



# Depression, Anxiety, and Quality of Life among Patients with Psoriasis: Prevalence, and Associated Factors

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## Abstract

**Background:** Like many chronic skin diseases, psoriasis has a psychological impact on the sufferer and a huge impact on quality of life. The aim of the study is to estimate the prevalence of depression and anxiety among patients suffering from psoriasis in a region of Morocco, and to identify sociodemographic, disease-related, and quality of life associated factors. **Materials and Methods:** A cross-sectional study was carried out in the dermatology department of the Hassan II University Hospital in Fez between September 2019 and December 2020 on patients with psoriasis. The Hospital Anxiety and Depression Scale were used to measure depression and anxiety, and the 12-item Short Form survey to measure Quality of Life. A multivariate analysis was used to determine associated factors. **Results:** Results: A total of 133 participants were included, with men slightly predominant at 70 (52.6%). Of the participants, 67.7% were aged 35 years or older, and duration of psoriasis greater than 3 years was predominant at 79.7%. The prevalence of depression was 28.6% with a 95% CI (20.9 - 36.2), and anxiety was 41.4% with a 95% CI (33.0 - 49.7). The mean scores for mental (MCS-12) and physical (PCS-12) quality of life were  $36.4 \pm 7.0$  and  $35.9 \pm 5.8$ , respectively. Depression was associated with advanced age, female gender, married status, high affected body surface area, and low MCS-12, while anxiety was associated with advanced age, pruritus, and low MCS-12. **Conclusion:** Our results suggest that it is important to establish the detection of mental health disorders and assess the impact of psoriasis on patients' quality of life, particularly in terms of mental quality, as part of psoriasis care.

## Subject Areas

Psychiatry & Psychology

## Keywords

Depression, Anxiety, Quality of Life, Psoriasis, HADS, SF-12

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## 1. Introduction

Psoriasis is a chronic autoimmune disorder characterized by scaly, red patches on the skin. It affects people of all ages and ethnicities [1] [2]. The prevalence of psoriasis varies between 0.09% and 11.4% in different areas of the world [3] [4]. However, developed countries have reported higher rates, with 4.6% of the population being affected [5].

This condition can have a significant impact on a person's quality of life, including their mental health [6]. Studies have shown that psoriasis patients are at a higher risk of developing depression and anxiety compared to the general population [7] [8].

Depression and anxiety can have a negative association with a person's overall quality of life, including their ability to work, socialize, and engage in daily activities. It is important to address these mental health concerns in psoriasis patients to improve their overall well-being [9].

Several factors may contribute to the higher rates of depression and anxiety among psoriasis patients, including the social stigma associated with the condition, physical discomfort, and the chronic nature of the disease [10] [11].

In addition, psoriasis patients with psychiatric disorders have higher health-care costs than psoriasis patients without these disorders. In addition, it can affect relationships at home, at school or at work, as well as sexual relationships, thus reducing the quality of life [12].

To the best of our knowledge, no data is available for assessing depression, anxiety and quality of life among Moroccan psoriasis patients.

Therefore, the aim of this study is to estimate the prevalence of depression and anxiety among patients suffering from psoriasis in a region of Morocco, and to identify sociodemographic, disease-related, and quality of life associated factors.

## 2. Materials and Methods

### 2.1. Study Design and Participants

Cross-sectional study was carried out in dermatology department of the Hassan II University Hospital of Fez, Morocco from September 2019 to December 2020. Patients aged 18 years and above who are diagnosed and treated for psoriasis were included. Patients with a history of depression or anxiety, patients with psychiatric disorders notably schizophrenia or bipolar states and patients with difficulties understanding or communicating were excluded.

### 2.2. Data Collection

All data were collected through face-to-face interviews conducted during pa-

tients' dermatology consultations or while they were waiting for their appointments. The interviews were conducted in person to accommodate illiterate or otherwise vulnerable patients. Clinical data, however, were obtained from the electronic health record (HOSIX) of the university hospital.

A questionnaire containing socio-demographic characteristics (age, sex, study level, marital status, Monthly income and medical insurance), clinical characteristics (antecedents, duration of disease, body surface area (BSA) and pruritus), "Hospital Anxiety and Depression Scale (HADS)" and quality of life questionnaire "SF-12" was used for data collection.

The severity of the disease was determined using the Body Surface Area (BSA) index, which is a commonly used method of estimating the percentage of body surface area affected [13].

