is considered a major factor in the impairment of the patient's QoL. In a study conducted on Malaysian patients with psoriasis reported that disease severity is the most important factor in the impairment of patient's QoL.³¹ Also, a study on French patients demonstrated that severe psoriasis impacted both the physical and psychological health of patients.³⁸ In addition, Korman *et al.*³² studied psoriasis patients of the USA and found that psoriasis severity has a significant negative

impact on the patient's QoL.

Age, Gender and Sexual Functioning The relationship between age, gender, and sexual functioning of psoriasis patients with QoL was analyzed in 13 studies included in this review. Results were inconsistent in these studies and their relationship was found to be weak in some cases and strong in other cases. The negative impact of psoriasis on QoL in young patients was noticed, however, in older patients with earlier psoriasis has increased comorbidities like depression, anxiety, and sleep disturbance.^{24,31,39} Similarly, Fernández-Torres *et al.*⁴⁰ and Van Der Velden *et al.*⁴¹ also found that young patient's QoL was more impaired as compared to older patients where older patients reports to have many issues in their daily life activities while younger patients are psychologically distressed. Van Der Velden *et al.*⁴¹ added that

increasing age results in acceptance of the fingernail psoriasis disease in patients. However, Petraškienė *et al.*³⁷ found that older patients mostly complain about psychological factors impaired by psoriasis.

Moreover, the impact of psoriasis on QoL in different genders has been extensively studied and most of the studies showed that female patients with psoriasis are more affected as compared to male psoriasis patients.^{37,40,41} However, Tang *et al.*³¹ found in their study of Malaysian patients that the QoL was effected by psoriasis equally in both genders. On the other hand, no relation was found between gender and QoL in patients with psoriasis²⁴. These conflicting results found in various studies can be the reason for the composition of the study groups or the gender differences in the duration of the disease.

Lastly, psoriasis also leads to impairment of sexual functioning in patients. Patients with psoriasis were found to have a higher prevalence of genital involvement that causes substantial impairment in their sexual functioning and QoL.⁴² A study conducted by Sampogna *et al.*⁴³ on patients with psoriasis in 13 different European countries has found that psoriasis has a strong negative impact on a patient's sexual life that further leads to impairment of their QoL. They also reported that the impairment of sexual functioning also leads to comorbidities like anxiety, depression, and suicidal thoughts over time. Furthermore, psoriasis diminishes the sexual functioning along with QoL and it was found particularly in female patients with psoriasis. These impairments are more severe in patients with lesions in the genital area of female patients²⁸.

D. Anxiety and Depression in Psoriasis Patients and its impact on QoL

Different scales have been used for measuring the anxiety and depression in patients with psoriasis including the Hospital Anxiety and Depression Scale (HADS) and Hamilton Scales for Anxiety and Depression (HAM-A and HAM-D). Old and female patients with psoriasis have been the target of anxiety and depression that leads to a decrease of QoL.³⁷ Both anxiety and depression were also found by Campolmi *et al.*⁴⁴ to have a higher impact on female psoriasis patients that leads to impairment of QoL. Similarly, Kouris *et al.*⁴⁵ also found in their study that anxiety and depression are the resultant of psoriasis that in turn impairs QoL of the patients.

A study conducted on psoriasis patients of Iran on the impairment of QoL found that anxiety and depression were the most frequent outcomes of the disease that significantly impacts the patient's QoL.⁴⁶ Another extensive study conducted on Spanish patients with psoriasis also found similar outcomes of anxiety and depression in psoriasis patients. The most affected group was female and their QoL was found to have decreased significantly³⁴. Tang *et al.*³¹ compared healthy subjects with patients with psoriasis and has found a lower QoL in patients with psoriasis in that anxiety and depression play an important role.

E. Impact of Pain/Discomfort level in Psoriasis Patients on QoL

The relationship of pain/discomfort was examined in 5 different studies included in this review. One of the main factors found in psoriasis patients of Iran was pain/discomfort that significantly impair the QoL of patients.⁴⁶ The scale used for measuring this factor was the EQ-5D where 50% of patients were affected by up to some extent and 12.9% of patients experienced a severe problem due to pain/discomfort. Similarly, Nyunt *et al.*³⁶ found

that the disease severity in patients with psoriasis has an impact on the pain/discomfort of the patients that leads to impairment of QoL.

