

## Psychosocial Implications and Quality of Life in Patients with Hidradenitis Suppurativa Compared to Those With Atopic Dermatitis and Psoriasis: a Cross-sectional Case-control Study

AlSiyoufi Alya<sup>1</sup>, AlMohaimed Saleh<sup>1</sup>, AlSiyoufi Sawsan<sup>1</sup>, Salah Louai<sup>2</sup>

<sup>1</sup> Department of Dermatology, Faculty of Medicine, King Abdulaziz University and King Abdulaziz University Hospital, Jeddah, Saudi Arabia

<sup>2</sup> Department of Dermatology, Ministry of Health, East Jeddah General Hospital, Jeddah, Saudi Arabia

**Key words:** Hidradenitis suppurativa, chronic inflammatory skin disease, quality of life, Dermatology Life Quality Index, Rosenberg Self-Esteem Scale

**Citation:** AlSiyoufi A, AlMohaimed S, AlSiyoufi S, Salah L. Psychosocial implications and quality of life in patients with hidradenitis suppurativa compared to those with atopic dermatitis and psoriasis: A cross-sectional case-control study. *Dermatol Pract Concept*. 2023;13(2):e2023076. DOI: <https://doi.org/10.5826/dpc.1302a76>

**Accepted:** October 13, 2022; **Published:** April 2023

**Copyright:** ©2023 AlSiyoufi et al. This is an open-access article distributed under the terms of the Creative Commons Attribution-NonCommercial License (BY-NC-4.0), <https://creativecommons.org/licenses/by-nc/4.0/>, which permits unrestricted noncommercial use, distribution, and reproduction in any medium, provided the original authors and source are credited.

**Funding:** None.

**Competing interests:** None.

**Authorship:** All authors have contributed significantly to this publication.

**Corresponding author:** Alya M. AlSiyoufi, Faculty of medicine, King Abdulaziz University, Jeddah, Saudi Arabia. Postal address: PO Box 23425, Jeddah 7625, Saudi Arabia. Tel: +966565521452 E-mail: [alia.moh1997@gmail.com](mailto:alia.moh1997@gmail.com)

**ABSTRACT** **Introduction:** Hidradenitis suppurativa (HS) is a chronic inflammatory skin disease that has been reported to have the greatest negative impact on quality of life (QoL) and psychosocial factors when compared with other skin conditions.

**Objectives:** To assess psychosocial impact and QoL impairment in patients with HS.

**Methods:** This cross-sectional case-control study included a case group with HS and a control group with psoriasis or atopic dermatitis diagnosed by a dermatologist at a public hospital in Jeddah, Saudi Arabia from 2016 to 2019. Data were obtained from medical records at a ratio of 1:2. Patients were contacted via telephone and asked to complete Arabic-validated questionnaires (Dermatology Life Quality Index [DLQI], Rosenberg Self-Esteem Scale, and Hospital Anxiety and Depression Scale) and a survey containing pictures to identify Hurley stage.

**Results:** The study included 46 patients and 101 controls (eczema, 50; psoriasis, 51). Patients had significantly higher DLQI and depression scores than did controls ( $P < 0.05$ ). Anxiety and depression scores were significantly higher in women than men ( $P < 0.05$ ). Cases with Hurley stage 3 had significantly higher DLQI scores than those with Hurley stages 1 and 2. Controls had a significantly higher percentage of employed participants ( $P < 0.05$ ).

**Conclusions:** HS had a greater psychosocial impact on QoL than psoriasis or atopic dermatitis and was associated with a lower employment rate. Women were more affected by the disease than men. Therefore, we recommend paying close attention to the psychosocial aspects of the disease and establishing educational programs and support groups for patients with HS.

## Introduction

Hidradenitis suppurativa (HS) is a chronic inflammatory condition that affects apocrine gland-containing skin, primarily in the axillary, inguinal, and anogenital regions. HS is characterized by recurring nodules, abscesses, sinuses, and scarring [1]. The pathogenesis of HS remains inadequately understood; however, it is possible that genetic and environmental factors play a role. Recently, researchers have proposed that follicular occlusion followed by a follicular rupture, leading to an immune response activation, is significant in HS development [2]. There may also be an association between HS and other inflammatory diseases, including pemphigus vulgaris [3]. HS can range from a simple recurrent cutaneous infection to severe recurrent attacks of sinus discharge and abscess formation [4,5] affecting patients' psychological well-being and quality of life (QoL) [1,5-7]. Cigarette smoking and obesity are recognized risk and aggravating factors [8,9].

