

Prevalence of Depressive Symptoms and Their Impact on Perceived Stress and Quality of Life Among Patients with Psoriasis

ABSTRACT

Objective: This study aimed to investigate the prevalence of depressive symptoms in patients with psoriasis and the association between depressive symptoms, perceived stress level, and quality of life of the participants.

Methods: Patients with psoriasis were invited to complete the Thai versions of the Patient Health Questionnaire, Perceived Stress Scale-10, Psoriasis Disability Index, and Simplified Psoriasis Index. To identify significantly related factors of depression, the independent sample *t*-test or Mann–Whitney *U*-test was performed to compare continuous variables between groups, and the chi-square test or Fisher’s exact test was used to compare categorical variables between groups. The association between the severity of depression and other variables was examined using Spearman’s correlation coefficient.

Results: Of the 150 participants assessed, 32 (21.3%) had depressive symptoms. Elevated stress scores, subjective psychosocial impact of psoriasis, self-perceived current severity of psoriasis, and impaired quality of life were significantly associated with depressive symptoms. Depressive symptom severity was determined to be positively correlated with perceived stress, quality-of-life impairment, current severity, and the psychosocial impact of psoriasis.

Conclusion: Depressive symptoms are prevalent among patients with psoriasis. Those with high scores for perceived stress, a psychosocial impact of psoriasis, or disease severity should be evaluated for depression, as it can hamper their quality of life.

Keywords: Depression, psychological stress, quality of life, psoriasis, chronic disease

Introduction

Several studies have reported that chronic medical conditions could be risk factors for mental health problems in patients who have been suffering from treatment burden, significant functional impairment, and presence of disease complications. Compared to people without these conditions, patients with chronic medical problems, such as arterial hypertension, diabetes, and irritable bowel syndrome, were more likely to experience depressive symptoms.¹⁻³

Psoriasis, a chronic skin disease, has an impact on individuals’ physical, emotional, and social well-being. Some people with this condition experience psychological distress due to significant impact on their quality of life.⁴ Psoriasis tends to be associated with psychological problems such as psychological stress, anxious and depressive symptoms, and substance abuse.⁵

Although there have not been adequate studies showing a definite mechanism explaining an obvious cause–effect relationship, especially regarding the biological mechanisms of depression and psoriasis, several studies have shown that there is a bidirectional relationship between them. Tohid et al⁶ found that a link between depression and psoriasis is mediated not only through the actions of inflammatory cytokines but also through the influence of neurotransmitters, including melatonin. Moreover, dissatisfaction with treatments and



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stigmatization, especially if the disease affects the face or genital area, may lead to depressive symptoms.⁵

Dowlatshahi et al⁷ reported that around 25% of patients with psoriasis experienced depression and patients were one and a half times more likely to express depressive symptoms compared with the general population.⁷ According to Lamb et al, approximately 10% of patients with psoriasis screened positive for depression, and the risk of depression was significantly higher in females with a currently severe condition, psoriatic arthritis, and a previous history of depression or anxiety.⁸ These findings corresponded with those of McDonough et al,⁹ who discovered a positive correlation between depression and female sex, unemployment, and disease severity. These inconsistencies in the prevalence of depression in the studies described above could have been brought about either by variable diagnoses of depression or the sampling techniques employed. From previous studies, those with comorbidities of psoriasis and depression also indicated that they had substance use problems and tended to perceive their physical conditions as more severe. According to Mathur et al, 16.4% of participants with psoriasis reported harmful use of alcohol.¹⁰ Alcohol use has been viewed as a maladaptive coping strategy that worsens depressive symptoms.¹¹ Furthermore, the perception of severity was found in participants to be associated with depression and negative emotional attitude to their bodies.¹² Additionally, subjective feelings toward disease severity also effected patient's quality of life.¹³ Almeida et al¹³ highlighted that the way patients perceive the severity of their psoriasis does not always correspond to the psoriasis severity assessed by experts, hence making it important to acknowledge the distorted perception of psoriasis and provide patients with the correct information.

Currently, there are only a limited number of studies about depression and its associated factors, especially the perception of psoriasis by patients. The primary objective of this study was to investigate the prevalence of depressive symptoms among this population. The secondary aim was to evaluate the association of depressive symptoms with perceived stress level and quality of life. It was hypothesized that depressive symptoms would be prevalent and would impact quality of life and perception of health.

This study is expected to support the psychological context of complex diseases that require both physical and psychological care, in which mental health professionals can assist physicians in enhancing patient quality of life.

Material and Methods

Study Design and Subjects

The present study was a cross-sectional descriptive study conducted between April and October 2017 at the Siriraj Psoriasis Clinic,

Department of Dermatology, Siriraj Hospital, Bangkok, Thailand. Research assistants invited all patients with a diagnosis of psoriasis to participate in the study and if eligible, they completed an informed consent form. If a participant was at least 18 years of age and had a good comprehension of the Thai language, they were eligible to participate. Anyone who had severe or emergency medical or psychiatric conditions, such as unstable vital signs or suicidal behavior was excluded from the study.

