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ORIGINAL ARTICLE

Depression Among a Sample of Iraqi Patients with Psoriatic Arthritis: A Single-Center Study

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ABSTRACT

Background/Aim: Psoriatic arthritis (PsA) is a chronic inflammatory disease characterized by joint inflammation, enthesitis, and skin psoriasis. Beyond its physical manifestations, PsA significantly affects mental health, with depression being a common comorbidity. Depression may further increase disease burden and reduce quality of life, highlighting the importance of its recognition. This study aimed to determine the frequency of depression among patients with PsA and evaluate its associations with sociodemographic, clinical, and disease-related characteristics.

Methods: This cross-sectional, single-center study was conducted at the Rheumatology Unit of Baghdad Teaching Hospital from January to July 2024 and involved 100 consecutive patients fulfilling the CASPAR criteria. Data collection included sociodemographic and clinical characteristics. Depression was assessed using the Beck Depression Inventory (BDI) and confirmed according to DSM-5 criteria.

Results: Depression was present in 29% of patients with PsA. Of these, 34.5% had mild, 51.7% moderate, and 13.8% severe depression. In univariable analysis, depression was significantly associated with younger age (21–35 years; $p = 0.003$), unmarried status ($p = 0.001$), and higher BASDAI scores in the axial PsA subgroup ($p = 0.045$). No significant associations were found with DAPSA scores ($p = 0.082$), smoking status, sex, BMI, employment status, education level, PsA type, disease duration, or comorbidities ($p > 0.05$).

Conclusion: Depression was common among patients with PsA. Cross-sectional associations were observed with younger age and unmarried status, and with higher BASDAI scores in the axial subgroup. However, causality cannot be inferred. These findings underscore the need for routine mental health screening and integrated care in PsA management.

Key words: Psoriatic arthritis; depression; Beck Depression Inventory; disease activity; BASDAI; DAPSA; Iraq.

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INTRODUCTION

Psoriatic arthritis (PsA) is a chronic inflammatory arthropathy associated with psoriasis (PsO), characterized by musculoskeletal and non-musculoskeletal manifestations [1, 2]. PsA affects 0.3–1% of the population and up to 30% of patients with psoriasis, usually developing 10–20 years after PsO onset [3–5]. In Iraq, psoriasis affects approximately 2.3% of the population [6, 7], while PsA prevalence is estimated at 0.02% [8].

The pathogenesis involves genetic susceptibility, environmental triggers, and immune dysregulation [9]. Clinically, PsA presents with peripheral arthritis, axial disease, enthesitis, dactylitis, and extra-articular features such as uveitis and inflammatory bowel disease [10, 11]. Diagnosis is clinical and supported by the CASPAR criteria, imaging, and exclusion of mimicking conditions [12–14]. Disease activity is assessed using tools such as DAPSA for peripheral disease and ASDAS or BASDAI for axial disease [15]. Treatment follows current guidelines, favoring early conventional synthetic disease-modifying antirheumatic drugs (csDMARDs) and escalation to biologic DMARDs (bDMARDs) or Janus kinase inhibitors when needed [16].

Depression is a common psychiatric disorder affecting 279 million people globally [17]. It presents with persistent sadness, loss of interest, and somatic or psychological symptoms [18]. Risk factors include genetic, chronic disease-related, and social factors [19]. Management often involves psychotherapy and pharmacotherapy, either separately or combined [20].

Patients with PsA are at increased risk of depression, with reported prevalence rates of 20–30% [21, 22]. Contributing factors include chronic pain, physical disability, social stigma, inflammatory cytokines such as tumor necrosis factor-α, interleukin (IL)-6, and IL-17, and medication side effects [23–25]. Emerging evidence also suggests that neuroimmune interactions may play a role in linking PsA and depression, indicating a potential bidirectional relationship between both conditions [26]. Mental health comorbidities, particularly depression, negatively influence PsA outcomes by increasing pain perception, contributing to secondary fibromyalgia, and impairing treatment adherence, which may result in unnecessary treatment escalation and a reduced likelihood of achieving minimal disease activity [4]. Despite increasing recognition of this association, data regarding depression among Iraqi patients with PsA remain limited, highlighting an important gap in local evidence.

This study aimed to determine the frequency of depression among a sample of patients with PsA, as well as to identify the association of sociodemographic, clinical, and disease-related characteristics with depression.

MATERIALS AND METHODS

Study design

A cross-sectional study was conducted at the Rheumatology Unit, Baghdad Teaching Hospital, Medical City, from January to July 2024.

