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ORIGINAL RESEARCH

Impact of Rosacea on the Quality of Life: A Population-Based Cross-Sectional Study in Saudi Arabia

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Purpose: Rosacea is a chronic skin condition that affects social and professional life, with a prevalence of 1.59%in Saudi Arabia. It has four subtypes and is linked to anxiety, depression, and reduced quality of life (QoL). Many patients report diminished self-esteem and social challenges. Given the limited research in Saudi Arabia, this study aims to assess rosacea's impact on QoL.

Patients and Methods: This cross-sectional study was conducted at a single secondary institution and via social media outreach to Saudi residents with a confirmed diagnosis of rosacea. Participants completed an electronic questionnaire covering sociodemographic data, rosacea severity, and Dermatology Life Quality Index (DLQI) scores. The data were analyzed using descriptive statistics, *t*-tests, chi-square tests, and correlation analyses with a significance level of $p<0.05$. Power calculations were made to ensure adequate sample sizes, and missing data were imputed.

Results: A total of 176 patients were included in the study, with a mean age of 28.8 years. More than half of the participants (52.5%) reported that rosacea had severely impaired their quality of life. Increased disease severity, as indicated by higher Clinician's Erythema Assessment (CEA) scores, the presence of papules, and ocular involvement, was significantly associated with poorer QoL. A longer duration of disease was positively correlated with greater QoL impairment. There was a higher prevalence of topical ivermectin use among individuals reporting severe impairment in quality of life.

Conclusion: This study underscores the substantial impact of rosacea on patients' quality of life in Saudi Arabia, particularly in emotional and social domains. Higher DLQI scores were significantly associated with longer disease duration and greater clinical severity. As a result of these findings, it is imperative to treat rosacea holistically, addressing both its physical manifestations and psychological burden of rosacea.

Keywords: rosacea, quality of life, psychosocial burden, clinical severity, patient-reported outcomes

Introduction

A person's face plays a crucial role in every aspect of life, including social, romantic, and professional interactions. Rosacea is a long-term skin condition marked by a variety of symptoms that fluctuate between periods of exacerbation and remission.[1] Despite its significance, accurate estimates of rosacea prevalence in the Middle East remain scarce. In Saudi Arabia, a study by Al-Hoqail found that the prevalence of rosacea is approximately 1.59%.[2] The disease is classified into four categories based on its morphological features: erythematotelangiectatic, papulopustular, phymatous, and ocular.[3]

According to the World Health Organization (WHO), Quality of Life (QoL) refers to an individual's perception of where he or she stands in life in relation to the culture and value systems in which they live, as well as the goals, expectations, and concerns of the individual. Rosacea has been shown to significantly impact QoL, with studies linking it to an increased risk of psychiatric disorders.[1,3,4] For instance, a cross-sectional observational study conducted in a tertiary

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hospital dermatology clinic assessed 469 individuals with rosacea. A majority of participants reported reduced QoL, with 44.8% experiencing anxiety, 37.5% reporting depression, and both conditions being primarily mild to moderate in severity.[5] Additionally, a survey conducted by the National Rosacea Society (NRS), involving over 400 participants, revealed that 75% reported low self-esteem, 70% felt embarrassed, 69% expressed frustration, and 56% felt deprived of pleasure or happiness.[6]

Rosacea is often marked by erythema, primarily in convex areas of the face, such as the cheeks, nose, chin, and forehead.[7] An international study investigating the psychological effects of rosacea-associated facial erythema included 6,831 participants from eight countries. The study found that facial erythema negatively affected participants emotionally, socially, and professionally, demonstrating a strong association between poor dermatological health and adverse personality traits.[8] Consequently, the psychological burden experienced by patients and its effect on their QoL is substantial and must not be overlooked.

Dermatologists are becoming more concerned about rosacea's impact on mental health and quality of life. A review of the existing literature underscores the need for further research assessing the QoL of individuals with rosacea. It is essential to recognize that the QoL of patients with rosacea is highly variable and may differ across cultural contexts. Therefore, this study aims to assess the effects of rosacea on patients' quality of life in Saudi Arabia.

Materials and Methods

Study Design and Population

This study employed an anonymous, population-based cross-sectional design. Data were collected at the outpatient dermatology clinics of a single secondary care institution, alongside online recruitment efforts through social media platforms to reach the broader Saudi population. Recruitment was conducted using a non-probability convenience sampling technique. Eligible participants were adults (≥18 years) residing in Saudi Arabia with a dermatologist-confirmed diagnosis of rosacea. Exclusion criteria included individuals younger than 18 years, those without a dermatologist-confirmed diagnosis, patients with preexisting psychiatric disorders that could influence QoL, and those who declined participation or submitted incomplete questionnaires. Sample size estimation was performed using Epi Info software, based on the previously reported rosacea prevalence of 1.59% from Al-Hoqail's study,[9] with 80% power, a 95% confidence level, and a ±5% margin of error, resulting in a minimal sample size of 24 participants. However, the actual recruitment exceeded this threshold to account for potential non-responses and incomplete data.

Ethics Statement and Informed Consent

A review and approval of the study protocol was conducted by the Institutional Review Board (IRB) of Princess Nourah bint Abdulrahman University (No. 23–0541) prior to study initiation. Study objectives and potential benefits were explained in detail to all participants. Electronic informed consent was obtained at the beginning of the survey. Participation was voluntary, responses were anonymous, and all identifying information was removed to ensure confidentiality.