The HADS is a self-administered questionnaire with 14 items and divided into two sub-scales of 7 items each, one for anxiety (HADS-A) and the other for depression (HADS-D). Each item is rated on a scale of 0 to 3, and a score is generated for each of the two sub-scales. Borderline scores are used to classify non-cases or asymptomatic cases (scores below 7), probable or borderline cases (scores between 8 and 10), and clearly or clinically symptomatic cases (scores of 11 or higher) [14]. In the present study, we utilized the Arabic version of the questionnaire [15], and we considered depression and anxiety as present if the HADS subscale scores were 11 or higher.

The 12-Item Short Form Survey (SF-12) Questionnaire is derived from the SF-36 questionnaire and comprises 12 items [16]. It provides two scores, namely the mental quality of life (MCS-12) and physical quality of life (PCS-12) scores. The SF-12 evaluates eight dimensions of health, including physical functioning (PF), social functioning (SF), bodily pain (BP), general health (GH), vitality (VT), role physical (RP), role emotional (RE) and mental health (MH). In this study, the Moroccan Arabic version of the SF-12 questionnaire was used [17].

### 2.3. Statistical Analysis

The collected data were coded, entered, and validated using Excel software. Statistical analysis was performed using SPSS version 26 software. Descriptive statistics were utilized, with quantitative variables being presented as means and standard deviations (SD), and qualitative variables being presented as absolute numbers and percentages. Bivariate analysis was conducted using the  $\chi^2$  test to compare percentages and Student's T test to compare means. Multivariate analysis involved logistic regression to identify associated factors of sociodemographic, clinical, and SF-12 mental/physical scores with anxiety and depression, while accounting for confounding factors. Variables with a significance level of 20% or less were included in the logistic regression model, and the significance level was set at 5%.

### 2.4. Ethical Consideration

Before collecting data, participants were asked for their consent and were in-

formed that their participation was voluntary and would not affect their medical care. They were also assured that their data would be kept confidential and only accessible to the research team. Data collection commenced only after obtaining ethics approval.

The study was approved by the Ethics Committee of the Faculty of Medicine and Pharmacy of Fez.

### 3. Results

#### 3.1. Socio-Demographic and Clinical Characteristics

A sample of 133 patients was included in the study, with slightly more than half of them being male (52.6%). The majority of the patients were 35 years old or older (67.7%) and were married (61.7%). About two-thirds of the patients reported having a low monthly income (66.9%). Half of the patients had received education beyond high school, such as at a university or through secondary schooling (50.4%). Only a small proportion of the patients reported their medical and surgical histories (24.1%), while most of them had psoriasis for three years or more (79.7%). A minority of patients had a psoriasis body surface area (BSA) of exceeding 15% (21.1%). Most of the patients experienced pruritus (itchiness) (72.2%). The sociodemographic and clinical parameters are summarized in **Table 1**.

#### 3.2. Quality of Life

**Table 2** presents the scores obtained from the SF-12 instrument responses. The mean total score for the Mental Quality of Life Scale (MCS-12) was  $36.43 \pm 7.09$  (with a 95% confidence interval of 35.22 - 37.63), while the mean total score for the Physical Quality of Life Scale (PCS-12) was  $35.92 \pm 5.85$  (with a 95% confidence interval of 34.92 - 36.91). The mean quality of life scores for other scale dimensions was higher for vitality (VT) at  $46.16 \pm 10.12$  and lower for body pain (BP) at  $26.48 \pm 12.05$ .

#### 3.3. Depression

**Table 3** shows that the estimated prevalence of depression among patients with psoriasis was 28.6% with a 95% confidence interval of 20.91% to 36.28%.

Univariate analysis revealed that seven factors were associated with depression. These factors were advanced age ( $p < 0.001$ ), female gender ( $p = 0.012$ ), illiteracy ( $p < 0.001$ ), married status ( $p < 0.001$ ), advanced body surface area (BSA) ( $p < 0.001$ ), presence of pruritus ( $p = 0.036$ ), and low mental QOL (MCS-12) ( $p = 0.013$ ) (see **Table 4**).

In multivariate analysis, the factors that were found to be associated with depression were advanced age (age  $\geq 35$  years) (adjusted odds ratio (AOR) = 8.65; 95% confidence interval (CI): 1.39 - 53.78), female gender (AOR = 4.24; 95% CI: 1.55 - 11.59), married status (AOR = 4.71; 95% CI: 1.19 - 18.55), high BSA (AOR = 5.33; 95% CI: 1.77 - 15.97), and low MCS-12 (AOR = 0.92; 95% CI: 0.85 - 0.98) (see **Table 4**).

