

Prevalence and predictors of depression among dermatology clinic patients in a teaching hospital, Jeddah, Saudi Arabia

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ABSTRACT

Context: Depression in patients with a skin condition can lead to severe consequences that affect the quality of life. To our knowledge, the estimated prevalence of depression in patients who visited dermatological clinics in Jeddah remains unknown. **Aims:** To assess the prevalence of depression among patients with dermatological conditions and evaluate the association between clinical and demographic characteristics and depressive symptoms. **Settings and Design:** A cross-sectional study was conducted among dermatological patients at King Abdulaziz University Hospital in Jeddah, Saudi Arabia. **Materials and Methods:** The Patient Health Questionnaire-9 (PHQ-9) was used for screening depression. **Statistical Analysis Used:** Chi-square test and odds ratios (ORs) were used to determine the association among variables. **Results:** The study included 273 participants. More than two-thirds (194) of the participants were women (71.1%). Depressive symptoms were prevalent in 43 (15.8%) participants. Depression was the most prevalent among patients with psoriasis (39.5%, $P < 0.001$), followed by those with acne (30.2% $P = 0.04$). **Conclusion:** Psychosocial assessment should be addressed when evaluating and treating dermatological diseases. Screening tools, including PHQ-9, can facilitate the early detection of depressive symptoms and improve clinical outcomes. Addressing psychosocial aspects of skin conditions may help in reducing exacerbation of symptoms, mainly for conditions aggravated by stress, including dermatitis and psoriasis.

Keywords: Depression, dermatology, Saudi Arabia, skin diseases

Introduction

Approximately 300 million people have depression worldwide, with an increase of >18% between 2005 and 2015.^[1] The prevalence of depression in Saudi Arabia (SA) is estimated to be 4.5% of the total population.^[1] Furthermore, a previous study conducted in Riyadh revealed that almost half of the patients visiting primary care had some depressive symptoms,

which were more prevalent in women and patients with a higher educational level.^[2]

The prevalence of depression is significantly higher in dermatological patients (30%) than in the general population (22%).^[3,4] In 2015, a large study conducted among dermatological outpatients across 13 European countries revealed that 10.1% of patients presented with depression, and that depression and anxiety were more prevalent in patients diagnosed with psoriasis, hand eczema, atopic dermatitis, and leg ulcers.^[5] Another Norwegian observational study showed that 5.8% of dermatological outpatients had clinical depression compared with 0.9% of controls.^[6] A similar Arab study conducted in Muscat,

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Oman, among 260 patients who visited a dermatology clinic revealed that the estimated prevalence of depressive symptoms was 24%. Furthermore, a family history of depression, comorbid medical condition, and using topicals or isotretinoin as a therapy were significantly associated with depression.^[7] Two studies in Riyadh determined that the prevalence of depression among Saudi Arabian dermatology patients was between 12.6% and 14% and reported that a lack of family support was significantly associated with depression.^[8,9]

Although the occurrence of depression in patients with a skin condition can lead to severe consequences, these can be prevented by providing psychological care and improving patients' quality of life.^[10] To the best of our knowledge, the estimated prevalence of depression in patients who visited the dermatological clinics in Jeddah, SA, remains unknown. Therefore, our cross-sectional study aimed to determine the prevalence of depression in this population to estimate the psychological intervention required for these patients.

Subjects and Methods

A cross-sectional study was conducted in the Dermatology Department of King Abdulaziz University Hospital (KAUH) in Jeddah on the western coast of SA from March 2017 to September 2017. The study has been approved by the Institutional Review Board of KAUH and written consent was obtained from all participants.

Sample size and selection of participants

Based on the literature, the estimated prevalence of depression among dermatology patients in SA is about 12.6%.^[9] The sample size was calculated using the following formula: $(n = 4pq/d^2)$.^[11] Therefore, the study required a sample size of 176 participants. However, we included 273 patients to ensure that we achieved an adequate number if any patients were excluded. The study included all patients diagnosed with dermatological disorders, who visited the dermatology clinics at KAUH in 2017, of both sexes, age 18 years or above, and who were able to understand the Arabic language.