Furthermore, Daudén *et al.*³⁵ in their study of Spanish patients with psoriasis noted that pain/discomfort was the main dimension in psoriasis patients that affect their mental health and that in turn leads to lower QoL. However, treatment of the disease resulted in the improvement of pain/discomfort dimension with the improvement of QoL. Similarly, pain/discomfort in psoriasis patients was found by Ljosaa *et al.*²⁵ in a Norwegian study to have a significant impact on patient's sleep disturbance leading to a decrease in QoL.

Discussion

This review was conducted to investigate the recent research on examining the QoL of patients with psoriasis. QoL was measured in the included articles with seven different instruments out of which DLQI was the most used instrument. Moreover, most of the studies suffered from weaknesses including small sample size, using non-statistical measures, and or in some cases use of a single question from the instrument for assessing the patient's QoL.

Despite these weaknesses, this review confirms that psoriasis significantly impairs the QoL of patients regardless of the type of psoriasis, and the impairments are physical, psychological, and social. Thus, this study provides important information on a patient's QoL affected by psoriasis and its comorbidities. Furthermore, studies have suggested that the in-depth analysis of each item in QoL instruments can deliver important information on psoriasis patient's most affected dimension of QoL. This will expose the psychological dimensions of psoriasis patients that need more attention in dealing with psoriasis.

Poorer QoL in patients with psoriasis was found in all the studies included in this review. A study conducted on 13 different European countries compared the impact of different skin diseases on a patient's QoL and especially the sexual impairment.⁴³ They found that psoriasis mainly affects patients' psychological dimensions and results in suicidal thoughts, depression and anxiety that are directly associated with the sexual functioning of psoriasis patients. In line with these findings, Meeuwis *et al.*²⁸ also found that psoriasis results in depression and anxiety and especially in young patients that directly impair their sexual life. They found that female patients were more sexually impaired as compared to male patients and the most severely impaired were patients with skin lesions on their genital area. Moreover, a study based in Australia also confirmed that psoriasis negatively affects the sexual functioning of the patient along with financial burdens on the patients.⁴⁹ Several studies examined the disease severity and its effect on the QoL of psoriatic patients. Most of the studies identified that the disease severity significantly impairs the QoL of patients and reported that the more severe disease will lead to more severe impairment of QoL.^{19,30,33,47} These studies found that patients with moderate to severe psoriasis has more impaired QoL as compared to patients with mild psoriasis. The impairment was both physical and psychological, however effects were mostly found on their psychological dimension and the depression and anxiety level rises with a rise in the severity of psoriasis. However, Petraškienė *et al.*³⁷ conducted a study on Lithuanian patients with psoriasis and found that psoriasis has a negative effect on patient's QoL but this negative impact is not associated with disease severity. From these findings, it is clear that the psychosocial problem including sexual functioning must be considered when assessing the severity of the disease.