The estimated prevalence of HS globally is 1%–4% [1]. It typically appears after puberty, primarily in young adults, with a lower prevalence among those aged 55 years or older (1.4% versus 0.5%), with female predominance. Women outnumber men in disease incidence by a factor of 3 [10].

Owing to the clinical nature of the disease, patients with HS tend to have poor self-esteem and QoL, as well as depression and anxiety [1]. HS has been reported to have the greatest negative impact on QoL when compared with other skin conditions [11]. Such patients are likely to avoid social interactions and have a higher rate of absenteeism from work than do individuals in the general population [1].

## Objectives

Despite the abovementioned repercussions of the disease, the negative impact of HS on QoL has not been extensively studied, especially in Saudi Arabia. The aim of this study was to assess the impact of HS on patients and society to establish funding priorities and raise awareness of the disease.

## Methods

This cross-sectional case-control study was conducted at a hospital facility between January 2016 and December 2019. The inclusion criteria were patients with HS (case group) and

patients with psoriasis or atopic dermatitis (control group) aged 16 years or older. All cases and controls were diagnosed by dermatologists and presented at the dermatology clinic of our hospital and were extracted from medical records at a ratio of 1:2 to improve study power. Patients with any psychiatric disorder were excluded to prevent confounding from psychosocial impairment from various causes other than HS.

Interviews with patients were conducted via telephone. Data on demographics (age, sex, nationality, educational level, income, occupation, body mass index, and marital status) were collected. Patients were also asked to complete the following standardized Arabic-validated questionnaires: 1) the Dermatology Life Quality Index (DLQI), a popular tool that is used exclusively for those with skin conditions and allows comparison between HS and other skin conditions [12]; 2) the Rosenberg Self-Esteem Scale (RSES), which measures patients' self-esteem [13]; and 3) the Hospital Anxiety and Depression Scale (HADS), utilized to measure anxiety and depression levels. The HADS is a 14-item scale that generates ordinal data [14]. Seven items are related to depression (HADS-D) and seven to anxiety (HADS-A). Furthermore, Hurley staging was included by asking patients to choose the picture and the descriptions that matched their Hurley stage. The source of the pictures was the HS online website [15].

Statistical analyses were performed using SPSS version 26 (IBM Corp.). Qualitative data were presented as numbers and percentages, and correlations were determined using chi-squared ( $\chi^2$ ) tests. Quantitative data were expressed as means and standard deviations. Data were analyzed using the Mann–Whitney and Kruskal–Wallis tests and independent samples t-tests. To analyze correlations, Spearman correlation coefficient was used, and tests with a  $P < 0.05$  were considered significant.

This study was approved by an Institutional Review Board in Saudi Arabia (H-02-J002). All participants provided verbal informed consent during the telephonic interviews. The participants were assured of confidentiality, and anonymity was strictly maintained.

## Results

This study included 46 cases of HS (out of 75 patients) and 101 controls (out of 150 patients) who consented to and completed the surveys. Of the controls, 50 had eczema and

51 had psoriasis. Of the 46 patients with HS, only 6 had another concurrent chronic skin disease.

Cases of HS had a higher mean age of diagnosis when compared with controls (28.76 ± 8.79 versus 20.1 ± 8.28 years, P < 0.05), while controls had a higher rate of

employment (39.6%) and a longer disease duration (6.39 ± 7.42 years) when compared with cases of HS (3.3 ± 4.38 years, P < 0.05; Table 1).

In HS cases (N = 46), topical and oral antibiotics were the most frequently used treatments (78.2% and 73.9%,

**Table 1. Difference between cases and controls according to their demographics, body mass index, and age at diagnosis.**