Study population

A consecutive sampling approach was employed. All adult patients with PsA attending follow-up visits at the Rheumatology Consultant Clinic, Baghdad Teaching Hospital, during the study period who met the eligibility criteria were invited to participate. Recruitment was conducted during routine outpatient clinic visits three days per week throughout the study period. A total of 100 consecutive patients were enrolled. No formal sample size calculation was performed, as the study aimed to recruit all eligible patients presenting during the predefined study period. The final sample coincidentally comprised 50 males and 50 females; no quota sampling or sex-based recruitment strategy was used.

Inclusion criteria

Patients aged $\geq$ 18 years who were diagnosed with PsA according to the CASPAR criteria [12], irrespective of disease duration or treatment type, were included after thorough assessment.

Exclusion criteria

Patients with overlapping inflammatory or connective tissue diseases, malignancy, organ failure, hypothyroidism, pregnancy, substance use, or alcohol intake were excluded. Exclusion criteria were verified through patient interview, medical-record review, medication history, clinical assessment, and relevant laboratory investigations when indicated.

Previous psychiatric history and current psychotropic medication use were assessed through patient interview and medical-record review. None of the enrolled participants had a documented pre-existing psychiatric diagnosis or were receiving antidepressants, anxiolytics, antipsychotics, or mood stabilizers at the time of enrollment.

Data collection

Data were collected through direct interviews using a structured questionnaire that comprised the following:

Sociodemographic data. Information included name, age, sex, body mass index (BMI), marital status, education, employment, and smoking history.

Clinical data. Disease duration was defined as the time since PsA diagnosis. Disease activity was assessed using DAPSA for peripheral arthritis and BASDAI for axial disease. BASDAI was measured only in patients with axial involvement (n = 20). DAPSA cutoffs were remission (≤ 4), low (> 4 to ≤ 14), moderate (> 14 to ≤ 28), and high (> 28). The BASDAI cutoff for active axial disease was ≥ 4. Peripheral versus axial PsA was classified by the treating rheumatologist based on clinical examination and imaging. Pain was assessed using a visual analogue scale (VAS, 0–10), and patient global assessment (PGA) was evaluated using a VAS (0–10). Acute-phase reactants included erythrocyte sedimentation rate (ESR, mm/h) and C-reactive protein (CRP, mg/dL). Comorbidities included hypertension, diabetes mellitus, ischemic heart disease, and others. Medications were included if taken regularly for the preceding three months.

Assessment of depression. Depression assessment was conducted in two phases. First, screening was performed using the Arabic-translated version of the Beck Depression Inventory (BDI), a 21-item self-report questionnaire [27]. Scores were categorized as minimal (0–10), mild (11–16), moderate (17–30), and severe depression (31–63). Interviewer assistance was provided when necessary. The Arabic version of the BDI has been culturally adapted and pilot-tested for Iraqi populations. Second, participants with BDI scores > 10 underwent semi-structured interviews based on DSM-5 diagnostic criteria [28]. The DSM-5 interviews were conducted by a consultant psychiatrist (co-author M.T.H.) who was blinded to patients' disease activity status. All screened-positive participants fulfilled the DSM-5 criteria for depression.

Statistical analysis

Data were analyzed using IBM SPSS Statistics for Windows, Version 27. Normality of continuous variables (CRP, ESR, and VAS scores) was assessed using the Shapiro–Wilk test. Normally distributed variables were analyzed using Student's t-test, whereas non-normally distributed variables were analyzed using the Mann–Whitney U test. Categorical variables were analyzed using the chi-square test or Fisher's exact test when expected cell counts were < 5. For contingency tables larger than 2×2 with expected cell counts < 5, the Fisher–Freeman–Halton exact test was used (implemented in SPSS as the Exact option for Fisher's exact test in larger tables). Results are presented as frequencies, percentages, means ± standard deviations (SD), and ranges (minimum–maximum). Statistical significance was set at $p < 0.05$.

Table 1. Demographic characteristics of PsA patients (n = 100).