Study Survey

Research data were collected using a structured, anonymous electronic questionnaire. The survey consisted of four sections: sociodemographic and clinical data, rosacea severity assessment using the Clinician's Erythema Assessment (CEA) and Clinician's Assessment of Telangiectasia (CAT) scores,[10] and the Dermatology Life Quality Index (DLQI).[11] Rosacea severity was evaluated using validated instruments, including the CEA, CAT, and additional symptom-based items. The DLQI, a 10-item scale, was employed to assess the impact of rosacea on participants' quality of life. It includes six domains reflecting several aspects of quality of life: symptoms and feelings (items 1–2), daily activities (items 3–4), leisure (items 5–6), work/school (item 7), personal relationships (items 8–9), and treatment (item 10). The DLQI scoring system was categorized as follows: scores of 0–1 = no effect, 2–5 = a small effect, 6–10 = moderate effect, 11–20 = significant effect, and 21–30 = very large effect on quality of life. A score above 10 indicates a substantial impairment in quality of life. The questionnaire was translated into Arabic, reviewed by clinical and linguistic experts, and pilot-tested for clarity and cultural appropriateness.

Statistical Analysis and Data Management

R software (version 4.3) was used for statistical analysis. A mean and standard deviation were presented for continuous variables, whereas frequencies and percentages were used for categorical variables, depending on their distribution. Associations between QoL scores and demographic or clinical variables were assessed using independent sample t-tests for continuous variables and chi-square tests for categorical variables. Spearman correlation analysis was used where appropriate based on the distribution of variables. Missing data was imputed to minimize bias. Statistical significance was set at p-value <0.05. All analysis was conducted using standard statistical procedures.

Results

Table 1 demonstrates the descriptive statistics of the study sample. The questionnaire was completed by 176 patients, with a mean age of 28.8 ± 8.25 years. The majority of respondents were female (79.5%, n = 140), while males accounted for 20.5% (n = 36). Most patients were Saudi nationals (84.1%, n = 148), and nearly half resided in the Central region

Table 1 Descriptive Statistics for the Study Sample N=176

Variables	Mean ± SD
Age	28.8 (±8.25)
Gender	N (%)
Female	140 (79.5%)
Male	36 (20.5%)
Nationality	
Non-Saudi	28 (15.9%)
Saudi	148 (84.1%)
Residence	
Central region	86 (48.9%)
Eastern region	19 (10.8%)
Northern region	15 (8.52%)
Southern region	17 (9.66%)
Western region	39 (22.2%)
Marital status	
Divorced	2 (1.14%)
Married	70 (39.8%)
Single	101 (57.4%)
Widowed	3 (1.70%)
Education	
Bachelor's degree	121 (68.8%)
High school or less	32 (18.2%)
Post-graduate	23 (13.1%)

(*Continued*)

Table 1 (Continued).

Variables	Mean ± SD
Employment	
Student	48 (27.3%)
Unemployed	32 (18.2%)
Monthly income	
<5000	38 (21.6%)
5000-10000	53 (30.1%)
>10000	85 (48.3%)

Note: Data were summarized using counts and percentages.

(48.9%, n = 86), followed by the Western (22.2%, n = 39) and Eastern regions (10.8%, n = 19). In terms of marital status, over half of the respondents were single (57.4%, n = 101), while 39.8% (n = 70) were married. Approximately two-thirds of the respondents (68.8%, n = 121) had a bachelor's degree, and 18.2% (n = 32) had a high school education or less. Regarding employment status, 38.1% (n = 67) were employed, 27.3% (n = 48) were students, and 18.2% (n = 32) were unemployed. Nearly half of the respondents reported a monthly income exceeding 10,000 SAR (48.3%, n = 85).

The *DLQI* item with the highest reported impact was "feelings of embarrassment or self-consciousness" due to skin problems, yielding a mean score of 3.67 ± 1.17. Notably, 34.7% of respondents indicated experiencing this "very much". This was followed by "interference with social or leisure activities", which had a mean score of 3.20 ± 1.44, with 24.4% reporting a "very much" impact. The item "addressing skin discomfort, including itchiness, soreness, or pain" had a mean score of 3.14 ± 0.95; 42.0% of respondents reported experiencing this "a lot", and 11.4% "very much". "Difficulty performing daily activities due to skin issues" was also significant, with a mean score of 3.11 ± 1.44 and over 44% of respondents indicating a moderate to severe impact. Lastly, interference with routine tasks including "shopping or caring for the home or garden" had a mean score of 3.07 ± 1.35. In contrast, the lowest impact was noted for "sexual difficulties related to skin conditions", which had a mean score of 2.01 ± 1.20; notably, 45.5% of respondents marked this item as "not relevant". Similarly, "relationship-related issues with a partner or relatives" received a mean score of 2.60 ± 1.41. Other domains reflected a moderate burden, including "the influence of skin problems on clothing choices" (mean = 2.62 ± 1.33), "disruption of work or study activities" (mean = 2.69 ± 1.49), and "inconvenience associated with treatment(mean = 2.85 ± 1.48).

Table 2 presents patients' self-assessment of rosacea severity. All 176 patients completed the questionnaire. The median Clinical Erythema Assessment (CEA) score was 5.00 [IQR: 3.00–7.00]. Most patients were classified as papule

Table 2 Self-Assessment of Rosacea Severity N=176

Categories	Median (IQR)
CEA score	5.00 [3.00;7.00]
Papules	N (%)
1	114 (64.8%)
2A	42 (23.9%)
3B	16 (9.09%)
4C	4 (2.27%)

(*Continued*)

Table 2 (Continued).