Variable	Cases N (%)	Controls N (%)	$\chi^2$	P
Age (years), mean ± SD	32.06 ± 10.3	26.5 ± 6.53	3.27 <sup>a</sup>	0.001
Sex				
Female	25 (54.3)	49 (48.5)	0.43	0.512
Male	21 (45.7)	52 (51.5)		
Educational level				
Illiterate	1 (2.2)	0 (0.0)	8.65	0.194
Primary	1 (2.2)	0 (0.0)		
Middle school	3 (6.5)	2 (1.98)		
High school	15 (32.6)	35 (34.65)		
Diploma	0 (0.0)	5 (4.95)		
Bachelor	24 (52.2)	54 (53.47)		
Master	2 (4.3)	5 (4.95)		
Monthly income (Saudi Riyals)				
<1000	1 (2.2)	7 (6.9)	5.13	0.399
1000–3000	6 (13)	10 (9.9)		
3001–5000	8 (17.4)	16 (15.8)		
5001–10000	5 (10.9)	14 (13.9)		
>10000	8 (17.4)	28 (27.7)		
No response	18 (39.1)	26 (25.7)		
Marital status				
Widowed	0 (0.0)	2 (2)	3.66	0.3
Single	23 (50)	59 (58.4)		
Married	19 (41.3)	37 (36.6)		
Divorced	4 (8.7)	3 (3)		
Employment				
Employed	14 (30.4)	40 (39.6)	11.2	0.003
Unemployed	30 (65.2)	29 (28.7)		
Student	2 (4.3)	32 (31.7)		
Nationality				
Saudi	41 (89.1)	95 (94.1)	1.1	0.292
Non-Saudi	5 (10.9)	6 (5.9)		
Smoking				
No	28 (60.9)	66 (65.3)	0.27	0.6
Yes	18 (39.1)	35 (34.7)		
Body mass index	29.22 ± 7.04	26.65 ± 7.12	2.3*	0.021
Age at diagnosis	28.76 ± 8.79	20.1 ± 8.28	5.75 <sup>b</sup>	< 0.001
Disease duration	3.3 ± 4.38	6.39 ± 7.42	2.68	< 0.001

SD = standard deviation.

<sup>a</sup>Mann–Whitney test, <sup>b</sup>Independent samples t-test

respectively), while biological injections were used the least (28.2%). Armpits were the most commonly affected areas (69%). Regarding patient-reported Hurley staging, 45.7%, 34.8%, and 19.6% of patients had Hurley stages 1, 2, and 3, respectively.

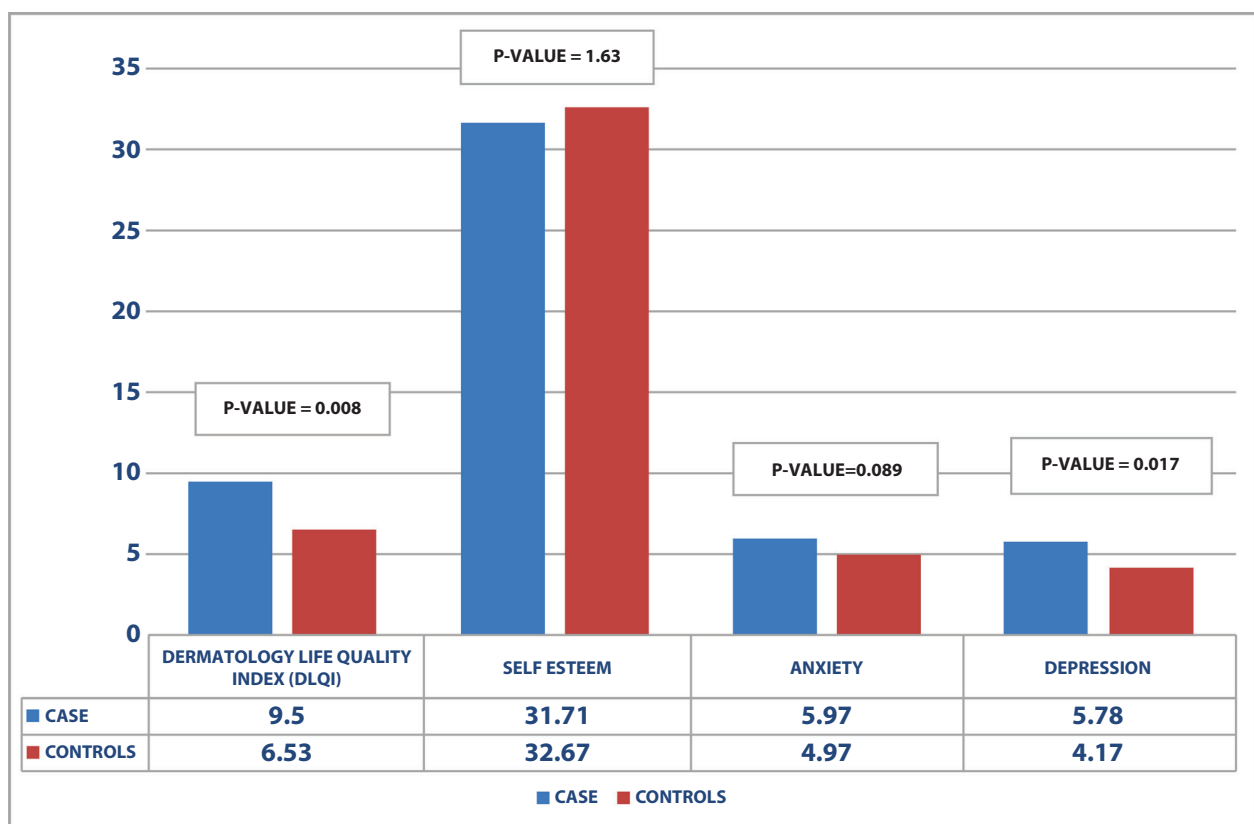
Patients with HS had significantly higher mean DLQI and HADS-D scores when compared with controls with eczema or psoriasis ( $P < 0.05$ ). No significant difference was found in HADS-A and RSES scores ( $P > 0.05$ ; Figure 1 and Table 2).