The present study was approved by the Siriraj Research Affair and Siriraj Institutional Review Board (SIRB), Faculty of Medicine, Siriraj Hospital, Mahidol University (CoA No. Si 712/2016).

Procedure and Measurement

One hundred fifty patients with psoriasis treated in the outpatient department were recruited. This number corresponded to a sample size calculated to detect differences using an infinite population proportion formula. Demographic data were collected, including psoriasis duration and history of alcohol and cigarette consumption. They then completed self-rated instruments, including the Patient Health Questionnaire (PHQ-9), used to detect depressive symptoms and measure symptom severity, the Psoriasis Disability Index (PDI), the Thai Perceived Stress Scale-10 (T-PSS-10), and the self-assessed Simplified Psoriasis Index (saSPI). Subsequently, subjects were assessed by a dermatologist from amongst the authors of this study using the professional version of the Simplified Psoriasis Index (proSPI) to evaluate disease severity and its impact.

Instruments

Patient Health Questionnaire: The PHQ-9 is a self-questionnaire of depression which consists of 9 questions based on the diagnostic criteria of major depressive episodes (DSM-IV). It was translated from English into Thai by Lotrakul et al¹⁴ and has been used as a screening tool for major depression. The Thai version of PHQ-9 has a cut-off score of 9 or above. The questionnaire demonstrates good internal consistency (Cronbach's $\alpha = 0.79$).

Thai Perceived Stress Scale-10: The PSS is a 10-item scale that assesses how stress is perceived. Respondents evaluate themselves as to whether they find their lives unpredictable, uncontrollable, and overloaded.¹⁵ Wongpakaran and Wongpakaran¹⁶ translated PSS into the Thai language and found that T-PSS-10 shows good internal consistency (intra-class correlation = 0.85 and Cronbach's $\alpha = 0.84$).

Psoriasis Disability Index: The PDI is a questionnaire used to measure the quality of life of individuals with psoriasis. This questionnaire was translated into Thai by Chularojanamontri et al¹⁷ with permission from Andrew Y. Finlay. The PDI has satisfactory validity and reliability (Cronbach's $\alpha = 0.83$).

Simplified Psoriasis Index: The SPI is a tool for assessing the severity of psoriasis (SPI severity: extent in each body part), psychosocial impact (SPI psychosocial), and course of psoriasis and interventions received [SPI intervention, including for example: history of hospitalization, Ultraviolet (UV) light therapy treatment, prescription of methotrexate, psoralen, and ultraviolet (PUVA)]. There are 2 versions of SPI: evaluated by either a health-care professional (proSPI) or self-assessed by the patient (saSPI). Strong intra-rater (proSPI and saSPI) and inter-rater reliability (proSPI) have been shown (all intra-class correlation coefficients >0.75) (Chularojanamontri et al).¹⁸

MAIN POINTS

- Compared to the general population, patients with psoriasis reported a higher prevalence of depressive symptoms.
- Participants with depressive symptoms expressed higher stress levels and tended to perceive their illness as more severe than those without depression.
- Regardless of sex and other sociodemographic determinants, clinicians should evaluate how patients perceive their illnesses, especially when they express clinical symptoms of depression.

Statistical Analysis

The IBM Statistical Package for the Social Sciences Statistics software 21.0 (IBM SPSS Corp.; Armonk, NY, USA) was used to analyze the data. Using the Shapiro–Wilk test, the normality of the data was checked. Descriptive statistics were used to characterize the demographic data of all participants. Categorical variables are shown as frequencies with percentages. Continuous data are presented as mean (SD) for normally distributed data and as median and quartile 1–quartile 3 for non-normally distributed data. The independent sample *t*-test or Mann–Whitney *U*-test was used to compare group continuous variables, and the chi-square test or Fisher's exact test were used to compare group categorical variables to examine factors associated with depression. Spearman's rank correlation coefficient was used to investigate the relationship between depression severity and other variables. A *P*-value < .05 was considered to indicate statistical significance.

Results

Demographic Data and Prevalence of Depression

The sample consisted of 74 (50.67%) females and 76 (49.33%) males, of which 106 (70.67%) were employed and 44 (29.33%) unemployed, 25/150 (16.67%) were alcohol drinkers, and 19/150 (12.67%) had a history of smoking. The mean age of the participants was 46 years, and the average disease duration was 13.5 years.

Using the PHQ-9, 32 (21.33%) of the 150 participants screened positive for depression. There were no statistically significant differences in sociodemographic characteristics [sex (*P*-value = .267), age (*P*-value = .507), employment (*P*-value = .253)], history of alcohol (*P*-value = .075) and tobacco use (*P*-value = .765), or duration of being diagnosed as having psoriasis (*P*-value = .272) between participants who had depression and those who did not (Table 1).