Categories	Median (IQR)
Rhinophyma	
None	149 (84.7%)
Mild A	21 (11.9%)
Moderate B	5 (2.84%)
Severe C	1 (0.57%)
Ocular irritation	
None	127 (72.2%)
Mild A	37 (21.0%)
Moderate B	10 (5.68%)
Severe C	2 (1.14%)

Notes: Categorical variables were summarized using n (%) and continuous variables were summarized using median [IQR].

grade 1 (64.8%, n = 114), followed by grade 2A (23.9%, n = 42). Higher severity grades, such as 3B and 4C, were less common, reported in 9.09% (n = 16) and 2.27% (n = 4), respectively. Rhinophyma was absent in the majority of respondents (84.7%, n = 149). Mild rhinophyma (grade A) was observed in 11.9% (n = 21), while moderate and severe cases were rare, accounting for 2.84% (n = 5) and 0.57% (n = 1), respectively. With respect to ocular involvement, 72.2% (n = 127) of patients reported no symptoms of ocular irritation. Mild symptoms were reported by 21.0% (n = 37), while moderate and severe symptoms were less frequent, occurring in 5.68% (n = 10) and 1.14% (n = 2), respectively.

The Composite Assessment Tool (CAT) score ranged from 0 to 10, with a median of 5 (IQR = 4) and a mean of 4.62 ± 2.52. In contrast, the total DLQI score exhibited greater variability, ranging from 0 to 30, with a median of 10 (IQR = 15) and a mean of 10.97 ± 8.62. The relatively wide interquartile range and standard deviation observed in the DLQI scores indicate a more dispersed response distribution compared to the CAT score, as illustrated in Figure 1.

More than half of the patients (52.5%, n = 84) reported DLQI scores exceeding 10, indicating a severely impaired quality of life. Specifically, 33.1% (n = 53) had scores between 11 and 20, reflecting a substantial impact of rosacea on quality of life, while 19.4% (n = 31) reported scores above 20, indicating a very severe impact. Moderate and mild impairments were reported by 18.1% (n = 29) and 21.9% (n = 35). Only 7.5% (n = 12) of respondents indicated no impact of rosacea on their quality of life, as illustrated in Figure 2.

Spearman correlation analysis revealed statistically significant associations between DLQI scores and all clinical indicators, as demonstrated in Figure 3. The DLQI score showed a moderate positive correlation with the Cat score ($r = 0.443$, $p < 0.001$) and weaker, yet significant correlations with ocular irritation ($r = 0.306$, $p < 0.001$), papules ($r = 0.231$, $p = 0.003$), and rhinophyma ($r = 0.190$, $p = 0.014$). Similarly, the CAT score was significantly correlated with all clinical features, including papules ($r = 0.443$, $p < 0.001$), ocular irritation ($r = 0.364$, $p < 0.001$), and rhinophyma ($r = 0.245$, $p = 0.001$). Among the clinical features, the strongest correlation was observed between rhinophyma and ocular irritation ($r = 0.383$, $p < 0.001$), followed by a significant association between rhinophyma and papules ($r = 0.319$, $p < 0.001$).

Table 3 presents the distribution of sociodemographic characteristics and self-assessed rosacea severity stratified according to skin-related quality of life. Approximately half of the patients (47.7%, n = 84) were categorized as having severely impaired quality of life, defined by a DLQI score greater than 10. This subgroup exhibited significantly higher clinical severity across multiple indicators. The mean Clinical Erythema Assessment (CEA) score was significantly higher among patients with severely impaired QoL than among those with lesser impairment (2.39 ± 0.92 vs 1.51 ± 1.08, $p = 0.001$). Similarly, Telangiectasia scores were elevated in the severely impaired group (0.89 ± 0.52 vs 0.63 ± 0.59, p =