Among cases of HS, HADS-A and HADS-D scores for women were 6.14 and 5.54, respectively, which were significantly higher than those of men (4.41 and 3.8, respectively,  $P < 0.05$ ; Figure 2). Similarly, Hurley stage 3 DLQI scores

(15.11) were significantly higher than those of Hurley stage 1 (6.85) and 2 (9.81) ( $P < 0.05$ ; Table 3).

The site of the lesion was not significantly correlated with DLQI, RSES, and HADS scores ( $p > 0.05$ ). Smoking and body mass index were also not found to significantly affect Hurley stage ( $P > 0.05$ ).

A non-significant positive correlation was found between disease duration and DLQI and HADS scores ( $P > 0.05$ ), while RSES scores had a non-significant negative correlation ( $P > 0.05$ ). Regarding controls, higher RSES scores were associated with significantly longer disease duration ( $r = 0.24$ ,  $P < 0.014$ ). Furthermore, longer disease duration was associated with non-significant lower DLQI and HADS scores ( $P > 0.05$ ).

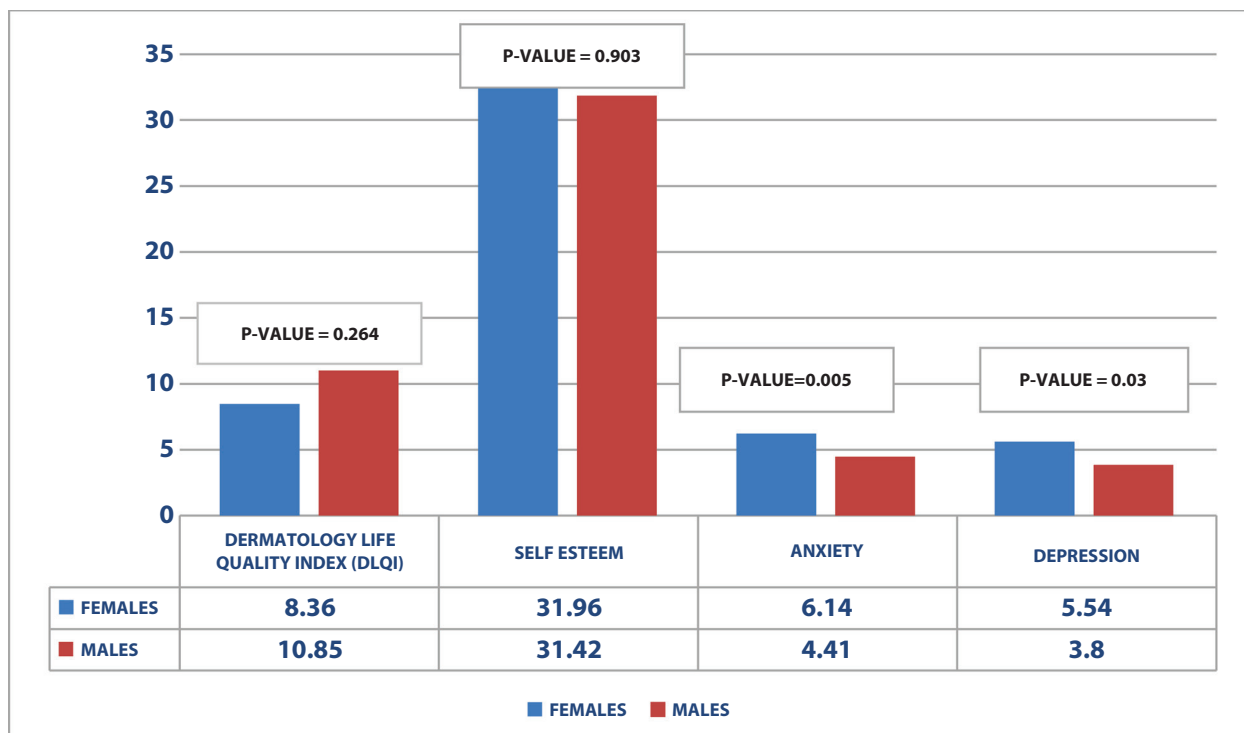


**Figure 1.** Difference between cases and controls according to Dermatology Life Quality Index, self-esteem, anxiety, and depression scores.

**Table 2.** Difference between hidradenitis suppurativa cases and controls with eczema and psoriasis according to Dermatology Life Quality Index, Rosenberg Self-Esteem Scale, and Hospital Anxiety and Depression Scale scores.

Variable	Case	Atopic dermatitis	Psoriasis	P
Dermatology Life Quality Index score, mean $\pm$ SD	9.5 $\pm$ 6.92	5.82 $\pm$ 6.03	7.23 $\pm$ 6.92	0.017
Self-esteem scale score, mean $\pm$ SD	31.71 $\pm$ 4.53	33 $\pm$ 4.69	32.35 $\pm$ 5.82	0.377
Anxiety score, mean $\pm$ SD	5.97 $\pm$ 3.57	4.9 $\pm$ 3.24	5.03 $\pm$ 3.78	0.226
Depression score, mean $\pm$ SD	5.78 $\pm$ 4.14	4.48 $\pm$ 4.27	3.88 $\pm$ 4.33	0.038

SD = standard deviation.



**Figure 2.** Difference between men and women according to Dermatology Life Quality Index, self-esteem, anxiety, and depression scores.

**Table 3.** Relationship between hidradenitis suppurativa stages and Dermatology Life Quality Index, Rosenberg Self-Esteem Scale, and Hospital Anxiety and Depression Scale scores.

Variable	Hurley stage 1	Hurley stage 2	Hurley stage 3	P