Table 1 Studies included in the systematic literature review

Article Reference	Study Design	1. Sample Size 2. Male: Female Ratio	HRQoL Instrument	Predictors assessed for HRQoL	Aims & Objective	Conclusion
43	Cross-Sectional	1. 3,485 2. 44:56	DLQI	Anxiety, Depression, Sexual Functioning, Age Differences	To understand the impact of different skin disease on sexual functioning	Patients with psoriasis were impaired in their sexual life and the impact was associated with itching, depression, anxiety and suicidal thoughts
37		1. 368 2. 52:48	DLQI	Anxiety, Depression, Gender Differences, and Age Differences	Examining the interrelationships between QoL and emotional and demographic factors in patients with psoriasis	More than half of the patients with psoriasis reported a significant negative change in their QoL
32	Retrospective Study	1. 694 2. 55:45	DLQI, EQ-5D	Disease Severity, Work and Productivity	Evaluating the variations of QoL and work productivity in patients with mild, moderate and severe psoriasis	The severity of psoriasis is directly proportional to lower QoL and work productivity
45	Cross-Sectional	1. 84 2. 49:51	DLQI	Anxiety and Depression	To investigate the level of QoL, social activities and anxiety/depressing in patients with psoriasis	Psoriasis significantly impairs the QoL of life of patients physically and psychologically
39	Cross-Sectional	1. 1,022 2. 60:40	DLQI	Disease Severity and Age	To analyze the QoL in patients with a family history of psoriasis and by age	Family history of psoriasis leads to impair QoL and the impact of psoriasis was more noticeable in younger patients
42	Cross-Sectional	1. 354 2. 58:42	DLQI	Sexual Functioning, Gender Differences, Age Differences	To evaluate the impact of genital psoriasis on QoL and sexual functioning	Patients with genital psoriasis are significantly impaired in sexual life and QoL
46	Cross-Sectional	1. 62 2. 76:24	DLQI, EQ-5D	Anxiety, Depression, and Pain/Discomfort	Assessing the HRQoL in patients with psoriasis	Psoriasis patients HRQoL were severely impaired in the dimension of anxiety, depression, pain, and comfort.
33	Cross-Sectional	1. 100 2. 50:50	DLQI	Disease Severity	Examining the QoL in psoriasis patients and the severity of psoriasis	Psoriasis significantly reduces the patient's QoL
47	Cross-Sectional	1. 414 2. 68:32	SF-36	Disease Severity and Pain/Discomfort	Identifying factors impacting the HRQoL of psoriasis patients	Diseases severity and symptoms like itching, burning sensation, and nail involvement were important factors affecting patient's HRQoL
40	Retrospective Study	1. 395 2. 60:40	DLQI	Gender Differences	To evaluate the relationship between characteristics of psoriasis and comorbidities with QoL	Patient's gender, disease's duration and the type of treatments were major factors associated with impaired QoL
41	Cross-Sectional	1. 49 2. 53:47	SF-36	Gender Differences and Age Differences	To examine the effect on the QoL of patients with nail psoriasis	Patient's physical and psychological wellbeing was affected by nail psoriasis

Article Reference	Study Design	1. Sample Size 2. Male: Female Ratio	HRQoL Instrument	Predictors assessed for HRQoL	Aims & Objective	Conclusion
34	Cross-Sectional	1. 1,022 2. 60:40	DLQI, SF-36	Anxiety, Depression, and Gender Differences	To analyze patient with moderate to severe psoriasis to determine the correlation between HRQoL and the comorbidities	Patients with moderate to severe psoriasis significantly impair HRQoL. Female patients are more affected in psychological components as compared to men.
19	Cross-Sectional	1. 83 2. 54:46	DLQI, WHOQL-BREF	Disease Severity, Age Differences, and Economical Burden	To evaluate and compare the psoriasis patient's financial status with disease severity and its effect on QoL	The severity of psoriasis has a significant negative impact on a patient's economic status and leads to impairment of QoL
30	Cross-Sectional	1. 200 2. 68:32	DLQI, EQ-5D	Disease Severity and Economical Burden	Investigating the cost of illness in patients with psoriasis and its impact on their QoL	The financial burden of psoriasis considerable affect the QoL of patients with psoriasis
48	Cross-Sectional	1. 15,177 2. N. A	DLQI, EQ-5D, Skindex-29	Gender Differences, Age Differences, and Sexual Functioning	Evaluating the self-reported dermatological HRQoL in the general population	Persons with self-reported skin morbidity had lower HRQoL than the general population
36	Cross-Sectional	1. 223 2. 53:47	DLQI	Disease Severity, Pain/Discomfort, Work, and Productivity	To examine the effect and factors associated with HRQoL in patients with psoriasis in Malaysia	Disease severity has a significant negative impact on HRQoL in patients with psoriasis. Moreover, psychological factors also impair patient's HRQoL
35	Prospective	1. 1,217 2. 39:61	DLQI, EQ-5D, PDI	Anxiety, Depression, Pain/Discomfort, and Age Differences	Analyzing the HRQoL in patients with moderate to severe Psoriasis	Most significant factor impairing HRQoL in patients with psoriasis is disease severity
31	Cross-Sectional	1. 250 2. 54:46	DLQI, SF-12v2	Disease Severity, Anxiety, Depression, Gender Differences, Age Differences, Work, Productivity, and Economical Burden	Investigating the effect of psoriasis in patient's QoL in Malaysia and the cost of illness in psoriasis patients	Psoriasis negatively affect the QoL of patients in Malaysia and the financial burden is subsidized by the government of Malaysia
49	Cross-Sectional	1. 692 2. 42:58	EQ-5D	Gender Differences, Age Differences, Sexual Functioning, and Economical Burden	To examine the physical and psychological burden on the patients of psoriasis in Australia	Psychosocial, personal, and professional relationships and QoL of patients are severely impaired by psoriasis
50	Retrospective Study	1. 404 2. 64:36	DLQI, EQ-5D	Disease Severity	Evaluating the QoL, severity of psoriasis, and treatment satisfaction in patients of psoriasis	The higher severity of psoriasis leads to lowest QoL in patients
26	Cross-Sectional	1. 282 2. N. A	SF-36, WHOQL	Anxiety and Depression	Analyzing the psychological distress in patients with psoriasis and its association with HRQoL	Anxiety and depression strongly impairs the HRQoL in patients with psoriasis