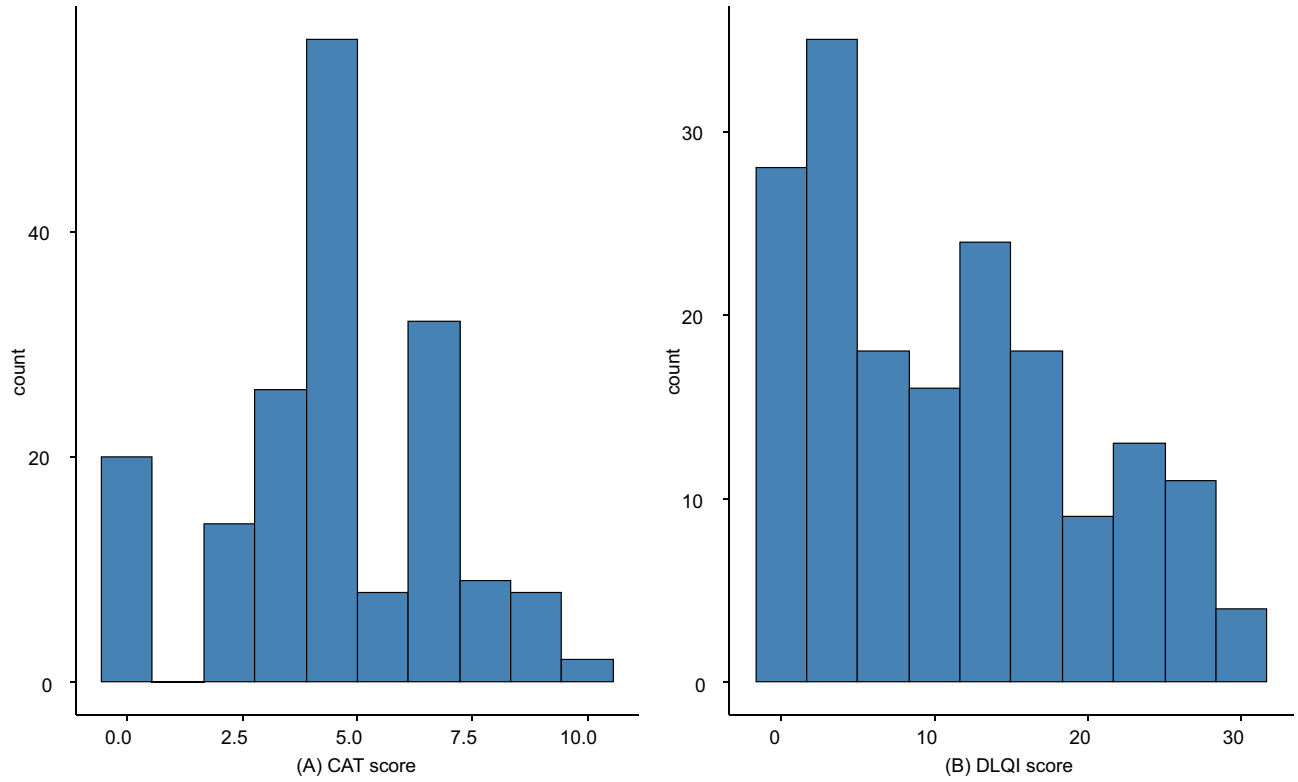

Figure 1 Distribution of (**A**) Clinician's Assessment of Telangiectasia (CAT) scores and (**B**) Dermatology Life Quality Index (DLQI) scores among rosacea patients.
Abbreviations: CAT, Clinician's Assessment of Telangiectasia; DLQI, Dermatology Life Quality Index.

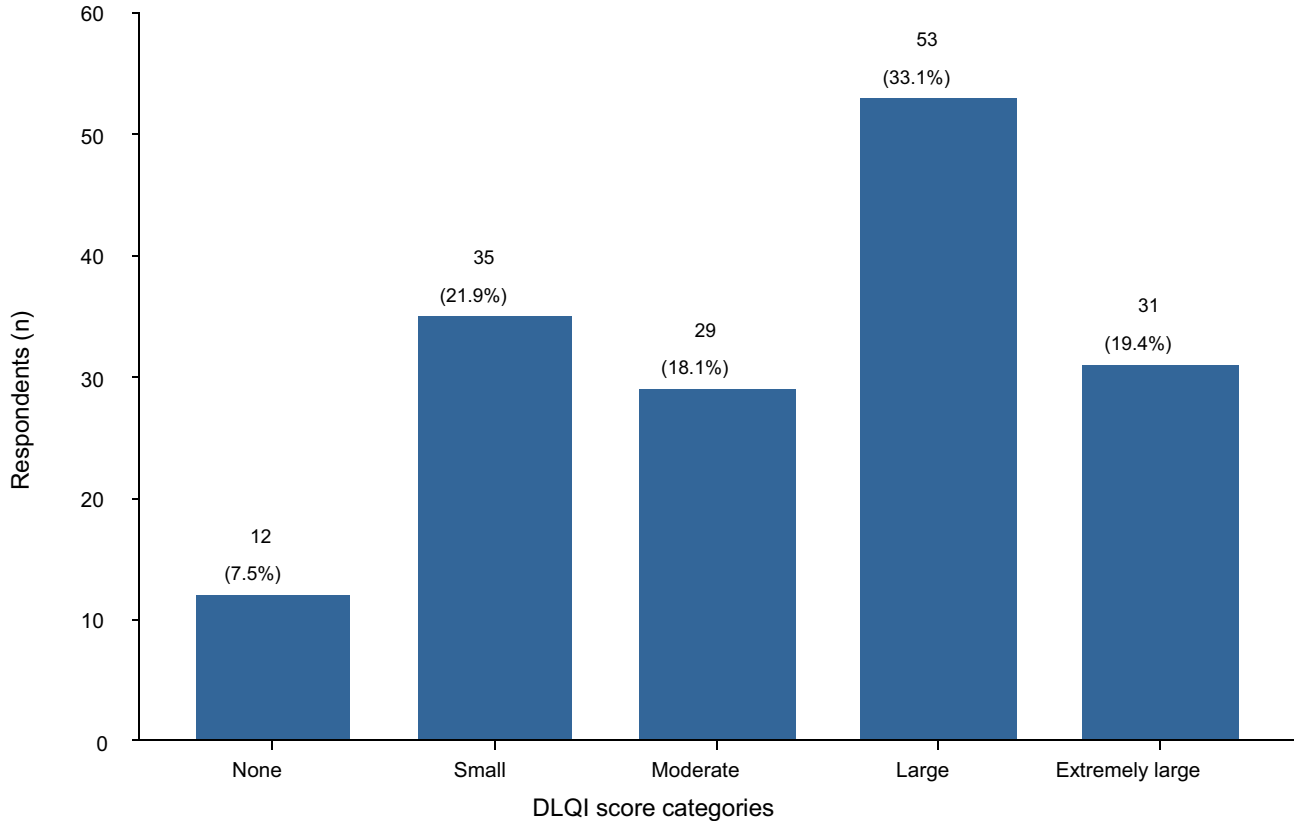

Figure 2 Effect of Rosaceae on the quality of life.