Dermatology Life Quality Index score, mean ± SD	6.85 ± 7.3	9.81 ± 5.03	15.11 ± 5.86	0.006
Self-esteem score, mean ± SD	32.71 ± 4.02	31.43 ± 3.79	29.88 ± 6.54	0.432
Anxiety score, mean ± SD	5.47 ± 3.77	6.25 ± 2.64	6.66 ± 4.66	0.447
Depression score, mean ± SD	5.76 ± 4.87	5.06 ± 3.15	7.11 ± 3.91	0.436

Kruskal–Wallis test was used for comparison.

## Conclusions

HS is a chronic skin condition characterized by episodes of mild to severe recurrent flares, deteriorating the QoL for patients and impairing their psychological well-being [1,5-7]. Numerous studies have shown that this disease has a significantly greater impact on QoL than other skin conditions such as psoriasis and atopic dermatitis [16]. Our findings support those of previous studies that have proposed that HS impairs QoL, as the disease involves debilitating characteristics such as persistent pain, abscess formation, development of disfiguring scars, and smelly discharge [17]. Moreover, these characteristics compel patients to wear covered attire to hide their skin lesions [18]. These insecurities force patients to isolate themselves from the outside world, affecting their work performance [1]; this was also observed in our study, as cases of HS were

more likely to be unemployed than controls. All the above-mentioned features of HS have a significant impact on patients mental health.

Cases of HS in our study had higher depression scores than controls, consistent with the findings reported in literature [16]. Self-esteem and anxiety were also affected, as such individuals had lower self-esteem scores and higher anxiety scores compared with the control group, although the difference was not significant.

Patients with HS are usually misdiagnosed, as they often initially visit general physicians, surgeons, urologists, and gynecologists before consulting a dermatologist [19], which may lead to delayed diagnosis, as shown in our study, along with avoidance of contact with physicians [20].