Measurement

The Patient Health Questionnaire-9 (PHQ-9) is a self-administered questionnaire used to screen depression and assess its severity. It has been validated among several populations differing in language and cultures, including the Arabic version in SA.^[12] PHQ-9 consists of nine short questions based on the depression criteria that were established by the Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition (DSM-IV), which was kept unchanged in DMS-V. The items were scored on a 4-point scale rated from 0 (not at all) to 3 (nearly every day). The cut-off score was 10 (PHQ-9 \geq 10) which indicated that a patient had a positive screening test for depression. The total score was classified into diagnostic algorithms according to DSM-IV as the following: a score from 10 to 14 was considered moderate

depression, 15–19 was moderately severe depression, and 20–27 indicated severe depression. Furthermore, we obtained more data from patients, including demographic data, dermatological diagnosis and treatment, systemic disease, diagnosis of depression and treatment, and family history of depression.

After receiving written consent from each patient, we distributed a pretested Arabic version of PHQ-9^[12] to patients in the dermatology clinic waiting rooms. The questionnaire required 4 minutes or less to be completed.

Statistical analysis

Data entry was performed using Microsoft Excel (2010), and statistical analysis was processed using the Statistical Package for the Social Sciences (SPSS), version 24. All categorical variables, including clinical and demographic data, were described using simple frequencies, while continuous variables were described using mean, standard deviation, and range. The Chi-square test (χ^2) was used to identify the association and difference between two categorical variables. The measure of association between depression and its severity was expressed as the odds ratio (OR) with 95% confidence interval (CI). For all the statistical analyses, *P* values \leq 0.05 were considered statistically significant.

Results

The study included 273 participants with a mean age of 37.34 ± 15.71 years. More than two-thirds (194) of the sample were women (71.1%), while men represented 79 (28.9%) patients. Among them, 26 (9.5%) patients had been diagnosed and treated for a major depressive disorder and had a family history of depression. Besides this, there were 85 (31.1%) patients with chronic comorbidities. Details of the demographic data are shown in Table 1.

The most common dermatological diagnosis among the participants was dermatitis, represented in 72 (26.4%) of the patients, followed by acne and alopecia in 50 (18.3%) and 26 (9.5%) patients, respectively. Regarding the treatment, 171 (62.6%) patients were treated with topical products, while 29 (10.6%) were treated with isotretinoin and 19 (7%) with laser therapy. Details of the clinical features are presented in Table 1.

Depressive symptoms were prevalent in 43 (15.8%) patients. From the severity perspective, 29 of them experienced moderate depressive symptoms (10.6%), while 12 (4.4%) patients suffered from moderately severe depressive symptoms, and only 2 (0.7%) had severe depressive symptoms. The 14 (13.8%) patients who suffered from moderately severe to severe depressive symptoms reported that the symptoms had adversely affected their lifestyle and made it very difficult. The prevalence and severity of depressive symptoms are shown in Table 2.

The presence of depression was not associated with clinical and sociodemographic factors. Among patients with

Table 1: Demographic and clinical characteristics of the sample (n=273)

Variables	n (%)
Age (mean±SD)	37.34±15.71
Gender	
Male	79 (28.9)
Female	194 (71.1)
Nationality	
Saudi	179 (65.6)
Non-Saudi	94 (34.4)
Diagnosed with major depression	
Yes	26 (9.5)
No	247 (90.5)
Family history of depression	
Yes	26 (9.5)
No	247 (90.5)
Presence of chronic medical comorbidity	
Yes	85 (31.1)
No	188 (68.9)
Dermatological diagnosis	
Dermatitis	72 (26.4)
Acne	50 (18.3)
Alopecia	26 (9.5)
Psoriasis	24 (8.8)
Fungal infection	20 (7.3)
Viral infection	18 (6.6)
Vitiligo	16 (5.9)
Other	47 (17.2)
Treatments	
Topical	171 (62.6)
Isotretinoin	29 (10.6)
Laser	19 (7)
Minoxidil	13 (4.8)
Phototherapy	8 (2.9)
Biologics	5 (1.8)
No medication	28 (10.3)

Values are presented as mean±SD or n (%); SD: standard deviation

depressive symptoms, psoriasis (39.5%, $P < 0.001$) was the most prevalent disease, followed by acne (30.2%, $P = 0.04$). Details of the association between demographic characteristics and depressive symptoms are presented in Table 3.