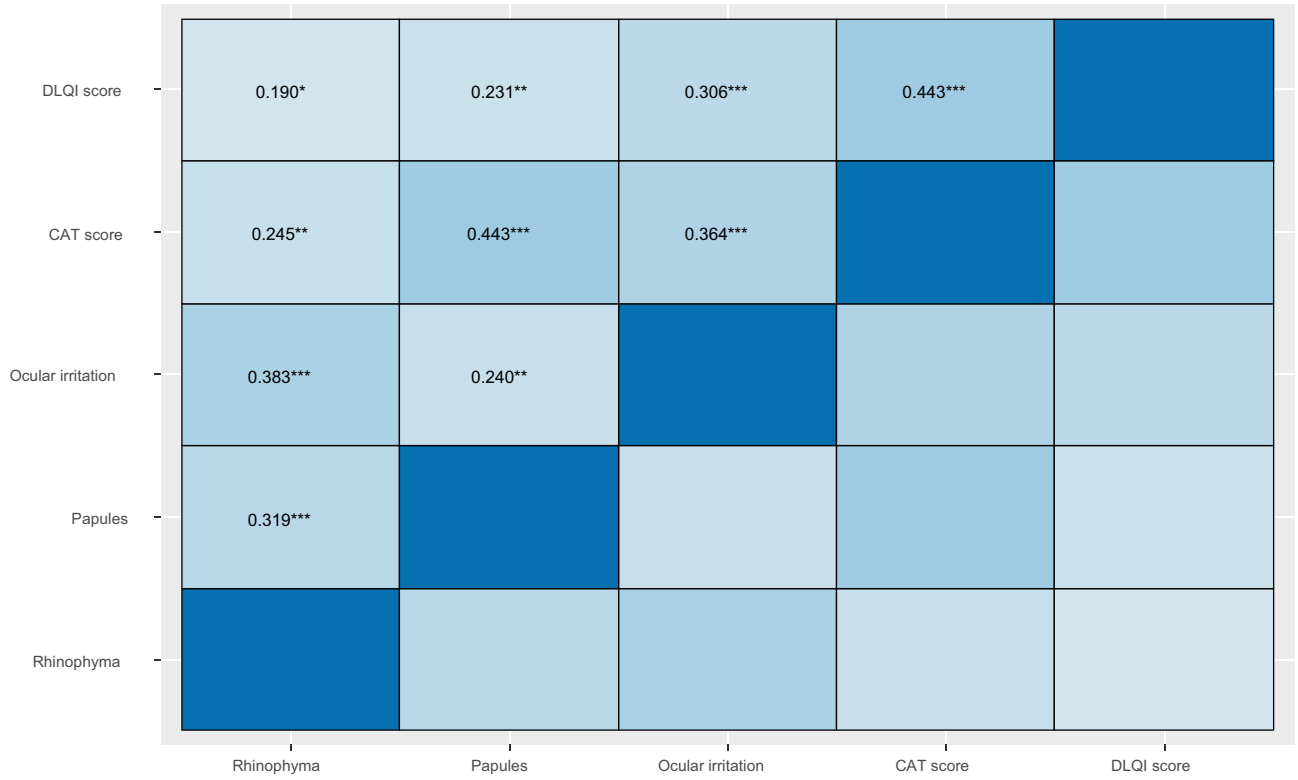

Figure 3 Correlation matrix illustrate Spearman's rho coefficients between DLQI scores and clinical features of rosacea, including rhinophyma, papules, ocular irritation, and CAT score. *p < 0.05; **p < 0.01; ***p < 0.001.

0.002). CAT scores also differed significantly, with higher values observed among those with more severely affected QoL (5.68 ± 1.98 vs 3.65 ± 2.59, p = 0.001).

For clinical features, patients with severely impaired QoL were significantly more likely to exhibit advanced grades of papules (p = 0.025), the presence of rhinophyma (p = 0.013), and higher levels of ocular irritation (p = 0.001). Regional distribution also differed significantly between groups (p = 0.024), with a greater proportion of individuals from the southern and eastern regions represented in the severely impaired category. Employment status was also associated with

Table 3 Sociodemographic and Rosaceae Self-Assessed Severity Stratified by Skin-Related Quality of Life (QoL)

Variables	**Non- Severely Impaired QoL**	**Severely Impaired QoL**	**P-value**
	N=92	**N=*84***	
Age	28.1 (8.67)	29.6 (7.73)	0.210
Gender			0.386
Female	76 (82.6%)	64 (76.2%)	
Male	16 (17.4%)	20 (23.8%)	
Nationality			0.955
Non-Saudi	14 (15.2%)	14 (16.7%)	
Saudi	78 (84.8%)	70 (83.3%)	

(*Continued*)

Table 3 (Continued).

Variables	Non- Severely Impaired QoL	Severely Impaired QoL	P-value
	N=92	N=84	
Residence			0.024
Central region	52 (56.5%)	34 (40.5%)	
Eastern region	7 (7.61%)	12 (14.3%)	
Northern region	10 (10.9%)	5 (5.95%)	
Southern region	4 (4.35%)	13 (15.5%)	
Western region	19 (20.7%)	20 (23.8%)	
Marital status			0.664
Divorced	2 (2.17%)	0 (0.00%)	
Married	37 (40.2%)	33 (39.3%)	
Single	52 (56.5%)	49 (58.3%)	
Widowed	1 (1.09%)	2 (2.38%)	
Education			0.230
Bachelor's degree	58 (63.0%)	63 (75.0%)	
High school or less	20 (21.7%)	12 (14.3%)	
Post-graduate	14 (15.2%)	9 (10.7%)	
Employment			0.041
Employed	28 (30.4%)	39 (46.4%)	
Housewife	15 (16.3%)	14 (16.7%)	
Student	33 (35.9%)	15 (17.9%)	
Unemployed	16 (17.4%)	16 (19.0%)	
Monthly income			0.140
<5000	17 (18.5%)	21 (25.0%)	
5000-10000	24 (26.1%)	29 (34.5%)	
>10000	51 (55.4%)	34 (40.5%)	
Apply sunscreen when going out during the day			0.604
Always	31 (33.7%)	33 (39.3%)	
Frequent	15 (16.3%)	7 (8.33%)	
Sometimes	18 (19.6%)	16 (19.0%)	
Never	17 (18.5%)	17 (20.2%)	
Rarely	11 (12.0%)	11 (13.1%)	

(*Continued*)

Table 3 (Continued).

