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Assess Patients' Health-related Quality of Life in relation to various Skin Conditions and Related Factors in Saudi Arabia 2024

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Abstract:

Background: People with skin problems who do not have a clinical consultation are not included in the numerous extensive studies on the burden of skin diseases that have been conducted on patients enrolled in clinical centers. Skin diseases have caused a heavy burden on the infected population worldwide. The majority of dermatological conditions have been shown to have an impact on patients' health-related quality of life (HRQOL). Nevertheless, Saudi Arabia has not conducted any research on the magnitude of its adverse effects and predictors.

The study aimed: To assess HRQOL among patients with different skin diseases and identify related factors.

Methods: A cross-sectional study was utilized among 430 participants at Saudi Arabia clinical centers from January to March 2024. Data collection tool was employed EuroQol-5 Dimensions-5 Levels (EQ-5D-5L), which measures the EQ-5D index from five domains including mobility, self-care, usual activity, pain/discomfort, and anxiety/depression. Multivariate Tobit regression was adopted to determine factors that were associated with HRQOL (EQ-5D index).

Results: The highest prevalence was 28.8% for atopic dermatitis, followed by 17.0% for contact dermatitis and 13.0% for cutaneous fungal infections. In terms of HRQOL, the most prevalent health issue among patients with skin conditions was anxiety/depression (71.8%), which was followed by pain/discomfort (63.6%). The average score on the EQ-5D index was 0.73 (SD = 0.19). Males with psoriasis (mean = 0.59) and females with skin infections (mean = 0.52) had the lowest EQ-5D index scores. Compared to men, women scored far lower (Coef. = -0.06; 95% CI = -0.11 to -0.01). This study highlighted the vulnerability of patients with varying socioeconomic statuses to their HRQOL and showed that patients with skin illnesses had low

HRQOL.

Keywords: Health-related quality of life; Socioeconomic Status; Skin disorder

Introduction:

Several skin diseases are known to significantly affect patients' quality of life [(1)]. Not only life-threatening diseases, such as malignant melanoma, but also chronic diseases Dermatological disorders (DDs) have a significant global public health impact, among the top ten global diseases [(2-4)]. The most common prevalent skin disorders include acne, atopic dermatitis (eczema), psoriasis, rosacea, skin cancers, vitiligo, herpes zoster, sunburn, tinea pedis, melasma, and contact dermatitis [(4)]. Most of DDs are chronic and significantly reduce HRQOL among its patients [(5)].

Skin conditions have been a major burden on people of all ages and genders worldwide, particularly in tropical areas [(6, 7)]. According to The Global Burden of Disease project, skin disorders rank fourth among non-fatal morbidity causes globally [(8)] and are predicted to generate 41.6 million disability-adjusted life years (DALYs), or 1.79% of the total burden of diseases [(7)]. At 0.38% of all disease burdens worldwide, dermatitis is the most common skin condition, followed by urticaria (0.19%), psoriasis (0.19%), and acne vulgaris (0.29%) [(7)]. According to Hahnel et al. (2017) [(9)], who conducted a systematic analysis, fungal infections (prevalence rate 14.3% to 64%), dermatitis (1% to 58.7%), xerosis (5.4% to 85.5%), and benign skin tumors (1.7% to 74.5%) were the most prevalent skin illnesses among individuals aged 65 and over.

Skin conditions have a wide range of negative impacts on a patient's life. They might experience mortality, mental anguish, and physical damage [(10)]. Skin conditions frequently serve as the outward manifestation of more serious conditions as HIV/AIDS or several neglected tropical diseases [(7, 11)]. In terms of financial strain, individuals with skin conditions are also more likely to experience excessive medical expenses and decreased productivity at work [(12)]. Furthermore, severe facial and body skin conditions can lower a patient's sense of confidence and self-worth, which has a big impact on how they participate in social activities [(13-15)].