Characteristic	Category/statistic	n	%
Age, years	< 20	3	3.0
	21–35	29	29.0
	36–50	39	39.0
	51–65	28	28.0
	> 65	1	1.0
	Range	18–70	
	Mean ± SD	41.7 ± 12.2	
Sex	Male	50	50.0
	Female	50	50.0
Smoking	Non-smoker	68	68.0
	Ex-smoker	12	12.0
	Current smoker	20	20.0
Employment	Not employed	51	51.0
	Employed	49	49.0
Marital status	Married	80	80.0
	Single	18	18.0
	Widowed/divorced	2	2.0
Education	Illiterate/read and write	3	3.0
	Primary	22	22.0
	Secondary	30	30.0
	College/postgraduate	45	45.0
BMI, kg/m²	Underweight (< 18.5)	2	2.0
	Normal weight (18.5–24.9)	12	12.0
	Overweight (25–29.9)	45	45.0
	Obese (≥ 30)	41	41.0
	Range	17.5–44	
	Mean ± SD	29.9 ± 5.3	

Abbreviations: BMI, body mass index; PsA, psoriatic arthritis; SD, standard deviation.

Ethical considerations

Written informed consent was obtained from all participants after explaining the study purpose and ensuring data confidentiality. The study protocol was approved by the Institutional Review Board of the Iraqi Board for Medical Specializations (Approval No. 642, dated 31 January 2024).

RESULTS

Demographic characteristics

The study included 100 patients with PsA, with a mean age of 41.7 ± 12.2 years. Most participants were aged 36–50 years. The cohort showed an equal sex distribution, and most participants were non-smokers and married. Nearly half had a college or postgraduate degree, while overweight and obesity were highly prevalent. Detailed demographic characteristics are presented in Table 1.

Table 2. Clinical characteristics of PsA patients (n = 100).

Characteristic	Category/statistic	n	%
PsA type	Peripheral	80	80.0
	Axial	20	20.0
PsA duration, years	< 5	23	23.0
	5–9	29	29.0
	10–15	23	23.0
	> 15	25	25.0
	Range		0.5–37
	Mean ± SD		10.9 ± 7.7
Pain VAS	Range		0–10
	Mean ± SD		5.4 ± 2.4
Global assessment VAS	Range		0–10
	Mean ± SD		4.9 ± 2.2
CRP, mg/dL	Range		0.01–3.8
	Mean ± SD		0.84 ± 0.86
ESR, mm/h	Range		2–130
	Mean ± SD		22.9 ± 21.9
Comorbidities	No	64	64.0
	Yes	36	36.0
	HTN	10	27.8
	DM	7	19.4
	Others	5	13.9
	More than one comorbidity	14	38.9
DAPSA	Remission	5	6.25
	Low	24	30.00
	Moderate	26	32.50
	High	25	31.25
	Total	80	100.0
	Range		1–88
	Mean ± SD		21.8 ± 14.8
BASDAI	Inactive or mild	9	45.0
	Active	11	55.0
	Total	20	100.0
	Range		1–8.8
	Mean ± SD		4.16 ± 2.26

Percentages for individual comorbidities were calculated among patients with at least one comorbidity (n = 36). Other comorbidities included ischemic heart disease, dyslipidemia, gout, uveitis, asthma, celiac disease, and Crohn's disease. "More than one comorbidity" refers to patients with two or more comorbidities.
Abbreviations: BASDAI, Bath Ankylosing Spondylitis Disease Activity Index; CRP, C-reactive protein; DAPSA, Disease Activity Index for Psoriatic Arthritis; DM, diabetes mellitus; ESR, erythrocyte sedimentation rate; HTN, hypertension; PsA, psoriatic arthritis; SD, standard deviation; VAS, visual analogue scale.

Clinical characteristics

Peripheral PsA was the most common clinical subtype. Overall, patients demonstrated moderate disease activity, with a considerable proportion exhibiting high disease activity based on DAPSA assessment. More than half of the patients with axial involvement had active disease according to BASDAI. Comorbidities were frequently observed, particularly hypertension and diabetes mellitus. Additional clinical details are summarized in Table 2.

Table 3. Treatment characteristics of PsA patients (n = 100).

Treatment	Category	n	%
csDMARDs	No	47	47.0
	Yes	53	53.0
	Methotrexate	46	86.8
	Leflunomide	4	7.5
	Sulfasalazine	1	1.9
	Hydroxychloroquine	1	1.9
	Azathioprine	1	1.9
bDMARDs	No	12	12.0
	Yes	88	88.0
	Adalimumab	33	37.1
	Infliximab	28	32.6
	Etanercept	23	25.8
	Golimumab	2	2.2
	Ustekinumab	2	2.2
Non-DMARDs	No	63	63.0
	Yes	37	37.0
	NSAID	16	43.2
	Topical therapy	12	32.4
	Prednisolone	1	2.7
	NSAID + topical therapy	5	13.5
	NSAID + prednisolone	2	5.4
	NSAID + topical therapy + prednisolone	1	2.7

Patients may have received more than one treatment modality concurrently. Percentages for individual csDMARDs, bDMARDs, and non-DMARD therapies were calculated among users of each respective treatment group: csDMARDs, n = 53; bDMARDs, n = 88; non-DMARD therapies, n = 37.
Abbreviations: bDMARD, biologic disease-modifying antirheumatic drug; csDMARD, conventional synthetic disease-modifying antirheumatic drug; NSAID, non-steroidal anti-inflammatory drug; PsA, psoriatic arthritis.