In general, depression and anxiety experienced by women with HS were greater than those experienced by their male counterparts; other studies using different scales

and measures have reported similar findings, showing that women are more psychologically affected than men. A possible explanation is that women tend to be more emotional, sensitive, and self-aware of their bodies and appearance as compared to men; therefore, severe dermatological disease may lead to anxiety and depression in women [1,21,22].

As with many other studies [1,16,23], our findings indicate that the progression of the disease to severe clinical manifestations (widespread boils with connecting tracts along the affected area accompanied by an unpleasant smelling secretion, Hurley stage 3) has a greater impact on satisfaction and enjoyment of QoL-related activities among patients with HS. Interestingly, throughout our analysis, the site of the lesion did not affect the QoL, anxiety, depression, and self-esteem scores of patients with HS, consistent with two Canadian studies [11,22]. However, while other studies have suggested that anogenital lesions have a significant effect on psychosocial aspects and QoL, a Polish study noted that the occurrence of lesions in visible skin areas plays a major role in stigmatization, which is logical, as other areas can be hidden [16,23].

The limitations of our study were confined to the small sample size and it being a single-center study. Controls representing patients with other dermatological diseases have both limitations and strengths. Despite the absence of a healthy population in our study, it fairly demonstrates the impact of HS and emphasizes the burden of this disease in comparison with other dermatological diseases.

In conclusion, we found that patients with HS experienced a greater psychosocial impact on QoL as well as a lower employment rate when compared with patients with psoriasis or atopic dermatitis. The greater the severity of HS, the greater the impact; however, women tended to be more affected by the disease than men.

Our recommendation is for dermatologists to pay close attention to the psychosocial aspects of the disease and to refer the patient to a psychiatrist if needed. Furthermore, governments should establish educational programs and support groups for patients with HS owing to the impact of the disease on not only individuals but also the healthcare system and society. Addressing the disease burden will help direct the required funds and attention to the issue. We also recommend that researchers develop HS-specific validated questionnaires for use in future multicenter case-control studies with larger sample sizes to identify the significant impacts of the disease.

## Acknowledgments

We thank Editage (www.editage.com) for English language editing.

## References

1. Kouris A, Platsidaki E, Christodoulou C, et al. Quality of life and psychosocial implications in patients with hidradenitis suppurativa. *Dermatology*. 2019;232(6):687–691. DOI: 10.1159/000453355. PMID: 28052274.
2. Ruggiero A, Martora F, Picone V, Marano L, Fabbrocini G, Marasca C. Paradoxical hidradenitis suppurativa during biologic therapy, an emerging challenge: a systematic review. *Biomedicines*. 2022;10(2):455. DOI: 10.3390/biomedicines10020455. PMID: 35203664. PMCID: PMC8962303
3. Martora F, Martora L, Fabbrocini G, Marasca C. A case of pemphigus vulgaris and hidradenitis suppurativa: may systemic steroids be considered in the standard management of hidradenitis suppurativa? *Skin Appendage Disord*. 2022;8(3):265–268. DOI: 10.1159/000521712. PMID: 35707292. PMCID: PMC9149405
4. Shirah B, Shirah H. The clinical pattern of axillary hidradenitis suppurativa among Saudi Arabians: mode of presentation and treatment challenges. *J Cutan Aesthet Surg*. 2017;10(2):95–100. DOI: 10.4103/JCAS.JCAS\_80\_16. PMID: 28852296. PMCID: PMC5561718
5. Ather S, Chan DSY, Leaper DJ, Harding KG. Surgical treatment of hidradenitis suppurativa: case series and review of the literature. *Int Wound J*. 2006;3(3):188–189. DOI: 10.1111/j.1742-481X.2006.00235.x. PMID: 16984573. PMCID: PMC7951451
6. Balik E, Eren T, Bulut T, Buyukuncu Y, Bugra D, Yamaner S. Surgical approach to extensive hidradenitis suppurativa in the perineal/perianal and gluteal regions. *World J Surg*. 2009;33(3):481–487. DOI: 10.1007/s00268-008-9845-9. PMID: 19067039.
7. Jemec GB. Clinical practice. Hidradenitis suppurativa. *N Engl J Med*. 2012;366(2):158–164. DOI: 10.1056/NEJMc1014163. PMID: 22236226.6.
8. König A, Lehmann C, Rompel R, Happel R. Cigarette smoking as a triggering factor of hidradenitis suppurativa. *Dermatology*. 1999;198(3):261–264. DOI: 10.1159/000018126. PMID: 10393449.
9. Sartorius K, Emtestam L, Jemec G, Lapins J. Objective scoring of hidradenitis suppurativa reflecting the role of tobacco smoking and obesity. *Br J Dermatol*. 2009;161(4):831–839. DOI: 10.1111/j.1365-2133.2009.09198.x. PMID: 19438543.
10. Alhusayen R, Shear NH. Pharmacologic interventions for hidradenitis suppurativa. *Am J Clin Dermatol*. 2012;13(5):283–291. DOI: 10.2165/11631880-000000000-00000. PMID: 22676319.
11. Alavi A, Anooshirvani N, Kim WB, Coutts P, Sibbald RG. Quality-of-life impairment in patients with hidradenitis suppurativa: a Canadian study. *Am J Clin Dermatol*. 2015;16(1):61–65. DOI: 10.1007/s40257-014-0105-5. PMID: 25432664.
12. Bin Saif GA, Al-Balbeesi AO, Binshabaib R, et al. Quality of life in family members of vitiligo patients: a questionnaire study in Saudi Arabia. *Am J Clin Dermatol*. 2013;14(6):489–495. DOI: 10.1007/s40257-013-0037-5. PMID: 23839260.
13. Rice V, Weglicki L, Templin T, Hammad A, Jamil H, Kulwicki A. Predictors of Arab American adolescent tobacco use. *Merrill Palmer Q*. 2006;52(2):327–342. DOI: 10.1353/mpq.2006.0020. PMID: 16909165. PMCID: PMC1533871
14. Terkawi AS, Tsang S, AlKahtani GJ, et al. Development and validation of Arabic version of the Hospital Anxiety and Depression Scale. *Saudi J Anaesth*. 2017;11(Suppl 1):S11–S18. DOI: 10.4103/sja.SJA\_43\_17. PMID: 28616000. PMCID: PMC5463562