Factors Associated with Depression

Participants with depression, when compared with those without depressive symptoms, expressed significantly higher scores on their perception of stress, psychosocial impact of psoriasis, perception of psoriasis severity, and effect of disease on quality of life, as shown in Table 2 (*P*-value < .05).

Adverse effects of disease on quality of life ($r = 0.502$; *P*-value < .001), stress levels ($r = 0.334$; *P*-value < .001), psychosocial impact rated by clinicians ($r = 0.288$; *P*-value < .001) and patients ($r = 0.314$; *P*-value < .001), and patients' assessment of disease severity ($r = 0.264$; *P*-value < .001) were positively correlated with a higher score on the PHQ-9, as shown in Table 3 (*P*-value < .05). However, both versions of SPI historical course and interventions (*P*-value = .106 for professional assessment; *P*-value = .126 for self-assessment), which included patients' history of admission to the hospital for psoriasis, duration of illness, history of erythrodermic or generalized pustular psoriasis, and history of treatment with drugs or UV or PUVA, were not significantly correlated with the PHQ-9 score.

Discussion

The prevalence of depressive symptoms in patients with psoriasis in the present study was 21.3%, which is markedly higher than that of the general population, as reported by the World Health Organization (4.4%).¹⁹ Dowlatshahi et al⁷ reported comparable findings, with 28%

Table 1. Comparison of Sociodemographic Characteristics of Participants With and Without Depression (n = 150)

Characteristics	Participants Who Had Depression (PHQ-9 Score ≥ 9) (n = 32) (%)	Participants Who Did Not Have Depression (n = 118) (%)	<i>P</i>
Sex			
Male	13 (40.6)	61 (51.7)	.267 [†]
Female	19 (59.4)	57 (48.3)	
Age [mean (SD)], years	45.06 (12.21)	46.97 (14.94)	.507 [†]
Employment			
Yes	20 (62.5)	86 (72.9)	.253 [†]
No	12 (37.5)	32 (27.1)	
History of alcohol drinking			
Yes	2 (6.3)	23 (19.5)	.075 [†]
No	30 (93.7)	95 (80.5)	
History of smoking			
Yes	3 (9.4)	16 (13.7)	.765 ^{†*}
No	29 (90.6)	101 (86.3)	
Duration of being diagnosed with psoriasis [median (Q1–Q3)], years	10.0 (7.0–20.0)	13.0 (6.0–22.0)	.409 ^{**}

[†]Chi-square test.

[†]*t*-test.

**P*-value for history of smoking: Fisher's exact test.

***P*-value for duration of being diagnosed with psoriasis: Mann–Whitney *U*-test

Table 2. Comparison of Psoriasis Impact on Participants With and Without Depression Using *T*-Test (n = 150)

Variables	Participants with Depression (PHQ-9 Score ≥ 9) (n = 32)	Participants Without Depression (n = 118)	<i>P</i>
T-PSS-10	18.00 (15.25–21.00)	16.00 (12.75–19.00)	.006*
proSPI severity	11.00 (4.00–25.5)	7.25 (3.38–15.00)	.216
proSPI psychosocial	5.00 (4.00–8.00)	3.50 (2.00–6.00)	.005*
proSPI intervention	3.00 (2.00–5.00)	2.50 (1.00–4.00)	.301
saSPI severity	10.50 (4.13–16.25)	4.50 (1.50–9.00)	.001*
saSPI psychosocial	5.00 (4.00–7.00)	3.00 (1.00–5.00)	<.001*
saSPI intervention	2.00 (1.00–4.75)	2.50 (1.00–4.00)	.588
PDI	11.50 (7.00–16.75)	4.00 (2.00–9.00)	<.001*

The Shapiro–Wilk test was used to test normality of the data.

PDI, Psoriasis Disability Index; proSPI, professional assessment Simplified Psoriasis Index; saSPI, patient self-assessment Simplified Psoriasis Index; SPI, Simplified Psoriasis Index; T-PSS-10, Thai Perceived Stress Scale-10.

**P*-value < .05: the Mann–Whitney *U*-test was used to test the data which was not normally distributed.

of patients with psoriasis expressing depressive symptoms and a 19% prevalence of depression on formal assessment using the DSM-IV criteria. Esposito et al²⁰ reported a much higher prevalence, with 62% of patients in their study having depressive symptoms. The prevalence

Table 3. Correlation Between Severity of Depression and Other Variables

Variables	Coefficient of Correlation (r)	P
Psoriasis Disability Index	0.502	<.001*
T-PSS-10	0.334	<.001*
proSPI severity	0.168	.041
proSPI psychosocial	0.288	<.001*
proSPI intervention	0.133	.106
saSPI severity	0.264	.001*
saSPI psychosocial	0.314	<.001*
saSPI intervention	0.126	.120

proSPI, professional assessment Simplified Psoriasis Index; saSPI, patient self-assessment Simplified Psoriasis Index; SPI, Simplified Psoriasis Index; T-PSS-10, Thai Perceived Stress Scale-10.