Treatment characteristics

Most patients were receiving biologic DMARD therapy, whereas csDMARD use was reported in about half of the cohort, with methotrexate being the most commonly used agent. Adjunctive non-DMARD treatments, particularly NSAIDs and topical therapies, were also commonly used. Further treatment details are shown in Table 3.

Frequency and severity of depression

Depression was identified in 29% (n = 29) of patients, while 71% (n = 71) had no depression, as presented in Figure 1. Among patients with depression, BDI scores ranged from 11 to 34, with a mean of 19.8 ± 6.71. Moderate depression was the most common severity category (51.7%, n = 15), followed by mild depression (34.5%, n = 10) and severe depression (13.8%, n = 4), as shown in Figure 2.

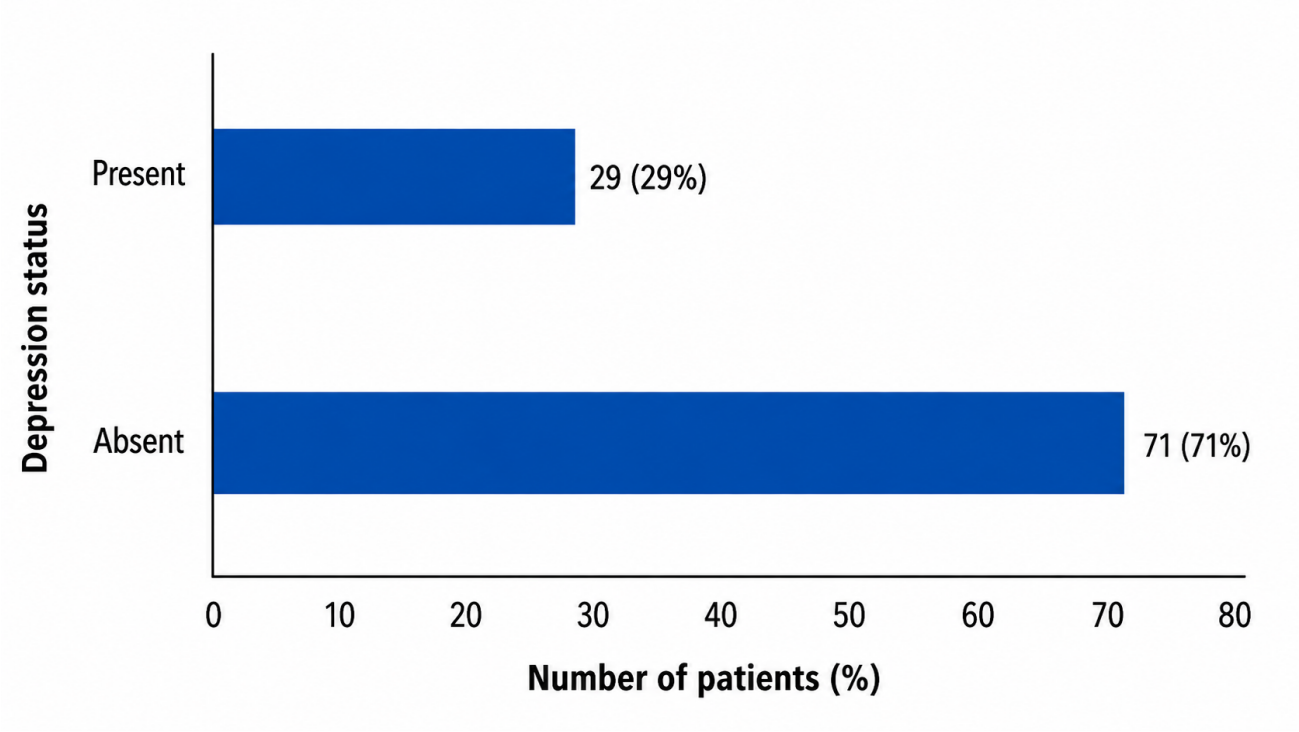

Figure 1. Frequency of depression among PsA patients (n = 100).