Considering skin illnesses have complex effects on patients' lives, doctors are urged to focus on enhancing their patients' general health and well-being rather than only their medical results. The health-related quality of life (HRQOL) is one metric that can represent these elements [(16)]. According to earlier research, a patient's state of wellness and illness load would be determined by how they perceive their physical, mental, and emotional health as well as their social functioning [(16, 17)]. Additionally, the HRQOL assessment offers a consistent result for comparing the effects of various skin conditions and the efficacy of various treatment choices for each condition. Numerous studies have attempted to assess the HRQOL of individuals with particular skin conditions [(13, 14, 18-20)].

People with hidradenitis suppurativa, blistering disorders, leg ulcers, psoriasis, and eczemas had the highest HRQOL impairment, according to a multicenter study done in Europe in 2013 across 13 countries and 26 illness categories [(21)]. However, the results of these studies varied significantly, requiring contextualized evidence for each country in order to optimize the treatment outcomes in each population. Therefore, the aim of this study was to investigate how various skin conditions affect people's HRQOL. Additionally, we identified the most socially

vulnerable groups for the HRQOL decline brought on by skin conditions by calculating socioeconomic disparities in HRQOL among these patients.

Methods:

A cross-sectional study was utilized among 430 participants at the outpatient clinic in clinical centers at Saudi Arabia from January to March 2024. The study was approved by the Ethical Committee in University. A convenient sampling technique was utilized to select participants for this study among patients who were diagnosed and treated at the outpatient clinic at the time of study. Eligibility criteria for participating in the present study were: being 18 years old or above; being able to coherently answer the questions asked by our interviewers; and giving written consent expressing agreement to be involved in the study.

To estimate the appropriate sample size, we used confidence level = 95%; expected mean = 0.70; expected standard deviation = 0.20 (according to a previous study in 13 European countries [21], and absolute precision required = 0.02. The essential sample size was 385. After adding 15% of the sample size to prevent those who did not agree to participate or did not complete the interview, the final sample size was 443 patients. Finally, we successfully recruited a total of 430 participants for the study (97.1%). Face-to-face interviews were conducted by researchers with 15–20 min per interview using a structured questionnaire in Arabic language. Selected participants were invited to a private room at the clinical center to ensure the confidentiality and quality of the answers.

The information on the type and severity of dermatology diseases respondents was collected by extracting these data from patients' medical records. The HRQOL of the patients was assessed using the EuroQOl-5 dimensions-5 levels (EQ-5D-5L) instrument. The version used in this study was translated into Arabic and validated in another HRQOL study [22, 23]. The EQ-5D-5L has good psychometric properties with a good convergent validity, discrimination validity, and Cronbach's alpha = 0.85 [22]. The EQ-5D-5L measured HRQOL through five domains: mobility, self-care, usual activities, pain/discomfort, and anxiety/depression. Each domain had five different respond options to choose, ranging from no problem to extreme problem/impossible to do. The combination of responses yielded 3125 unique health statuses [24]. By using a cross-walk value set developed for 3125 health statuses were converted into 3125 single indexes within the score range of –0.566 to 1.000 [24, 25].

SPSS version 28 was used to analyze the data. We used Mann–Whitney and Chi-squared tests to determine differences between genders. Multivariate Tobit regression, along with stepwise selection strategies ($p < 0.2$ as the threshold for selecting variables), was adopted to identify factors that were associated with the HRQOL of respondents. A p-value < 0.05 was considered statistically significant.

Results:

Table (1) shows that the majority were female (54.7%). The mean age of participants was 36.5 (SD = 14.1) years, in which the highest proportion was the age group of 18–30 years (45.6%). Most of the patients had completed more than a high school education (66.5%) and had partners or were married (62.2%). About one third of the patients (32.1%) were freelancers, while 2.8%

were unemployed. Patients were predominantly living in urban areas (62.4%) and had health insurances (83.2%). Differences between male and female patients were found in age, education, marital status, and occupation ($p < 0.05$).