**Table 1.** Sociodemographic and clinical characteristics of psoriasis patients (n = 133).

Variables	Number (percentage)
<b>Age</b>	
<35 years	43 (32.3)
≥35 years	90 (67.7)
<b>Gender</b>	
Male	70 (52.6)
Female	63 (47.4)
<b>Study level</b>	
Illiterate	38 (28.6)
Primary	28 (21.1)
Secondary/university	67 (50.4)
<b>Marital status</b>	
Unmarried	51 (38.3)
Married	82 (61.7)
<b>Monthly income</b>	
>6000 dhs	14 (10.5)
2000 - 6000 dhs	30 (22.6)
≤2000 dhs	89 (66.9)
<b>Medical insurance</b>	
No	40 (30.1)
Yes	93 (69.9)
<b>Medical and surgical antecedents</b>	
No	101 (75.9)
Yes	32 (24.1)
<b>Duration of disease</b>	
<3 years	27 (20.3)
≥3 years	106 (79.7)
<b>Body surface area (BSA)</b>	
<15%	105 (78.9)
≥15%	28 (21.1)
<b>Pruritus</b>	
No	37 (27.8)
Yes	96 (72.2)

### 3.4. Anxiety

As indicated in **Table 3**, the estimated prevalence of anxiety among psoriasis patients was 41.4% with a 95% confidence interval ranging from 33.02% to 49.77%.

**Table 2.** 12-Item short form survey (SF-12) dimensions, mental and physical quality of life scores.

SF-12 scores	Min	Max	Mean	Standard deviation
Physical functioning (PF)	22.10	56.46	42.45	12.66
Role physical (RP)	20.32	57.17	39.54	11.14
Bodily pain (BP)	16.67	57.44	26.48	12.05
General health perceptions (GH)	18.86	61.98	37.99	12.27
Vitality (VT)	27.62	67.87	46.16	10.12
Social functioning (SF)	16.17	56.56	38.04	12.86
Role emotional (RE)	11.34	56.07	33.92	12.35
Mental health (MH)	21.87	64.54	37.95	7.28
Mental quality of life score (MCS-12)	20.31	50.80	36.43	7.09
Physical quality of life score (PCS-12)	21.95	48.69	35.92	5.85

**Table 3.** Anxiety and depression prevalence among psoriasis patients.

	Number (percentage)	95% CI (min - max)
Depression	38 (28.6)	(20.91 - 36.28)
Anxiety	55 (41.4)	(33.02 - 49.77)

**Table 4.** Depression associated factors in bivariate and multivariate analysis.

Variables	Depression (%)		p-value	Adjusted OR (95% CI)
	No	Yes		
<b>Age</b>			<b>&lt;0.001</b>	
<35 years	95.3	4.7		1.00
≥35 years	60.0	40.0		8.65 (1.39 - 53.78)
<b>Gender</b>			<b>0.012</b>	
Male	81.4	18.6		1.00
Female	60.3	39.7		4.24 (1.55 - 11.59)
<b>Study level</b>			<b>&lt;0.001</b>	
Illiterate	55.3	44.7		
Primary	57.1	42.9		
Secondary/university	86.6	13.4		
<b>Marital status</b>			<b>&lt;0.001</b>	
Unmarried	92.2	7.8		1.00
Married	58.5	41.5		4.71 (1.19 - 18.55)
<b>Monthly income</b>			0.487	
>6000 dhs	85.7	14.3		
2000 - 6000 dhs	70.0	30.0		
≤2000 dhs	69.7	30.3		

Continued

<b>Medical insurance</b>				0.676
No	75.0	25.0		
Yes	69.9	30.1		
<b>Medical and surgical antecedents</b>				0.823
No	72.3	27.7		
Yes	68.8	31.3		
<b>Duration of psoriasis</b>				0.482
<3 years	77.8	22.2		
≥5 years	69.8	30.2		
<b>Body surface affected</b>				<b>&lt;0.001</b>
<15%	79.0	21.0		1.00
≥15%	42.9	57.1		5.33 (1.77 - 15.97)
<b>Pruritus</b>				<b>0.036</b>
No	79.2	20.8		
Yes	62.3	37.7		
<b>Mental quality of life score (MCS-12)</b>	37.40 ± 6.77	34.03 ± 7.37	<b>0.013</b>	0.92 (0.85 - 0.98)
<b>Physical quality of life score (PCS-12)</b>	35.74 ± 5.68	36.39 ± 6.33	0.561	