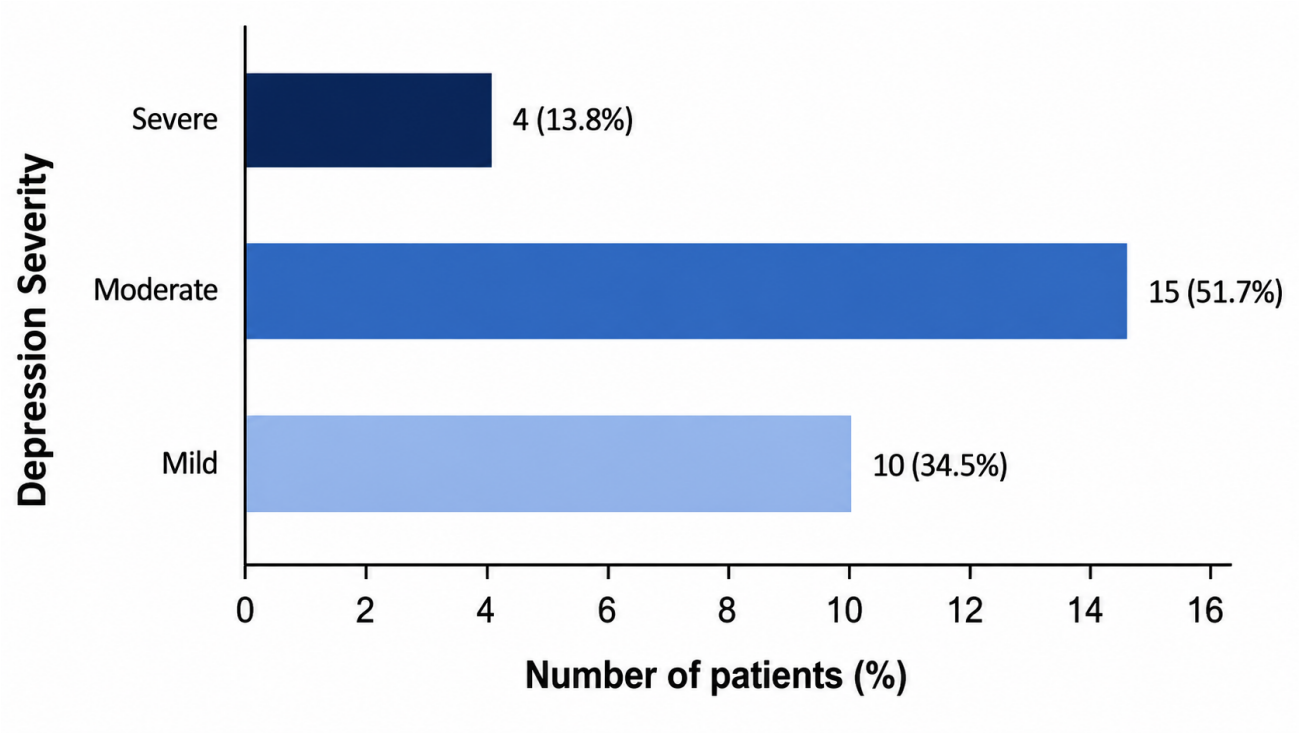

Figure 2. Distribution of depression severity among PsA patients with depression (n = 29).

Association between depression and demographic characteristics

Depression showed significant associations with age and marital status, with higher rates observed among younger and single participants. No significant associations were found with sex, BMI, employment status, education level, or smoking status. Detailed results are presented in Table 4.

Association between depression and clinical characteristics

Disease activity showed mixed associations, with no significant relationship observed between depression and DAPSA

Table 4. Association between depression and demographic characteristics of PsA patients.