Table (1): Demographic characteristics of study participants

Characteristics	Male		Female		Total		p-Value
		%	n	%	n	%	
Age group							**0.11**
18–30 years	8	0.6	113	49.8	191	45.6	
31–40 years	3	2.4	45	19.8	88	21.0	
41–50 years	7	4.1	37	16.3	64	15.3	
51–60 years	4	2.5	20	8.8	44	10.5	
>60 years	0	0.4	12	5.3	32	7.6	
Education							<0.01
<High school	2	6.5	29	12.4	61	14.3	
High school	8	4.7	34	14.5	82	19.2	
>High school	14	8.8	171	73.1	285	66.5	
Marital status							
Single	3	2.5	99	42.1	162	37.8	0.04
Married	31	7.5	136	57.9	267	62.2	
Occupation							<0.01
Unemployed		.6	7	3.0	12	2.8	
Freelancer	2	6.9	66	28.1	138	32.1	
worker	4	3.1	103	43.8	187	43.4	
Student	4	.2	39	16.6	53	12.3	
Others	0	0.3	20	8.5	40	9.4	
Living location							
Urban	13	7.9	154	66.1	267	62.4	0.08
Rural	2	2.1	79	33.9	161	37.6	
Having health insurance							
Yes	51	1.6	186	84.5	337	83.2	0.43
No	4	8.4	34	15.5	68	16.8	
	Mean	**SD**	**Mean**	**SD**	**Mean**	**SD**	
Age	8.1	4.6	35.1	13.6	36.5	14.1	0.04
Household month income	011.9	024.2	896.7	1204.9	948.4	1622.5	0.41

Table (2) shows the health conditions and HRQOL of dermatology patients. The rate of atopic dermatitis was the highest with 28.8%, following by contact dermatitis (17.0%) and skin fungal infections (13.0%). Regarding HRQOL, anxiety/depression was the most common health problem in patients with skin diseases (71.8%), followed by pain/discomfort (63.6%). The mean EQ-5D index score was 0.73 (SD = 0.19).

The study result reveals the proportion of patients suffering problems in each EQ-5D dimension according to different dermatology diseases. The percentage of patients with skin infections having mobility problems was the highest (61.5%). Meanwhile, the rates of psoriasis patients with problems in the other four dimensions including self-care, usual activities, pain/discomfort, and anxiety/depression were the highest compared to those with other diseases (31.0%, 38.5%, 82.8%, and 82.1%, respectively).

Regarding EQ-5D index score, warts patients had the highest score at 0.80 while psoriasis patients had the lowest score at 0.63. In terms of gender, the EQ-5D index score was the lowest in female patients with skin infections (mean = 0.52) and in male patients with psoriasis (mean = 0.59)

Table (2): Health-related quality of life (HRQOL) and health status of respondents

Characteristics	Male		Female		Total		-Value
	n	%	*n*	%	*n*	%	
Dermatology diseases							
Atopic dermatitis	44	22.6	80	34	124	28.8	0.01
Contact dermatitis	32	16.4	41	17.4	73	17.0	.78
Psoriasis	17	8.7	12	5.1	29	6.7	.14
Skin infections	8	4.1	5	2.1	13	3.0	.23
Skin fungal infections	35	17.9	21	8.9	56	13.0	0.01
Urticaria	20	10.3	24	10.2	44	10.2	.99
Warts	5	2.6	11	4.7	16	3.7	.25
Zona	13	6.7	18	7.7	31	7.2	.69
EQ-5D-5L dimensions							
Having problems wi mobility	49	25.1	60	26.0	109	25.6	.84
Having problems with sel care	23	11.9	34	14.5	57	13.3	.42
Having problems with usu activity	43	22.5	60	26.2	103	24.5	.38
Pain/discomfort	122	62.9	150	64.1	272	63.6	.80
Anxiety/depression	126	66	179	76.5	305	71.8	.02
Characteristics	**Mean**	**SD**	**Mean**	**SD**	**Mean**	**SD**	
EQ-5D index	0.74	0.19	0.722	0.19	0.73	0.19	.39