*P-value < .05: Spearman's rank correlation coefficient.

of depressive symptoms or depression may differ between studies due to differences in study population, definitions of depression, and types of questionnaires. The prevalence of depression in patients with psoriasis has been shown to be higher than for those without this condition in most studies. The results reported here correspond with those of previous studies that found patients with psoriasis reported higher depressive symptoms and lower quality of life.^{21,22} Nowowiejska et al,²³ together with Bulat et al,²⁴ showed that psoriasis had a significant impact on many aspects of patient life as they had to be absent from work or school because painful and disfiguring skin lesions can lead to physical disability and diminished task performance.^{23,24} Moreover, some patients reported problems with their financial situation regarding cost of medical care, time lost from work, and transportation fees.²⁴

This study also showed that patients with higher levels of self-perceived stress, self-perception of severe psoriasis, or a major psychosocial impact on quality of life tend to suffer from depression. An effect was found between the severity of depressive symptoms and the degree to which patients perceived the severity of their psoriasis. Results reported here correspond with those of a previous cohort study that found that participants who screened positive for depression tended to perceive their symptoms of psoriasis as more severe when compared with the symptom assessment by physicians. This suggests that the discrepancy in assessing the severity of psoriasis between physicians and patients seems to be associated with the patients' depressive symptoms.²⁵ Also, those with higher perceived stress and an impact on quality of life seem to express more severe depressive symptoms. Similarly, Schmitt and Ford²² highlighted that patients with depression had been experiencing illness-related stress and were not satisfied with their psoriasis treatment. Additionally, there was an interdependent association between depressive symptoms and stress as well as diminished quality of life in patients with psoriasis.²⁶ Therefore, how individuals experience psoriasis seems to be an important area for health-care providers to explore.

Based on these results, it is proposed that patients with psoriasis, regardless of sex, age, and socioeconomic status, should be evaluated for depression and other psychological problems, as well as the impact of psoriasis on their quality of life. Moreover, it is also important to discuss with patients how they perceive and understand the severity of the disease so that physicians can provide concise and

accurate information about psoriasis to patients and help them deal with their physically and emotionally disturbed symptoms.

Limitations and Suggestions for Future Research

The present study has several points of concern. It was a cross-sectional study with a small sample size. Limited psychosocial data were collected. The study samples were only from patients with psoriasis; there was no control group. Furthermore, the psychometric properties of the instruments were not performed, i.e., PHQ-9 and T-PSS-10, in this population before using them to collect data in the present study. It was assumed that these instruments showed certain degrees of their properties in the previous studies. Although the PHQ-9 is the standard instrument for detecting depression, it is limited by being self-rated and is not a clinical evaluation. It is further emphasized that the reported results should be considered, keeping in mind the fact that the data were collected in a special clinic in a tertiary hospital. This may not be generalizable to other outpatient dermatology clinics. Moreover, most of the correlation coefficients between the variables were below 0.4, indicating a low correlation. There may be other confounding variables that should be taken into account for future studies, such as disease stages of psoriasis, the association of psoriasis with renal disease or joint involvement, received intervention, and other psychological factors that may affect the mood state of patients with psoriasis.

Further studies are required to demonstrate the causal relationships between depression, illness-related stress, and psoriasis to gain a better understanding of disease prevention. Biopsychosocial interventions for patients with the comorbidities of depression and psoriasis should also be investigated. As a means to confirm the accuracy of the assessment tool, further study should also examine the scale's reliability with its own data. To identify further potential risk factors for depression, future studies may need to include a control group of subjects without psoriasis or other chronic skin diseases from the same geographic areas as the participants with psoriasis. Specifying and exploring the types of psoriasis and types of treatment that patients receive or have previously received is also essential, as it can impact patient quality of life and mental health.

Depressive symptoms are prevalent in patients with psoriasis. Routine clinical screening for depressive symptoms is suggested, and patients' subjective feelings of disease severity, stress, and quality of life are vital areas that require further evaluation.

Availability of Data and Materials: The datasets used and/or analyzed during the current study are available from the corresponding author on reasonable request.

Ethics Committee Approval: This study was conducted with the approval of the Siriraj Research Affair and Siriraj Institutional Review Board (SIRB), Faculty of Medicine Siriraj Hospital, Mahidol University, Thailand (Approval No: Si712/2016).

Informed Consent: Written informed consent was obtained from the patients who agreed to take part in the study.

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Declaration of Interests: The authors have no conflict of interest to declare.

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