Characteristic	Category	Depression status		Total	*p*-value
		Absent, n (%)	Present, n (%)	n (%)	
Age (years)	< 20	2 (66.7)	1 (33.3)	3 (100.0)	**0.003**[a]
	21–35	15 (51.7)	14 (48.3)	29 (100.0)	
	36–50	28 (71.8)	11 (28.2)	39 (100.0)	
	51–65	25 (89.1)	3 (10.7)	28 (100.0)	
	> 65	1 (100.0)	0 (0.0)	1 (100.0)	
Sex	Male	35 (70.0)	15 (30.0)	50 (100.0)	0.828
	Female	36 (72.0)	14 (28.0)	50 (100.0)	
BMI (kg/m²)	Underweight	2 (100.0)	0 (0.0)	2 (100.0)	0.876[a]
	Normal	6 (50.0)	6 (50.0)	12 (100.0)	
	Overweight	33 (73.3)	12 (26.7)	45 (100.0)	
	Obese	30 (73.2)	11 (26.8)	41 (100.0)	
Smoking	Non-smoker	51 (75.0)	17 (25.0)	68 (100.0)	0.059[a]
	Ex-smoker	10 (83.3)	2 (16.7)	12 (100.0)	
	Current smoker	10 (50.0)	10 (50.0)	20 (100.0)	
Employment	Not employed	37 (72.5)	14 (27.5)	51 (100.0)	0.731
	Employed	34 (69.4)	15 (30.6)	49 (100.0)	
Marital status	Married	63 (78.8)	17 (21.3)	80 (100.0)	**0.001**[a]
	Single	7 (38.9)	11 (61.1)	18 (100.0)	
	Widowed/divorced	1 (50.0)	1 (50.0)	2 (100.0)	
Education	Illiterate/read and write	2 (66.7)	1 (33.3)	3 (100.0)	0.464[a]
	Primary	14 (63.6)	8 (36.4)	22 (100.0)	
	Secondary	22 (73.3)	8 (26.7)	30 (100.0)	
	College/postgraduate	33 (73.3)	12 (26.7)	45 (100.0)	

Values are presented as number and percentage. Bold *p*-values indicate statistical significance.
[a] Fisher–Freeman–Halton exact test was used because of small expected cell counts; the chi-square test was used for the remaining comparisons.
Abbreviations: BMI, body mass index; PsA, psoriatic arthritis.

Table 5. Association between depression and clinical characteristics of PsA patients.

Characteristic	Category	Depression status		Total	*p*-value
		Absent, n (%)	Present, n (%)	n (%)	
PsA type	Peripheral	58 (72.5)	22 (27.5)	80 (100.0)	0.513
	Axial	13 (65.0)	7 (35.0)	20 (100.0)	
PsA duration	< 5 years	15 (65.2)	8 (34.8)	23 (100.0)	0.131
	5–9 years	20 (69.0)	9 (31.0)	29 (100.0)	
	10–15 years	16 (69.6)	7 (30.4)	23 (100.0)	
	> 15 years	20 (80.0)	5 (20.0)	25 (100.0)	
Comorbidities	No	41 (64.1)	23 (35.9)	64 (100.0)	0.513
	Yes	30 (83.3)	6 (16.7)	36 (100.0)	
DAPSA	Remission	4 (80.0)	1 (20.0)	5 (100.0)	0.082[b]
	Low	18 (75.0)	6 (25.0)	24 (100.0)	
	Moderate	23 (88.5)	3 (11.5)	26 (100.0)	
	High	13 (52.0)	12 (48.0)	25 (100.0)	
BASDAI	Inactive/mild	8 (88.9)	1 (11.1)	9 (100.0)	**0.045**[c]
	Active	5 (45.5)	6 (54.5)	11 (100.0)	
csDMARDs	No	33 (70.2)	14 (29.8)	47 (100.0)	0.872
	Yes	38 (71.7)	15 (28.3)	53 (100.0)	
bDMARDs	No	8 (66.7)	4 (33.3)	12 (100.0)	0.727[c]
	Yes	63 (71.6)	25 (28.4)	88 (100.0)	

Values are presented as number and percentage. Bold *p*-values indicate statistical significance.
[b] Fisher–Freeman–Halton exact test was used because of small expected cell counts.
[c] Fisher's exact test was used because of small expected cell counts; the chi-square test was used for the remaining comparisons.
DAPSA categories were analyzed among patients with peripheral PsA (n = 80); BASDAI categories were analyzed among patients with axial PsA (n = 20).
Abbreviations: BASDAI, Bath Ankylosing Spondylitis Disease Activity Index; bDMARD, biologic disease-modifying antirheumatic drug; csDMARD, conventional synthetic disease-modifying antirheumatic drug; DAPSA, Disease Activity Index for Psoriatic Arthritis; PsA, psoriatic arthritis.

Table 6. Depression and disease activity parameters.