Variables	Non- Severely Impaired QoL	Severely Impaired QoL	P-value
	N=92	N=84	
Ever tried topical creams containing bleaching agents purchased from social media platforms			0.274
No	81 (88.0%)	68 (81.0%)	
Yes	11 (12.0%)	16 (19.0%)	
CEA	1.51 (1.08)	2.39 (0.92)	0.001
Telangiectasia	0.63 (0.59)	0.89 (0.52)	0.002
Papules			0.025
1	68 (73.9%)	46 (54.8%)	
2A	18 (19.6%)	24 (28.6%)	
3B	4 (4.35%)	12 (14.3%)	
4C	2 (2.17%)	2 (2.38%)	
Rhinophyma			0.013
None	84 (91.3%)	65 (77.4%)	
Mild A	5 (5.43%)	16 (19.0%)	
Moderate B	2 (2.17%)	3 (3.57%)	
Severe C	1 (1.09%)	0 (0.00%)	
Ocular irritation			0.001
None	81 (88.0%)	46 (54.8%)	
Mild A	9 (9.78%)	28 (33.3%)	
Moderate B	1 (1.09%)	9 (10.7%)	
Severe C	1 (1.09%)	1 (1.19%)	
CAT score	3.65 (2.59)	5.68 (1.98)	0.001

Notes: Continuous variables were summarized using mean ± SD and compared using independent samples t-tests. Categorical variables were summarized using counts and percentages and compared using the chi-square test or Fisher's exact test as appropriate. Severely impaired QoL was defined as DLQI > 10.

QoL impairment, as a higher proportion of employed patients fell within the severely impaired group ($p = 0.041$). No significant differences were observed between groups regarding age, gender, nationality, marital status, education level, income, sunscreen use, or prior use of bleaching agents.

Figure 4 illustrates the association between disease duration and quality of life. A clear trend was observed, indicating that the likelihood of impaired quality of life increased with longer rosacea duration ($\chi^2(3) = 26.52$, $p = 0.001$). Among patients with a disease duration of less than one year, only 20.4% (n = 11) reported severely impaired QoL. This proportion increased with disease chronicity: 53.8% (n = 35) for those with 1–5 years of disease duration, 60.6% (n = 20) for 5–10 years, and reached 75.0% (n = 18) among patients with disease duration exceeding 10 years. These findings suggest a moderate positive association between prolonged disease duration and greater impairment in quality of life.

Table 4 presents the association between impaired quality of life and current rosacea medications. Most treatments showed no significant relationship with quality of life impairment. However, topical ivermectin was significantly more

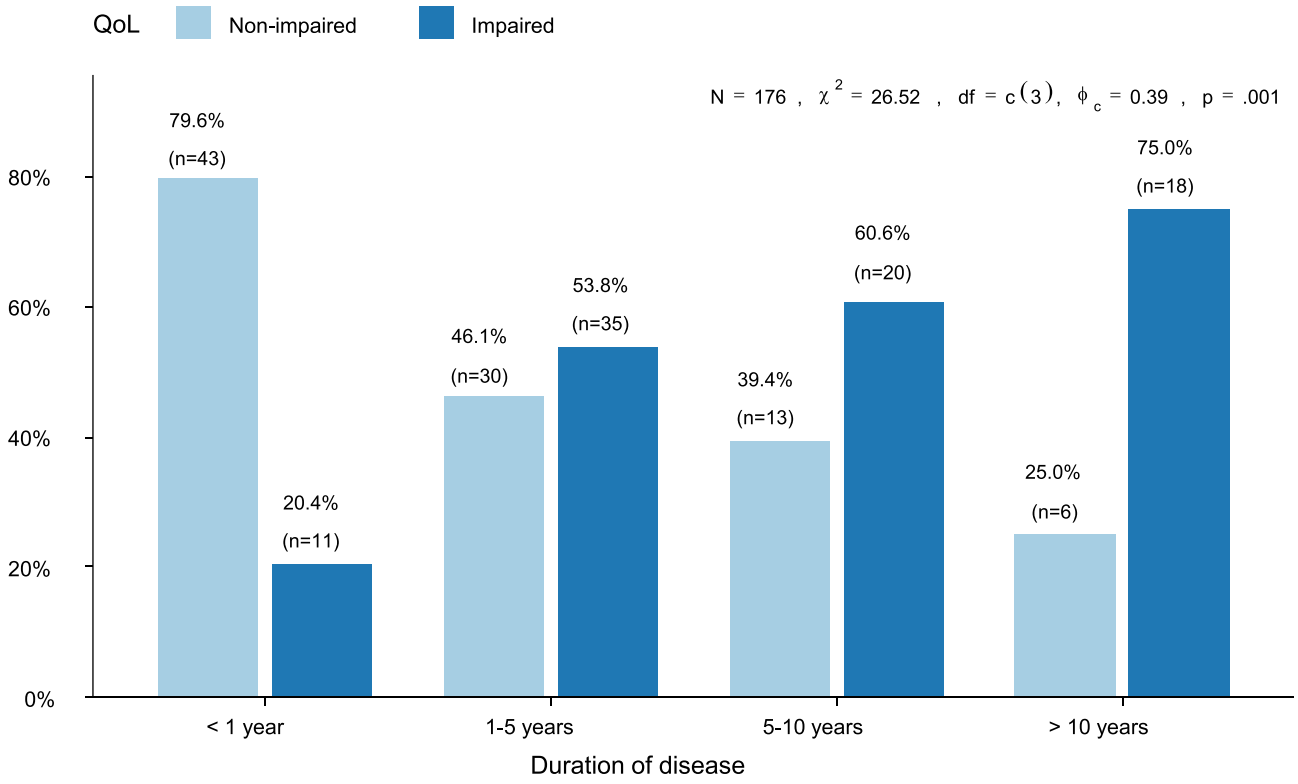

Figure 4 Association between duration of rosacea and impairment in quality of life (QoL) measured by DLQI.

frequently used among participants with severely impaired QoL (26.6%, n = 21) compared to non-severely impaired QoL (11.1%, n = 9; p = 0.021). No significant differences were observed between groups for the use of other therapies, including topical azelaic acid, topical or oral metronidazole, oral tetracyclines, oral isotretinoin, emollients, laser therapy, or alpha-adrenergic agonists (eg, brimonidine) (p > 0.05 for all comparisons).