Discussion

This study was the first of its kind to assess the prevalence and associated factors of depression in patients who visited the dermatological clinics at Jeddah using PHQ-9. The finding that a majority of the patients were women is supported by many epidemiological studies around the world and in SA, which have revealed that women visit dermatological clinics more often than men due to women's greater sensitivity to health-related issues.^[13,14] The most common diagnosis was dermatitis, followed by acne. This finding is consistent with other studies conducted in SA.^[13,14]

In this study, the prevalence of depressive symptoms was almost similar to another local study, which was conducted in a dermatology

Table 2: Prevalence and severity of depressive symptoms among the sample (n=273)

Variables	Depression	95% CI
Prevalence of depressive symptoms	43 (15.8)	11.7-20.1
Depressive symptoms severity		
Moderate	29 (10.6)	7.0-14.7
Moderate severe	12 (4.4)	2.2-7.3
Severe	2 (0.7)	0.0-1.8

Values are presented as n (%); CI: confidence interval

clinic in Riyadh, which revealed a prevalence of 12.6%.^[9] Conversely, the percentage of depression in this study was less compared to studies conducted in Oman (24%)^[7] and Sudan (22%).^[15] Outside the Arabic-speaking populations, the prevalence seems to be substantially higher, ranging from 23% to 62.3%.^[16,17] The variation in the prevalence of depression could be due to many factors, such as the diversity of the population and the type of scale. It is unclear whether the cultural factor has an impact on the lower prevalence of depressive symptoms in Arab populations than others. This could be explained by the fact that the Arab population may not prefer to discuss or explore their mental illness, and the stigma of psychological illness may contribute to this result.^[18]

Depression acts as a psychosocial stressor in initiating or causing a relapse of skin problems, as many studies have shown that psychological problems can change the skin's immunity.^[19] Conversely, depression could be a consequence of dermatological disorders due to their long course and effects on self-esteem and body appearance. All these factors make the skin more sensitive to stress. When stressed, the body releases more cortisol than normal, resulting in oily skin, which is more prone to acne and other dermatological problems than other skin types.^[19]

In this study, among patients with depressive symptoms, psoriasis was significantly the most prevalent disease ($P < 0.001$), followed by acne ($P = 0.04$). These results are supported by different studies, such as one conducted in Sudan, which revealed that depression was significantly higher in individuals diagnosed with psoriasis ($P = 0.006$) and acne ($P = 0.01$).^[15] In addition, a meta-analysis study conducted in 2013 demonstrated that patients with psoriasis are 1.5 times more likely to exhibit depressive signs and symptoms compared to their healthy peers.^[20] Some studies have revealed that the highest prevalence of depression and suicidal thoughts is frequently seen in cases with severe forms of acne and severe psoriasis compared to other skin disorders.^[21] Patients with psoriasis may also exhibit comorbidities that raise the risk of developing depression.^[22] Individuals with psoriasis are commonly distressed by itching and scratching, bleeding, physical shape, and flakes, which considerably influence their lives and may lead to stigmatization and isolation from social relations, thereby increasing the risk of depression.^[23]

In SA, a study conducted in Makkah found that 12.3% of patients with acne reported severe depression, while mild and moderate depression were reported by 16.2% and 12.3%, respectively.^[24] The rate of depression is almost double in acne cases compared to

Table 3: Association between demographic characteristics of the sample and the presence of depressive symptoms (n=273)

Variables	Depression	Nondepression	P*
Gender			
Male	15 (34.9)	64 (27.8)	0.45
Female	28 (65.1)	166 (72.2)	
Nationality			
Saudi	25 (58.1)	154 (67)	0.34
Non-Saudi	18 (41.9)	76 (33)	
Diagnosed with major depression			
Yes	6 (14)	20 (87)	0.42
No	37 (86)	210 (91.3)	
Family history of depression			
Yes	4 (9.3)	22 (9.6)	1.00
No	39 (90.7)	208 (90.4)	
Presence of chronic medical comorbidity			
Yes	17 (39.5)	68 (29.6)	0.26
No	26 (60.5)	162 (70.4)	
Diagnosis			
Psoriasis	17 (39.5)	7 (3)	<0.001
Acne	13 (30.2)	37 (16.1)	0.04
Dermatitis	10 (23.3)	62 (27)	0.75
Alopecias	2 (4.7)	24 (10.4)	0.36
Viral infection	0 (0)	18 (7.8)	0.11
Vitiligo	1 (2.3)	15 (6.5)	0.74
Fungal infection	0 (0)	20 (8.7)	0.09
Other	0 (0)	47 (20.4)	0.002
Treatment			
Topical	30 (69.8)	141 (61.3)	0.37
Isotretinoin	9 (20.9)	20 (8.7)	0.34
Laser	1 (2.3)	18 (7.8)	0.33
Minoxidil	1 (2.3)	12 (5.2)	0.66
Phototherapy	1 (2.3)	7 (3)	1.000
Biologics	0 (0)	5 (2.2)	0.72