Table (3) exposes that among dermatology patients, being female and living in rural areas were positively associated with having problems in anxiety/depression (OR = 2.35; 95% CI = 1.21–4.56 and OR = 1.94; 95% CI = 1.03–3.65, respectively). Those in the highest income group (OR = 3.11; 95% CI = 1.45–6.68) or living in rural areas (OR = 2.38; 95% CI = 1.40–4.03) were more likely to experience pain/discomfort compared to patients in the lowest income group or living in urban areas, respectively.

Regarding the EQ-5D index, female patients had a significantly lower score compared to males (Coef. = −0.06; 95% CI = −0.11−−0.01). Higher income (compared to the lowest income) and living in rural areas (compared to urban areas) were also negatively correlated with the EQ-5D

index score. Patients who were students had markedly higher EQ-5D index scores than unemployed patients (Coef. = 0.21; 95% CI = 0.05–0.37).

In terms of dermatology illnesses, patients having skin infections or psoriasis were more likely to suffer pain/discomfort. Patients with psoriasis also had a significantly lower EQ-5D index score compared to those not having this disease.

Table (3): Socioeconomic factors associated with the HRQOL of dermatology patients

Characteristics	**EQ-5D Index**		**Having Problems with Pain/Discomfort**		**Having Problems with Anxiety/Depression**	
	Coef.	**95% CI**	**OR**	**95% CI**	**OR**	**95% CI**
Gender (Female vs. Male)	−0.06 *	−0.11; −0.01			2.35 *	1.21; 4.56
Education					1.24	0.99; 1.55
Occupation (vs. Unemployed						
Freelancer	0.10	−0.05; 0.25				
worker	0.14	−0.01; 0.29				
Student	0.21 *	0.05; 0.37				
Others	0.10	−0.06; 0.26				
Household monthly income quintiles (vs. Lowest)						
Low	−0.12 *	−0.19; −0.04	1.73	0.82; 3.64		
Middle	−0.04	−0.12; 0.04	1.26	0.60; 2.67		
High	−0.05	−0.13; 0.03	1.56	0.74; 3.29		
Highest	−0.12 *	−0.19; −0.04	3.11 *	1.45; 6.68		
Having health insurance (No vs. Yes)	0.05	−0.01; 0.12				
Living location (Rural vs. Urban)	−0.08 *	−0.14; −0.03	2.38 *	1.40; 4.03	1.94 *	1.03; 3.65
Dermatology diseases						0.66; 8.41
Contact dermatitis (Yes vs. No)			1.64	0.83; 3.22		
Skin fungal infections (Yes vs. No)			2.60 *	1.15; 5.84		
Psoriasis (Yes vs. No)	−0.15 *	−0.26; −0.05	25 *	1.60; 32.88	2.36	
Warts (Yes vs. No)	0.09	−0.03; 0.22				
Zona (Yes vs. No)			2.82	0.78; 10.23		
* $p < 0.05$.						

Discussion:

The current study investigated the socioeconomic variables of skin disease patients' HRQOL. Overall, we discovered that individuals with particular dermatological conditions and the group as a whole had low HRQOL. We also emphasized that the groups most susceptible to the decline

in HRQOL if suffering from dermatological conditions were women, those without jobs, and those residing in rural areas. Notably, high wealth was a strong predictor of low HRQOL among dermatological patients, which was unexpected.

In the present study found that dermatological patients had a low EQ-5D index (mean value of 0.73), which was significantly lower than the general population [(23)], especially among disadvantaged groups such the elderly, those living in rural areas, or those living in other areas [(26-28)]. Comparing the HRQOL for each disease to earlier research, we were able to establish its robustness using subgroup analysis. For example, this study's urticaria patients' mean EQ-5D index score was 0.78, which is the same as the index score of patients with moderate urticaria in three randomized therapeutic trials [(29)].