Table 4 Association Between Impaired Quality of Life (QoL) and Current Medications

Variables	Non- Severely Impaired QoL	Severely Impaired QoL	P-value
	N=92	N=84	
Alpha-adrenergic agonist (Brimonidine)	5 (6.17%)	8 (10.1%)	0.531
Laser	27 (33.3%)	24 (30.4%)	0.817
Emollients	11 (13.6%)	11 (13.9%)	1.000
Oral isotretinoin	14 (17.3%)	17 (21.5%)	0.633
Oral Tetracycline (Doxycycline or Minocycline)	7 (8.64%)	9 (11.4%)	0.752
Oral Metronidazole	2 (2.47%)	6 (7.59%)	0.165
Topical Azelaic acid	17 (21.0%)	23 (29.1%)	0.315
Topical Ivermectin	9 (11.1%)	21 (26.6%)	0.021
Topical Metronidazole	14 (17.3%)	17 (21.5%)	0.633

Notes: Categorical variables were summarized using frequencies and percentages. Group comparisons were performed using chi-square test or Fisher's exact test, as appropriate.

Discussion

In the current study, patients' mean Dermatology Life Quality Index (DLQI) score was 10.97 ± 8.62, with a median of 10. More than half of the respondents (52.5%) scored above 10, indicating severe quality-of-life (QoL) impairment.

The domain most notably affected was emotional distress, particularly "feeling embarrassed or self-conscious", followed by substantial disruptions in social and leisure activities and significant difficulties in daily functioning. These results underscore the profound psychosocial burden of rosacea within the Saudi population studied, likely linked to the central facial location of lesions, which are highly visible and stigmatizing. This relationship between the facial visibility of skin conditions and emotional distress or social withdrawal has been consistently reported in dermatological research.[12–14]

The high visibility and stigmatizing nature of rosacea lesions may explain why emotional distress emerged prominently in our study. Studies confirm that rosacea patients often internalize stigma due to facial visibility, resulting in feelings of shame, low self-worth, and behavioral isolation.[15] Moreover, emotional and social impairments were disproportionately affected among participants, reinforcing that rosacea's consequences extend beyond physical symptoms into avoidance behavior, emotional dysregulation, and social withdrawal. The internalization of public stigma, regardless of explicit social experiences, has been linked to diminished overall functioning and poorer health perceptions among rosacea patients globally.[13,16]

The severe psychosocial impact documented in our study may also be explained by cultural factors unique to the Middle East, particularly within Saudi Arabia. The cultural emphasis on physical appearance, social presentation, and adherence to specific modesty and gender norms may exacerbate the psychological burden associated with rosacea. Younger adults, who are frequently socially engaged and professionally active, might perceive facial lesions as more detrimental due to heightened social visibility and frequency of interaction.[13,14] In this context, prior Saudi studies support our findings, illustrating a significant psychological toll associated with facial dermatoses. Alshammari et al, for instance, demonstrated substantial social anxiety and diminished self-esteem among Saudi youth with acne, which parallels rosacea's psychological profile observed in our participants.[17] Furthermore, Seetan et al confirmed significantly higher DLQI scores among Saudi rosacea patients compared to healthy controls, echoing the psychosocial challenges identified in our results.[18]

Moreover, our findings are consistent with existing global literature demonstrating moderate to severe QoL impairment in rosacea patients across diverse populations. A comprehensive meta-analysis involving over 13,000 patients found a pooled DLQI score averaging 8.6, with approximately 43% experiencing moderate to severe impairment.[16] Similarly, studies conducted in China, Turkey, and India consistently reported high mean DLQI scores, affirming significant emotional and social distress among rosacea patients irrespective of geographic or cultural context.[14,19,20] Furthermore, emotional distress was universally highlighted across international studies as particularly burdensome, with social limitations following closely. Yang et al reported that nearly half of rosacea patients experienced anxiety, with DLQI emotional subscales being the most frequently affected.[5] Additionally, Seetan et al, in a Jordanian cohort, observed significantly higher DLQI scores among female patients, especially those newly diagnosed and exhibiting multiple facial lesions. This underscores the consistent global finding that emotional and social impairments profoundly influence rosacea patients' quality of life, transcending cultural and geographical boundaries.[18]

The disconnect between clinical severity assessments and patient-perceived quality-of-life (QoL) impact constituted another critical observation in the current study. Several participants clinically classified with mild to moderate rosacea reported DLQI scores indicating severe QoL impairment. This mismatch between clinical assessments and subjective experiences is well documented. Patients frequently perceive even subtle visible symptoms as socially and emotionally detrimental, amplifying their distress beyond clinicians' estimations.[12,14] Factors such as anxiety, self-image perceptions, occupation-related appearance pressures, and cultural sensitivities significantly influence the perceived impact of rosacea, regardless of objective skin status.[20]

Research consistently demonstrates that subjective severity perceptions correlate more closely with mental health outcomes than objective clinical evaluations. Mohta et al identified a substantial correlation between anxiety and

depression scores and DLQI rather than with clinical severity scales, highlighting the need to incorporate subjective patient narratives into clinical assessment and treatment planning.[20]