15. European HS Foundation. Hidradenitis suppurativa online. Accessed October 22, 2019. Available from [https://www.hsonlinearabia.com/en\\_ae/home.html](https://www.hsonlinearabia.com/en_ae/home.html)
16. Matusiak L, Bieniek A, Szepietowski JC. Psychophysical aspects of hidradenitis suppurativa. *Acta Derm Venereol.* 2010;90(3): 264–268. DOI: 10.2340/00015555-0866. PMID: 20526543.
17. Smith HS, Chao JD, Teitelbaum J. Painful hidradenitis suppurativa. *Clin J Pain* 2010; 26(5):435–444. DOI: 10.1097/AJP.0b013e3181ceb80c. PMID: 20473053.
18. Esmann S, Jemec GB. Psychosocial impact of hidradenitis suppurativa: a qualitative study. *Acta Derm Venereol.* 2011;91(3): 328–332. DOI: 10.2340/00015555-1082. PMID: 21394419.
19. Kokolakis G, Wolk K, Schneider-Burrus S, et al. Delayed diagnosis of hidradenitis suppurativa and its effect on patients and healthcare system. *Dermatology* 2020;236(5):421–430. DOI: 10.1159/000508787. PMID: 32610312. PMCID: PMC7592906
20. Saunte DM, Boer J, Stratigos A, et al. Diagnostic delay in hidradenitis suppurativa is a global problem. *Br J Dermatol.* 2015;173(6):1546–1549. DOI: 10.1111/bjd.14038. PMID: 26198191.
21. Abolfotouh MA, Al-Khowailed MS, Suliman WE, et al. Quality of life in patients with skin diseases in central Saudi Arabia. *Int J Gen Med.* 2012;5:633–642. DOI: 10.2147/IJGM.S33276. PMID: 22866015. PMCID: PMC3410718
22. Alavi A, Farzanfar D, Rogalska T, Lowes MA, Chavoshi S. Quality of life and sexual health in patients with hidradenitis suppurativa. *Int J Womens Dermatol.* 2018;4(2):74-79. DOI: 10.1016/j.ijwd.2017.10.007. PMID: 30023423. PMCID: PMC6047191
23. Janse IC, Deckers IE, van der Maten AD, et al. Sexual health and quality of life are impaired in hidradenitis suppurativa: a multicentre cross-sectional study. *Br J Dermatol.* 2017;176(4): 1042–1047. DOI: 10.1111/bjd.14975. PMID: 27534591.