A bivariate analysis of the data revealed that there were seven factors associated with anxiety, including advanced age ( $p = 0.005$ ), low educational attainment ( $p = 0.013$ ), being married ( $p = 0.031$ ), longer duration of psoriasis ( $p = 0.048$ ), the presence of pruritus ( $p = 0.003$ ), low mental quality of life (MCS-12) score ( $p < 0.001$ ), and low physical quality of life score ( $p = 0.012$ ) as presented in **Table 5**. However, a multivariate analysis demonstrated that only advanced age (AOR = 4.75; 95% CI: 1.83 - 12.29), pruritus (AOR = 2.48; 95% CI: 1.12 - 5.48), and a low MCS-12 quality of life score (AOR = 0.89; 95% CI: 0.83 - 0.94) were found to be associated with anxiety (**Table 5**).

#### 4. Discussion

The aim of this study was to estimate the prevalence of depression and anxiety among patients with psoriasis in a Moroccan region, and to identify the association between quality of life, factors influencing it, and depression/anxiety.

The study found that 28.6% of psoriasis patients suffered from depression, which was higher than the rates reported by Camila Fernandes Pollo *et al.* (19%) and Emily McDonough *et al.* (9.6%) [18] [19]. There are several possible reasons why different studies may observe different prevalence rates of depression in patients with psoriasis. First, the characteristics of the study population can greatly influence the prevalence rates of depression. Camila Fernandes Pollo *et al.* [18] recruited their study participants from a dermatological infirmary and an outpatient clinic in a public hospital, which may have resulted in lower rates of depression compared to the present study that recruited patients from a university

**Table 5.** Anxiety associated factors in bivariate and multivariate analysis.

Variables	Anxiety (%)		p-value	Adjusted OR (95% CI)
	No	Yes		
<b>Age</b>			<b>0.005</b>	
<35 years	76.7	23.3		1.00
≥35 years	50.0	50.0		4.75 (1.83 - 12.29)
<b>Gender</b>			0.052	
Male	67.1	32.9		
Female	49.2	50.8		
<b>Study level</b>			<b>0.013</b>	
Illiterate	36.8	63.2		
Primary	64.3	35.7		
Secondary/university	68.7	31.3		
<b>Marital status</b>			<b>0.031</b>	
Unmarried	70.6	29.4		
Married	51.2	48.8		
<b>Monthly income</b>			0.293	
>6000 dhs	71.4	28.6		
2000 - 6000 dhs	66.7	33.3		
≤2000 dhs	53.9	46.1		
<b>Medical insurance</b>			0.851	
No	60.0	40.0		
Yes	58.1	41.9		
<b>Medical and surgical antecedents</b>			0.305	
No	61.4	38.6		
Yes	50.0	50.0		
<b>Duration of disease</b>			<b>0.048</b>	
<3 years	40.7	59.3		
≥5 years	63.2	36.8		
<b>Body surface affected</b>			0.666	
<15%	59.6	40.4		
≥15%	53.6	46.4		
<b>Pruritus</b>			<b>0.003</b>	
No	70.8	29.2		1.00
Yes	44.3	55.7		2.48 (1.12 - 5.48)
<b>Mental quality of life score (MCS-12)</b>	38.43 ± 6.40	33.61 ± 7.11	<b>&lt;0.001</b>	0.89 (0.83 - 0.94)
<b>Physical quality of life score (PCS-12)</b>	36.85 ± 5.48	34.61 ± 6.16	<b>0.029</b>	

hospital. This could be due to differences in the severity of the psoriasis cases and the level of medical care provided at these different healthcare settings. Se-



condly, Cultural factors can influence the prevalence rates of depression in patients with psoriasis. Varied cultural attitudes towards mental health might impact the rate of depression in psoriasis patients. Notably, there are significant cultural differences between the McDonough *et al.* [19] study conducted in Toronto and the present study.

The prevalence of anxiety in psoriasis patients was found to be 41.4%, which is consistent with the findings of Richards *et al.* (43%) and Daudén *et al.* (40.2%) [11] [20]. However, another study reported a slightly lower prevalence of anxiety among psoriasis patients (38.2%) [21]. This difference could be attributed to the use of different inclusion criteria, as in the case of the study by Landrey *et al.* [21], and could also be explained by the Covid-19 pandemic and its impact on the deterioration of the socio-economic level [22] [23].

The present study found that advanced age was associated with depression and anxiety in individuals with psoriasis. This is consistent with a previous study [18] that reported age as a significant factor influencing anxiety and depression in this population. However, it is important to note that the relationship between age and mental health in psoriasis patients may be complex, influenced by other factors such as disease severity, duration, and comorbid medical conditions.