While the mean score of atopic dermatitis (eczema) patients (mean = 0.73) was about equal to this group in the United States, the EQ-5D index found in our psoriasis patients (mean = 0.65) was comparable to the mean score of patients with moderate-to-severe psoriasis in Europe [(30, 31)]. As a result, we think that this finding may be utilized in part as an essential part of calculating quality-adjusted life years (QALYs), which is a measure of health economic assessment and helps with dermatology care decision-making [(32)].

The current study revealed that a notably high percentage of patients with various dermatological conditions experienced both physical and psychological side effects. Dermatology conditions have been shown to have clinical effects on patients' physical health, anxiety, and depression [(33-35)], which were significant contributors to the decline, in HRQOL [(34, 35)]. The development of depression/anxiety circumstances, which can be explained by the start of immune problems and increased pro inflammatory cytokine concentrations, may occur alongside the uncomfortable or itchy conditions that patients must endure during the course of their diseases [(18, 36, 37)].

Furthermore, according to some earlier research, people with skin conditions may experience social stigma because of their atypical skin [(38, 39)]. Compared to populations with other chronic disorders like respiratory and cardiovascular diseases, over 70% of our respondents in our study reported having anxiety or depression, which was more severe [(34, 38)]. Compared to men, women were shown to be more affected by dermatological conditions because they had a significantly worse HRQOL and a higher risk of anxiety and depression. This result was in line with other research [(40-42)].

This was frequently due to the fact that women were more sensitive to physical appearance than men were, and that women may experience greater psychological anguish from dermatological problems [(40)]. Another study suggested that the increased incidence of depression in females was caused by genetic and other biological variations between the sexes, such aberrant genes, metabolism, or histamine [(43)]. Among dermatology patients, residing in a rural region and being unemployed were found to be significant predictors of worse HRQOL. Previous research showed that working persons had a greater HRQOL than jobless people because they had a higher standard of living and had access to dermatological care early [(20, 23, 44)].

These explanations can be used to explain why patients in rural areas and those in urban areas have different HRQOLs [(14, 45, and 46)]. It's interesting to note that, in contrast to earlier research done globally, we discovered in multivariate models that patients with greater financial status were more likely to have a lower HRQOL and experience pain or discomfort [(19, 47, and 48)]. One

possible explanation for these events could be the severity of the sickness. Similar findings indicating income had a negative correlation with HRQOL were discovered in an Indian study [47].

Researchers assume that people who earn more also worry more about their appearance and self-worth than people who earn less [49, 50]. It is often known that skin disorders significantly impact a patient's comfort and attractiveness. Additionally, we discovered in a regression model that patients in the highest income group had a threefold higher likelihood of experiencing pain or discomfort compared to those in the lowest income group. Overall, it's possible that patients with higher incomes had a lower HRQOL than those with lower incomes. The cause of this is unclear, though, and more research is needed to fill up this knowledge gap.

Conclusions:

This cross-sectional study concluded that patients with skin conditions had a low HRQOL, with psoriasis patients having the lowest HRQOL and warts patients having the greatest. The effects of socioeconomic status on HRQOL were also highlighted in this study, especially for patients who were female, unemployed, lived in rural regions, and had high household incomes. The results of this study could be used to make a number of recommendations. First, because pain and anxiety/depression are very common among patients with skin illnesses should receive appropriate pain management and psychological counseling services. Second, differences in HRQOL by gender, place of residence, and occupation indicate that disadvantaged populations such as female, rural, and jobless patients should receive greater consideration while creating dermatology care services. Third, to evaluate the success in reducing the disparities between various socioeconomic groups among skin disease patients, HRQOL should be routinely monitored using a brief, straightforward tool like the EQ-5D-5L.

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