Article Reference	Study Design	1. Sample Size 2. Male: Female Ratio	HRQoL Instrument	Predictors assessed for HRQoL	Aims & Objective	Conclusion
44	Retrospective Study	1. 77 2. 35:65	HAM-A, HAM-D	Anxiety and Depression	Comparing different stress types on the psychological wellbeing and their QoL of patients with skin diseases	Women with skin diseases are found to be more afflicted with family stress and anxiety and depression correlates to each other
25	Cross-Sectional	1. 139 2. 43:57	DLQI	Disease Severity, Anxiety, Depression, and Pain/Comfort	Examining the relationship of pain/comfort on HRQoL in patients with psoriasis and to identify if psychological conditions are mediators of the relationship	Pain/comfort of patients has a significant relationship on the patient's HRQoL and secondly, the severity of psoriasis was directly associated with HRQoL
28	Self-Administered Questionnaire	1. 487 2. 57:43	DLQI	Anxiety, Depression, Gender Differences, and Sexual Functioning	Understanding the impact of psoriasis in the patient's sexual functioning and the attention given to it by the physicians	QoL and sexual functioning is impaired in patients with psoriasis and women with psoriasis were more afflicted by sexual distress
24	Cross-Sectional	1. 110 2. 47:53	SF-36, Skindex-29	Disease Severity, Gender Differences, Age Differences, and Sexual Functioning	Evaluating the factors impairing the HRQoL in psoriasis patients	Psoriasis significantly impairs the HRQoL in patients as compared to other diseases
29	Cross-Sectional	1. 897 2. 58:42	DLQI	Disease Severity, Work, Productivity, and Economical Burden	Examining the correlation between QoL, work and productivity, and economic burden in patients with psoriasis	Impaired QoL is strongly related to the financial burden on psoriasis patients
51	Cross-Sectional	1. 3,531 2. 56:44	DLQI	Disease Severity, Work and Productivity	Impact of nail psoriasis on patient's QoL	Nail involvement is directly related to the severity of psoriasis and the QoL impairment in patients with psoriasis
38	Cross-Sectional	1. 590 2. 51:49	DLQI, WPAI	Disease Severity, Work and Productivity	Understanding the effect of psoriasis on the social and professional life of patients and to evaluate the cost of illness in patients with psoriasis	Severe psoriasis has been found to have a strong negative impact on the patient's QoL and their financial status
27	Not mentioned	1. 79 2. N. A	WPAIQ	Work, Productivity, and Economical Burden	Evaluating the work productivity of patients with moderate to severe psoriasis in Canada	Moderate to severe psoriasis has a significant impact on the work productivity of the patients
52	Cross-Sectional	1. 1,151 2. 58:42	DLQI	Disease Severity, Work, and Productivity	Investigating disease severity, HRQoL and health care in psoriasis patients in Germany	Patient's with psoriasis are impaired in their work and productivity and they have significant impairment in HRQoL

Physicians and clinicians must consider the psychological dimension of patients with skin diseases and should consider creating a trusting relationship with psoriatic patients for effective treatment of the disease.

Extensive research has been conducted on the impairment of QoL in patients with psoriasis for the identification of different factors affecting QoL. A various number of factors that play the main role in impaired QoL are reported by some researchers, however, others have contradicted results in their research. For example, in case of the age and gender dimensions, most of the researchers found that the effect of psoriasis on patient's QoL is associated with their age and gender and are agreed that psoriasis affects QoL in young and female patients more as compared to old and male patients.^{31,34} However, depression and anxiety dimensions are found to have more impaired in old patients as compared to young patients regardless of their gender²⁴. Furthermore, female patients were found to have been more socially impaired by psoriasis and feel more stigmatization as compared to male patients.^{35,36} Therefore, special focus is required on female patients with psoriasis and dermatologists should always screen psoriatic patients for genital involvement and its impact on sexual functioning.