The study examined the relationship between gender and mental health in individuals with psoriasis. The findings showed that females with psoriasis were more likely to experience depression compared to males with psoriasis. This finding is consistent with previous studies that have investigated the link between gender and depression in individuals with psoriasis [24] [25] [26]. On the other hand, the study did not find any significant association between anxiety and gender in psoriasis participants. In other words, being female did not increase the likelihood of experiencing anxiety in individuals with psoriasis. This result is in line with some previous studies that have suggested a link between anxiety and psoriasis [26] [27] [28].

Marriage is a social status that entails significant responsibility and creates considerable psychosocial stress. The current research demonstrated that married individuals with psoriasis have a greater likelihood of experiencing depression and anxiety. Previous studies have similarly indicated that being married is a predictor of mental health disorders [29].

Duration of psoriasis was not associated with depression/anxiety. This finding aligns with a previous study by Nasreen *et al.* which also found no connection between duration and mental health disorders [29]. Another study indicated a positive relationship between how long a patient had psoriasis and mental health disorders [30], and this difference can be attributed to the relatively long time between the onset of symptoms and the diagnosis of psoriasis, which may make the time of evolution less accurate in this study.

The severity of psoriasis was assessed by measuring the extent of skin involvement using body surface area (BSA). According to the present study, high BSA was found to be associated with depression. This finding is consistent with the results of other studies [31] [32] [33].

However, the study did not find any significant association between anxiety and BSA. This suggests that the skin involvement may not have a direct impact on anxiety levels. This finding can be clarified by the notion that social stigmatization and psychological difficulties don't always correspond with the severity of psoriasis since mental factors and the extent of the disease aren't always connected [26] [34]. Additionally, the majority of the subjects were undergoing treatment, which encourages gradual enhancement or clinical management of the condition.

The study investigated the relationship between pruritus, which is a common symptom of psoriasis, and depression/anxiety in individuals with psoriasis. The study found that there was a significant association between pruritus and depression/anxiety in psoriasis patients, meaning that individuals who experienced pruritus were more likely to experience depression or anxiety as well. This finding is consistent with the results of a previous study conducted by Silva *et al.* [35] that also investigated the relationship between pruritus and depression/anxiety in individuals with psoriasis.

Our study found that the mean mental quality of life score in our population was  $36.4 \pm 7.09$  and the mean physical quality of life score was  $35.9 \pm 5.8$ . In comparison, a study by Grosdev *et al.* [36] reported high mean scores of 47.5 and 45.6, respectively. This difference in scores may be attributed to the different age ranges of the populations studied, as our study may have included individuals with lower mental and physical quality of life due to an older age distribution.

Mental quality of life was associated with depression and anxiety, while physical quality of life was associated only with anxiety this can be attribute to the visible nature of the condition, which can cause embarrassment and self-consciousness. It is important to note that psoriasis does not typically have a direct impact on physical quality of life, except in cases where joint damage is present. In our study, we only focused on skin psoriasis and did not examine joint involvement [36] [37].

Our study has some limitations; the participants were recruited from a single-center, and were excluded from the public health system, which may restrict the generalizability of the findings to other populations. Additionally, the use of self-reported patient data may lead to an overestimation of the patient's psychological condition and impairment of quality of life.

Despite these limitations, our study is one of the first studies in our country to investigate the prevalence of depression and anxiety in individuals with psoriasis. Additionally, we have analyzed the relationship between these mental health conditions and quality of life.

## 5. Conclusions

The findings indicate that people with psoriasis face an elevated risk of developing depression and anxiety, with the prevalence rates for depression and anxiety among psoriasis patients being 28.6% and 41.4%, respectively. In addition, the

mental and physical quality of life for this group was found to be compromised. Various factors were identified as associated with these disorders, including advanced age, female gender, and being married for depression, and advanced age, pruritus, and mental quality of life for anxiety.

Early detection of comorbidities is the first step towards effective management. This allows for integration of both psychiatric and dermatological treatments, ultimately improving the health and quality of life of patients with psoriasis. Education, support, and resources should be made available to help patients manage their symptoms and understand the link between psoriasis and mental health. A multidisciplinary approach, involving healthcare providers from various specialties such as dermatology, psychiatry, and psychology, can be effective in treating patients with psoriasis and comorbid mental health conditions. Public health initiatives should raise awareness of the link between psoriasis and mental health, and advocate for better access to mental health services for individuals with psoriasis.

### Conflicts of Interest

The authors declare no conflicts of interest.

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