Values are presented as n (%). *P-value has been driven by Chi-square test

the general population, and it affects women more frequently.^[25] Furthermore, isotretinoin, which is used to treat acne, is assumed to be related to an increased risk for depression.^[26] Another study showed that the prevalence of depression was significantly higher in acne patients (29.5%) compared to the control group.^[27] In addition, the prevalence of active suicidal thoughts among patients diagnosed with acne (5.6%) was higher compared to patients with other conditions. Hence, acne can be a significant contributory factor for depression.^[21] Psychological problems in patients with acne may be linked to hormones (androgens) and the fact that acne affects teenagers and individuals in early adult life at the time when they are profoundly worried about their physical appearance and social lives.^[28] Furthermore, due to the unwillingness of the patients to allow others to see their dermatological condition, patients' social, physical, and daily life activities may be adversely affected.

There were no significant differences between depression and the presence of chronic comorbidities among the participants.

However, the literature suggests that chronic illnesses affect the mental health of patients, decreasing treatment compliance and causing treatment dissatisfaction, which may also contribute to depression.^[22]

No gender differences were found regarding depression in this study, as the percentage of depression in both sexes was almost the same. This result supports another study which had similar conclusions.^[29] However, other studies have demonstrated that women are 1.3–2 times more likely than men to develop depression.^[30,31] This could be due to disparities in social roles and cultural standards, and genetic predisposition.^[32]

In this study, the majority of patients were treated with topical products and isotretinoin. Likewise, other studies in SA found that topical products and isotretinoin were mostly used as treatment for dermatological problems.^[24] Additional studies in the Arab region revealed the same result.^[7] More than any other reason, this is may be due to their efficacy if the patient used them correctly and their ease of use. Both treatments are used to treat acne vulgaris and other dermatological disorders. For the management of mild and moderate acne, we use a topical retinoid, while severe acne is treated by isotretinoin and oral retinoids.^[33]

In our study, the relationship between these medications and depressive symptoms was not significant, which is supported by a different study conducted in the United Kingdom.^[34] In contrast, other studies in Arabic countries found that people using isotretinoin are more susceptible to developing depressive or suicidal symptoms than others.^[7] The relationship can be explained by the psychiatric side effects of isotretinoin and its impact on the neurochemical balance, which trigger the depressive disorder.^[26]

Conversely, some studies demonstrated that isotretinoin improves the psychiatric symptoms of the patients more than other medications.^[35,36] Isotretinoin may be more effective than topical products in treating acne and some other skin problems. Thus, slow improvement with topical medications results in poor compliance from the patient, which worsens the skin condition and increases the risk of depression.

Among the sample, no significant association was observed between having a family history of depression and developing depressive symptoms. However, many studies worldwide suggest that a family history of depression is prevalent in patients who have depression.^[7,24]

Limitations

Although this study achieved its objectives, there were some unavoidable limitations. First, the cross-sectional design cannot ascertain the direction of the relationship between variables. Second, patients were enrolled from one large city only and may not represent those from other areas and hospitals of the country; therefore, these results are not representative of the

rest of the population of SA. Hence, a future study conducted nationwide is required. Moreover, the enrolment of patients who visited only the dermatology clinics in this study made the generalizability of the findings to all dermatology patients debatable since dermatology inpatients may have a different psychological profile. Third, the PHQ-9 was used to assess depressive symptoms without a clinical diagnosis of depression, for which a standardized clinical interview is necessary. Although a diagnosis cannot be made with the PHQ-9, the higher scores reflect a higher level of symptom severity, as studies indicate that PHQ-9 has a similar performance to a doctor's clinical diagnosis.^[12]

Conclusion

These results revealed that quite a few patients who visited the dermatology clinic at KAUH were noted to have depressive symptoms. Depression was not associated with clinical and sociodemographic factors, except history of depression, and it was most prevalent among patients with psoriasis, followed by those with acne. Hence, a psychosocial assessment should be addressed in the evaluation and treatment of dermatological diseases. Simple screening measures, such as PHQ-9, may be useful for the early detection of depressive symptoms and can decrease unnecessary investigations, but should be confirmed by a psychiatrist. Although the results are preliminary, they provide suggestions for future studies in different community settings. Specifically, further research on the association between skin diseases and depression, or other forms of psychiatric disorders, is necessary.

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Conflicts of interest

There are no conflicts of interest.

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