Economic burden was also one of the impacts on psoriatic patient's QoL and was found to have impaired their QoL.^{19,49} Medical bills, absenteeism at work, and work productivity were the main factors found in current research affecting the patient's financial status. Balogh *et al.*³⁰ and Hawro *et al.*¹⁹ found that economic burden due to psoriasis in patients substantially affects their QoL. In addition, disease severity was found to have a direct effect on a patient's economic status that leads to impairment of QoL. Similar results were also found by Sato *et al.*²⁹ and Baker *et al.*⁴⁹ that severity of psoriasis

directly affects the financial status of patients resulting in lower QoL. However, in a study aimed at psoriatic patients in Malaysia found that the financial burden has no or very small effect on patient's QoL.³¹ The reason given in their study mentioned is the low cost of medical treatment and subsidizing the cost of treatment by the Malaysian government on patients with chronic disease. Findings of research on the economic burden of psoriasis on patient's QoL are alarming and governments are required to devise a long-term solution for preventing the psoriatic patients from social exclusion.

Conclusion

Quality of life impairment is significantly related to psoriasis which is a chronic skin disease. Various instruments have been used in recent years to examine the effect of psoriasis on a patient's QoL. Similarities and contradictions have been found in assessing different dimensions of the patient's QoL in different studies. The psychological dimension including depression and anxiety along with pain/comfort and economic burden were found to impair QoL in patients with psoriasis. In addition, age and gender were found in several studies to have related to the patient's QoL while others show no relation of age and gender with QoL. Moreover, female psoriasis patients were found to be more sexually impaired as compared to male patients along with a high level of depression and anxiety. Therefore, a patient's psychological and social dimensions are a special focus of attention in seeking psychiatric treatment as these are more affected by psoriasis.

References

1. National Psoriasis Foundation. Psoriasis overview and psoriasis statistics 2015 [Available from: <https://www.psoriasis.org/>].