Additionally, illness perceptions, particularly emotional reactions to rosacea and beliefs about disease controllability, significantly predict QoL independently of clinical severity. Akin et al emphasized how emotional representations of rosacea strongly influence QoL, with patients perceiving more significant emotional threats experiencing greater impairment in QoL.[21] This aligns with global evidence indicating rosacea patients frequently view their condition as disfiguring and socially stigmatizing, particularly when facial appearance is involved.[3,6]

Our analysis identified statistically significant correlations between clinical severity measures and QoL impairment. The Clinician's Erythema Assessment (CEA) and Composite Assessment Tool (CAT) displayed the strongest relationships, with additional associations observed for papules, ocular involvement, and rhinophyma. Global literature similarly reports moderate but significant associations between symptom severity, ie, erythema, flushing, papulopustular lesions, and elevated DLQI, anxiety, and depression scores.[5,18,22] These correlations confirm the importance of addressing clinical severity in treatment approaches but also suggest the influence of other moderate psychosocial factors, such as gender, body image, perceived disease control, and societal expectations.

Evidence also highlights the role of internal coping mechanisms in moderating QoL impairment. Azrumelashvili and Kituashvili noted that patients with enhanced internal coping strategies experienced less QoL impairment despite moderate rosacea severity, reinforcing the critical role of psychological support alongside clinical interventions.[20,23] Thus, psychological and behavioral support should be routinely integrated into rosacea management to address the psychosocial burden comprehensively.

Further, disease duration significantly impacted QoL, with patients with rosacea for over ten years displaying markedly higher DLQI scores. Chronic skin conditions intensify emotional fatigue, reduce coping capabilities, and erode treatment confidence over time, thereby magnifying psychological distress.[5] Literature on chronic dermatological conditions such as psoriasis and acne corroborate these findings, linking chronicity to reduced QoL and increased depressive symptoms.[6,24] In contrast, Huang et al reported worse QoL in Chinese rosacea patients with shorter disease durations, possibly reflecting cultural differences in coping mechanisms and occupational appearance demands.[13] This suggests that cultural context significantly influences the psychological trajectory of rosacea, necessitating culturally sensitive patient education and support strategies.

Evaluating treatment patterns, we observed a significant association between severely impaired DLQI scores and the use of topical ivermectin. Rather than suggesting direct negative medication effects, this association likely represents clinical severity indication, as ivermectin is primarily prescribed for moderate to severe papulopustular rosacea. Nonetheless, the potential contribution of treatment-related side effects to this association cannot be entirely excluded and warrants further investigation with longitudinal studies to explore this relationship more definitively. Literature consistently supports the QoL benefits of topical and systemic treatments, including ivermectin, metronidazole, and doxycycline, over time.[3,20,25] Nonetheless, treatment alone may not sufficiently address emotional and social impairments, especially in chronic rosacea cases, highlighting that pharmacological approaches must be complemented by structured psychosocial support, counseling, and education programs to manage psychological burdens effectively.[26]

Patient education and effective communication are central to improving QoL outcomes in rosacea. Empowering patients through knowledge regarding disease triggers, realistic expectations, and disease management strategies significantly reduces anxiety, enhances coping confidence, and promotes adherence to protective behaviors such as sun avoidance.[21] Therefore, psychoeducation and shared decision-making approaches are recommended as integral components of comprehensive rosacea care, facilitating patient empowerment and enhanced therapeutic outcomes.[27]

Collectively, these findings emphasize the need for adopting a holistic approach integrating clinical assessments, patient-reported outcomes, psychological evaluations, and structured patient education. Recognizing the visible and emotional dimensions of rosacea equally, clinicians can bridge gaps between clinical assessments and subjective patient experiences, promoting more empathetic, individualized, and effective disease management strategies. This patient-centered approach is critical in ensuring improved therapeutic satisfaction and quality-of-life outcomes in rosacea patients.

While this study provides valuable insights into the impact of rosacea on Saudis' quality of life, but several limitations should be considered. First, the cross-sectional design limits the ability to establish causal relationships between clinical severity and psychosocial outcomes. Additionally, self-reported measures, such as the DLQI, introduce potential response bias or subjectivity, particularly in assessing emotional and social domains. Moreover, Although the sample was relatively diverse, the use of convenience sampling through a single dermatology clinic and social media outreach may have introduced a risk of selection bias. However, this strategy allowed us to achieve a diverse and adequate sample size within a reasonable timeframe, and the demographic variation observed among respondents supports the relevance and external applicability of our findings. The absence of a control group and lack of longitudinal follow-up further limit our capacity to evaluate changes in quality of life over time or assess treatment responsiveness. Lastly, while clinical assessments were conducted systematically, inter-observer variability may have influenced severity grading.

Conclusion

This study underscores the significant psychosocial burden of rosacea among patients in Saudi Arabia, with the most pronounced impact on quality of life observed in the emotional and social domains. High DLQI scores were strongly associated with disease duration, clinical severity, and patient self-perception, highlighting the multifaceted nature of rosacea's effects. These findings align with global evidence while emphasizing the importance of culturally tailored care strategies that address both the physical symptoms, and the psychological distress associated with the condition. Incorporating patient-reported outcomes, mental health screening, and educational interventions into clinical practice may enhance disease management and patient satisfaction. Rosacea should be conceptualized not merely as a dermatological disorder but a chronic illness with profound implications for quality of life.

Abbreviations

QoL, Quality-of-life; CAT, Clinician's Assessment of Telangiectasia; DLQI, Dermatology Life Quality Index; CEA, Clinician's Erythema Assessment.

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Disclosure

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