Parameter	Depression status		*p*-value
	Absent	Present	
Patient pain VAS	5.13 ± 2.2	6.21 ± 2.9	**0.048**
Patient global assessment VAS	4.66 ± 2.1	5.76 ± 2.5	**0.025**
CRP, mg/dL	0.88 ± 0.8	0.76 ± 0.8	0.526
ESR, mm/h	21.5 ± 20.2	26.4 ± 25.4	0.317

Data are presented as mean ± SD. Bold *p*-values indicate statistical significance. Student's *t*-test was used for normally distributed variables; Mann–Whitney *U* test was used for CRP and ESR.
Abbreviations: CRP, C-reactive protein; ESR, erythrocyte sedimentation rate; SD, standard deviation; VAS, visual analogue scale.

scores in the peripheral subgroup (n = 80), whereas BASDAI scores demonstrated a significant association in the axial subgroup (n = 20), indicating a higher prevalence of depression among patients with active axial disease (Table 5).

Depression was also significantly associated with higher patient pain VAS and patient global assessment VAS scores, but not with inflammatory markers (CRP and ESR) (Table 6).

DISCUSSION

Depression in PsA represents a significant comorbidity, adversely influencing disease outcomes, treatment adherence, and quality of life. Recognizing and addressing depression early is critical for implementing a comprehensive care model that targets both physical and psychological aspects, ultimately leading to improved patient outcomes and enhanced well-being.

In the present study, approximately 29% of patients with PsA demonstrated evidence of depression. This prevalence is substantially higher than that reported in the general Iraqi population (7.4%) [29], emphasizing the psychological burden imposed by PsA. Similar findings have been reported in various cohorts, including studies by Lai et al. (29.8%) [30], Vestergaard et al. (27.2%) [22], and Geng et al. (31.6%) [31]. An Egyptian study by Tabra et al. also recorded a 35% prevalence of depression among patients with PsA [32].

This consistency across different populations supports the need for a multidisciplinary approach to PsA management, addressing both somatic and mental health aspects. The psychological impact of PsA likely arises from factors such as chronic pain, fatigue, disfigurement, disability, and the resulting limitations in daily activities. Reich et al. observed a 30% prevalence of depressive symptoms in patients with PsA and axial spondyloarthritis, particularly among those with severe fatigue and functional impairment [33].

Further supporting this, Lada et al., using BADBIR data, found depression to be significantly more common in PsA (33%) than in psoriasis alone (23%) [34], and Ghajarzadeh et al. confirmed that joint involvement significantly increases depression risk compared with skin disease alone [35]. A systematic review and meta-analysis by Zhao et al., which pooled data from 24 studies involving more than 31,000 patients with PsA, reported a wide prevalence range (5–51%) [4]. This variability likely reflects differences in diagnostic methods, sample sizes, depression definitions, and cultural and healthcare-system factors. In Iraq, cultural stigma surrounding mental illness may contribute to the under-recognition and delayed management of depressive symptoms [36]. In addition, differences in help-seeking behavior and public perceptions of mental health services may influence the detection and management of depression [37]. Furthermore, limitations in mental health care resources and access to psychiatric services may affect depression recognition and management [38]. These factors should be considered when comparing findings across different populations.

Disease activity showed an association with depression. Although the DAPSA score, which reflects peripheral disease activity, did not reach statistical significance ($p = 0.082$), the BASDAI score, which was used to assess axial involvement, demonstrated a significant association with depression ($p = 0.045$). This finding is consistent with previous studies reporting an association between higher disease activity and depression in patients with PsA [30, 39]. The association with BASDAI may reflect the closer relationship between subjective symptoms such as pain and fatigue and psychological distress, consistent with the findings of Reich et al. [33].

In addition, higher patient pain VAS ($p = 0.048$) and patient global assessment VAS ($p = 0.025$) scores were significantly associated with depression. These findings are consistent with McDonough et al. [40] and Haberman et al. [41], who linked greater patient-reported pain and global disease burden to elevated depression risk. In contrast to some previous findings, inflammatory markers (CRP and ESR) were not significantly associated with depression in this cohort, possibly because of the relatively normal inflammatory marker levels observed. While Tan et al. [42] found a positive association between CRP, ESR, and depression in psoriasis, differences in populations and disease severity might explain this discrepancy.

Regarding treatments, the use of DMARDs, including biologics, showed no significant association with depression ($p > 0.05$). This aligns with McDonough et al. [40]. However, other studies have indicated that biologics, especially anti-tumor necrosis factor therapies, can reduce depressive symptoms over time [43, 44]. Notably, Martins et al. demonstrated that depression among patients with PsA correlated with poorer therapeutic responses and higher bDMARD discontinuation rates, emphasizing the interplay between mental health and disease management [10].