2. Bronckers I, Paller A, Van Geel M, van de Kerkhof P, Seyger M. Psoriasis in children and adolescents: diagnosis, management and comorbidities. *Paediatr Drugs*. 2015; **17(5)**: 373-84.
3. Perera GK, Meglio PD, Nestle FO. Psoriasis. *Annu Rev Pathol*. 2012; **7(1)**: 385-422.
4. National Institute for Health and Clinical Excellence. Atopic eczema in under 12s: diagnosis and management. [Available from: <https://www.nice.org.uk/guidance/cg57>.
5. National Institute for Health and Clinical Excellence. Psoriasis: assessment and management [Available from: www.nice.org.uk/guidance/cg153.
6. Neill S, Tatnall F, Cox N. Guidelines for the management of lichen sclerosus. *Br J Dermatol*. 2002; **147(4)**: 640-9.
7. Torpy JM, Lynn C, Glass RM. Psoriasis. *JAMA*. 2003; **290(23)**: 3160-5.
8. Carroll CL, Balkrishnan R, Feldman SR, Fleischer AB, Manuel JC. The burden of atopic dermatitis: impact on the patient, family, and society. *Pediatr Dermatol*. 2005; **22(3)**: 192-9.
9. Evers A, Lu Y, Duller P, Van Der Valk P, Kraaimaat FW, Van De Kerkhof P. Common burden of chronic skin diseases? Contributors to psychological distress in adults with psoriasis and atopic dermatitis. *Br J Dermatol*. 2005; **152(6)**: 1275-81.
10. Yosipovitch G, Papoiu AD. What causes itch in atopic dermatitis? *Curr Allergy Asthma Rep*. 2008; **8(4)**: 306-11.
11. Purdy S, de Berker D. Acne. *BMJ : Br Med J*. 2006; **333(7575)**: 949-53.
12. Bhosle MJ, Kulkarni A, Feldman SR, Balkrishnan R. Quality of life in patients with psoriasis. *Health Qual Life Outcomes*. 2006; **4(1)**: 35.
13. Lewis-Jones S. Quality of life and childhood atopic dermatitis: the misery of living with childhood eczema. *Int J Clin Pract* 2006; **60(8)**: 984-92.
14. Sampogna F, Tabolli S, Abeni D. Living with psoriasis: prevalence of shame, anger, worry, and problems in daily activities and social life. *Acta dermato-venereologica*. 2012; **92(3)**: 299-303.
15. Langley R, Krueger G, Griffiths C. Psoriasis: epidemiology, clinical features, and quality of life. *Ann. Rheum. Dis*. 2005; **64**: ii18-ii23.
16. Tan X, Feldman S, Balkrishnan R. Quality of life issues and measurement in patients with psoriasis. *Psoriasis: targets and therapy*. 2012; **2012(1)**: 13-23.
17. Bowling A. *Measuring Disease*. 2nd ed. Buckingham, UK: Open university press; 2001.
18. Fowler JF, Duh MS, Rovba L, Buteau S, Pinheiro L, Lobo F, *et al*. The impact of psoriasis on health care costs and patient work loss. *J Am Acad Dermatol*. 2008; **59(5)**: 772-80.
19. Hawro T, Zalewska A, Hawro M, Kaszuba A, Królikowska M, Maurer M. Impact of psoriasis severity on family income and quality of life. *J. Eur. Acad. Dermatol*. 2015; **29(3)**: 438-43.
20. Feldman S, Behnam SM, Behnam SE, Koo JY. Involving the patient: impact of inflammatory skin disease and patient-focused care. *J Am Acad Dermatol*. 2005; **53(1)**: S78-S85.
21. Lewis V, Finlay AY, editors. 10 years experience of the Dermatology Life Quality Index (DLQI). *J Investig Dermatol Symp Proc*; 2004: Elsevier.
22. Shikiar R, Willian MK, Okun MM, Thompson CS, Revicki DA. The validity and responsiveness of three quality of life measures in the assessment of psoriasis patients: results of a phase II study. *Health Qual Life Out*. 2006; **4(1)**: 71.
23. Higgins JP, Green S. *Cochrane handbook for systematic reviews of interventions*: John Wiley & Sons; 2011.
24. Jankovic S, Raznatovic M, Marinkovic J, Jankovic J, Kocev N, Tomic-Spiric V, *et al*. Health-related quality of life in patients with psoriasis. *J Cutan Med Surg*. 2011; **15(1)**: 29-36.
25. Ljosaa TM, Mork C, Stubhaug A, Moum T, Wahl A. Skin pain and skin discomfort is associated with quality of life in patients with psoriasis. *J Eur Acad Dermatol Venereol*. 2012; **26(1)**: 29-35.
26. Kotsis K, Voulgari PV, Tsifetaki N, Machado MO, Carvalho AF, Creed F, *et al*. Anxiety and depressive symptoms and illness perceptions in psoriatic arthritis and associations with physical health-related quality of life. *Arthritis Care Res*. 2012; **64(10)**: 593-601.
27. Chan B, Hales B, Shear N, Ho V, Lynde C, Poulin Y, *et al*. Work-related lost productivity and its economic impact on Canadian patients with moderate to severe

- psoriasis. *J Cutan Med Surg.* 2009; **13(4)**: 192-7.
28. Meeuwis K, De Hullu J, Van de Nieuwenhof H, Evers A, Massuger L, Van de Kerkhof P, *et al.* Quality of life and sexual health in patients with genital psoriasis. *Br J Dermatol.* 2011; **164(6)**: 1247-55.
 29. Sato R, Milligan G, Molta C, Singh A. Health-related quality of life and healthcare resource use in European patients with plaque psoriasis: an association independent of observed disease severity. *Clin Exp Dermatol.* 2011; **36(1)**: 24-8.
 30. Balogh O, Brodsky V, Gulácsi L, Herédi E, Herszényi K, Jókai H, *et al.* Cost-of-illness in patients with moderate to severe psoriasis: a cross-sectional survey in Hungarian dermatological centres. *Eur J Health Econ.* 2014; **15(1)**: 101-9.
 31. Tang MM, Chang CC, Chan LC, Heng A. Quality of life and cost of illness in patients with psoriasis in Malaysia: a multicenter study. *Int J Dermatol.* 2013; **52(3)**: 314-22.
 32. Korman N, Zhao Y, Pike J, Roberts J. Relationship between psoriasis severity, clinical symptoms, quality of life and work productivity among patients in the USA. *Clin Exp Dermatol.* 2016; **41(5)**: 514-21.
 33. Çakmur H, Derviş E. The relationship between quality of life and the severity of psoriasis in Turkey. *Eur J Dermatol.* 2015; **25(2)**: 169-76.
 34. Sanchez-Carazo JL, López-Estebanz JL, Guisado C. Comorbidities and health-related quality of life in Spanish patients with moderate to severe psoriasis: A cross-sectional study (Arizona study). *J Dermatol.* 2014; **41(8)**: 673-8.
 35. Daudén E, Pujol R, Sánchez-Carazo J, Toribio J, Vanaclocha F, Puig L, *et al.* Demographic characteristics and health-related quality of life of patients with moderate-to-severe psoriasis: The VACAP study. *Actas Dermo-Sifiliográficas (English Edition).* 2013; **104(9)**: 807-14.
 36. Nyunt WWT, Low WY, Ismail R, Sockalingam S, Min AKK. Determinants of health-related quality of life in psoriasis patients in Malaysia. *Asia Pac J Public Health.* 2015; **27(2)**: NP662-NP73.
 37. Petraškienė R, Valiukevičienė S, Macijauskienė J. Associations of the quality of life and psychoemotional state with sociodemographic factors in patients with psoriasis. *Medicina.* 2016; **52(4)**: 238-43.
 38. Meyer N, Paul C, Feneron D, Bardoulat I, Thiriet C, Camara C, *et al.* Psoriasis: an epidemiological evaluation of disease burden in 590 patients. *J Eur Acad Dermatol Venereol.* 2010; **24(9)**: 1075-82.
 39. López-Estebanz JL, Sánchez-Carazo JL, Sulleiro S. Effect of a family history of psoriasis and age on comorbidities and quality of life in patients with moderate to severe psoriasis: results from the ARIZONA study. *J Dermatol.* 2016; **43(4)**: 395-401.
 40. Fernández-Torres RM, Pita-Fernández S, Fonseca E. Quality of life and related factors in a cohort of plaque-type psoriasis patients in La Coruña, Spain. *Int J Dermatol.* 2014; **53(11)**.
 41. Van Der Velden HM, Klaassen KM, Van De Kerkhof PC, Pasch MC. The impact of fingernail psoriasis on patients' health-related and disease-specific quality of life. *J Dermatol.* 2014; **229(2)**: 76-82.
 42. Ryan C, Sadlier M, De Vol E, Patel M, Lloyd AA, Day A, *et al.* Genital psoriasis is associated with significant impairment in quality of life and sexual functioning. *J Am Acad Dermatol.* 2015; **72(6)**: 978-83.
 43. Sampogna F, Abeni D, Gieler U, Tomas-Aragones L, Lien L, Titeca G, *et al.* Impairment of Sexual Life in 3,485 Dermatological Outpatients From a Multicentre Study in 13 European Countries. *Acta dermato-venereologica.* 2017; **97(4)**: 478-82.
 44. Campolmi E, Zanieri F, Santosuosso U, D'Erme A, Betti S, Lotti T, *et al.* The importance of stressful family events in psoriatic patients: a retrospective study. *J Eur Acad Dermatol Venereol.* 2012; **26(10)**: 1236-9.
 45. Kouris A, Christodoulou C, Stefanaki C, Livaditis M, Tsatovidou R, Kouskoukis C, *et al.* Quality of life and psychosocial aspects in Greek patients with psoriasis: a cross-sectional study. *Anais Brasileiros De Dermatologia.* 2015; **90(6)**: 841-5.
 46. Fanni Rencz M, Ahmad Moradi M, Gulácsi L. Health status and quality of life in patients with psoriasis: an Iranian cross-sectional survey. *Arch Iran Med.* 2015; **18(3)**: 153.
 47. Ng CY, Yang YW, Liu SH, Lu JFR, Yang LC, Yang CH, *et al.* SF-36 healthy survey on psoriasis quality-of-life: A study of 414 Taiwanese patients. *J Dermatol.* 2015; **42(2)**: 159-65.

48. Vinding G, Knudsen K, Ellervik C, Olesen A, Jemec G. Self-reported skin morbidities and health-related quality of life: a

population-based nested case-control study. *J Dermatol*. 2014; **228(3)**: 261-8.