Younger patients (21–35 years) had a significantly higher prevalence of depression ($p = 0.003$). This aligns with Schaakxs et al. [45], suggesting that chronic disease effects may be amplified in younger individuals because of psychoso-

cial stress, career challenges, and relationship burdens. Marital status was another important factor, as single individuals exhibited higher depression rates ($p = 0.001$), followed by divorced or widowed patients. The absence of spousal support and increased social isolation likely contribute to psychological vulnerability.

Although no significant sex-based differences were found in this study, consistent with Lai et al. [30] and McDonough et al. [40], other studies suggest a higher depression burden among women with PsA [39, 46]. These discrepancies may reflect cultural or biological influences, as sex can modulate access to coping resources [47].

No statistically significant association was found between smoking and depression ($p = 0.059$), although 50% of current smokers had depression. A recent study by Snoeck Henkemans et al. found that patients with PsA and depression or anxiety were more often smokers, whereas this association was not observed in the present study [48]. Other variables, such as BMI, educational level, employment status, disease duration, and comorbidities, showed no significant associations. This corresponds to findings by Lai et al. [30] and De Lorenzis et al. [39], though it contrasts with Gok et al. [49], who linked obesity with higher depression risk. Given the predominantly overweight sample (mean BMI approximately 30 kg/m^2), the lack of variation might have obscured any weight-related effect. Regarding the presence of other medical comorbidities, no significant association was observed with depression. This finding may reflect the limited sample size and the heterogeneous nature of the comorbid conditions. Larger studies are needed to clarify this relationship.

This study has several limitations. Its cross-sectional design precludes causal inference. In addition, the single-center consecutive sample of 100 patients without a formal sample size calculation may have limited the statistical power and generalizability of the findings. The limited number of depression events and the small axial PsA subgroup precluded reliable multivariable regression analysis; therefore, the findings are based on univariable analyses and should not be interpreted as evidence of independent associations. Psoriasis severity, anxiety, fibromyalgia, fatigue, quality of life, and socioeconomic status were not assessed and may have confounded the observed associations. Furthermore, the BDI includes somatic symptoms that overlap with PsA manifestations and may have overestimated depressive symptoms. Finally, the absence of a healthy or psoriasis-only control group further limits the interpretation and generalizability of the findings. Despite these limitations, this study provides the first data on depression among Iraqi patients with PsA. The use of a validated screening instrument (BDI) followed by confirmation according to DSM-5 criteria strengthens the accuracy of depression assessment. In addition, disease activity was evaluated using validated indices (DAPSA and BASDAI).

CONCLUSION

Depression was common among these 100 patients with PsA, with most cases being of moderate severity. In this cross-sectional study, younger age and unmarried status were associated with depression in the overall cohort, while higher BASDAI scores were associated with depression in the axial PsA subgroup. Causality cannot be inferred.

Routine screening for depression using validated mental health screening instruments should be considered in rheumatology clinics. Patients with positive screening results should undergo appropriate psychiatric assessment or be referred to mental health services for further evaluation and management. A multidisciplinary approach involving rheumatologists, dermatologists, and mental health specialists is recommended to optimize the comprehensive care of patients with PsA. Effective management of disease activity may help reduce psychological distress among patients with PsA; however, longitudinal studies are needed to clarify the temporal relationship between disease activity and depression. Future research should include adequately powered, multicenter, longitudinal studies involving diverse Iraqi clinical settings and appropriate comparison groups to confirm these findings, evaluate temporal relationships, and identify factors associated with depression in patients with PsA.

ETHICAL DECLARATIONS

- ### Ethics Approval and Consent to Participate

  Written informed consent was obtained from all participants. The study protocol was approved by the Institutional Review Board of the Iraqi Board for Medical Specializations (Approval No. 642, dated 31 January 2024).

- ### Consent for Publication

  Not applicable.

- ### Availability of Data and Material

  The datasets generated and analyzed during the current study are available from the corresponding author upon reasonable request.

- ### Competing Interests

  The authors declare that they have no competing interests, financial or otherwise, that could be perceived as influencing the work reported in this manuscript.

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- **Use of Generative Artificial Intelligence**

The authors declare that ChatGPT, a generative AI-based tool developed by OpenAI, was used solely to enhance clarity and grammatical accuracy during the final editing phase. It was not used for content generation, data analysis, or interpretation.

- **Authors' Contributions**

All authors contributed equally to the study conception and design. All authors reviewed the manuscript and approved the final manuscript.

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