Annals of Health Research

(The Journal of the Medical and Dental Consultants' Association of Nigeria, OOUTH, Sagamu, Nigeria)

CC BY-NC
Volume 12, Issue 3: 274-286
September 2026
doi:10.30442/ahr.1203-02-334

ORIGINAL RESEARCH

Treatment seeking behavior and influence of Acne-related characteristics on Quality of life: A Cross-sectional study of Adolescents in Jos, Nigeria

Ruth Adah[1], Daniel J Meshak[2], Obinna Orjingene[3], Chisomaga Iroagba[4], Idika M Idika[5]

[1]Department of Paediatrics, Jos University Teaching Hospital, Jos Plateau State, Nigeria
[2]Department of Family Medicine, College of Health Sciences, University of Jos, Jos Plateau State, Nigeria
[3]United Nations International Children's Fund, Abuja, Nigeria
[4] Department of Medicine, Vom Christian Hospital, Vom, Plateau State, Nigeria
[5]Department of Family Medicine, David Umahi Federal University of Health Sciences, Uburu, Ebonyi State

Correspondence: Adah Ruth, Department of Paediatrics, Jos University Teaching Hospital, Jos Plateau State, Nigeria. email: adahruth@ymail.com; Orcid: 0000-0002-3907-7772

Citation**:** Adah R, Meshak D J, Orjingene O, Iroagba C, Idika MI. Treatment Seeking Behavior and Influence of Acne-related Characteristics on Quality of Life: A Cross-sectional Study of Adolescents in Jos, Nigeria. Ann Health Res. 2026;12(3):274-286. https://doi.org/10.30442/ahr.1203-02-334

Abstract

Background: Acne is common among adolescents and can significantly affect psychological well-being and quality of life (QoL). While some view it as a rite of passage, others seek treatment from various sources and use known and unknown substances, potentially increasing morbidity.

Objectives: To describe acne treatment-seeking behaviors among adolescents in Jos and determine how specific characteristics affect QoL.

Methods: A cross-sectional study of 265 secondary school students in Jos Metropolis, Nigeria, used self-administered questionnaires to assess socio-demographics, treatment-seeking, and acne-related behaviors. Acne was clinically classified, and the Teenage Quality of Life (TQoL) tool was used to assess its impact on QoL. The Jos University Teaching Hospital Research and Ethics Committee approved the study, and informed consent was obtained. We conducted univariate and bivariate analyses using SPSS 26.

Results: Facial acne occurred in 85.6% of students; 222 (83.8%) had mild acne, 41 (15.5%) had moderate acne, and one each had moderately severe and severe acne (together 0.8%). Only 41 (15.5%) sought treatment, most commonly from patent medicine vendors (PMVs); other sources included health facilities, traditional practitioners, cosmetic shops, and religious houses. The mean TQoL score was 6.7±6.11. Self-image was most affected (22.5% of maximum; mean 3.56±3.62), followed by psychological impact and relationships (17.16%; mean 2.06±2.21), with physical well-being and future aspirations least impaired (13.5%; mean 1.08±1.21). Higher impairment was significantly associated with female gender (p=0.001), extra-facial acne (p=0.001), and moderate-severe acne (p=0.001).

Conclusion: School health programs should incorporate adolescent acne education, accurate information, referrals, and psychological support.

Keywords: ***Acne vulgaris, Pimples, Quality of life, School health, Teenagers***

Introduction

Most students in secondary schools are adolescents. This is a crucial stage of life when, in addition to physical, psychological, and social changes, they experience acne vulgaris and its related challenges.[1-3] Although acne is neither fatal nor linked to physical debility, reports from different countries show varying effects on adolescents' lives.[4] The condition has been the cause of great worry, anger, and depression, and there have been associated cases of suicidal ideation, even leading to suicide.[5] A study among adolescents in France showed that even the possibility of having acne caused significant concern and anxiety.[6] Stigmatization and bullying by peers have resulted in a variety of psychological morbidity. Other areas affected include relationships, academics, career, and overall quality of life (QoL).[4-8]

According to the World Health Organization (WHO), QoL is defined as a person's position in life in the context of the culture and value systems in which they live, and in relation to their goals, expectations, standards and concerns.[9] The use of various QOL tools across continents, cultures, and value systems has had a varied yet significant impact on the lives of those affected. [4,5,10.11]

A number of studies, particularly in southern Nigeria, have shown a significant prevalence of acne among adolescents, but fewer have linked it to any form of morbidity (physical, social, psychosocial, and emotional impact of acne).[12,13] The pattern of acne already established in one region or age group, along with associated factors such as family history, diet, weather, sun exposure, stress, and cosmetic and skin care products, may differ from those in other regions or age groups within the same country. [8,14,15] Hence, adolescents in Jos, a city in Northern Nigeria, with different social norms, cultural practices, and media exposure may have a unique epidemiology of acne, expectations, and concerns, and these factors together may impact the QoL of the affected. [9,16] It is crucial to study how acne affects adolescents' quality of life and the associated factors. This will provide important information for the use of healthcare services and for public health research.

This study aimed to describe socio-demographic and other acne-related characteristics, their influence on the quality of life of adolescents with acne, and to document their treatment-seeking behaviour.

Methods

We conducted a clinical, cross-sectional, analytical study of secondary school students with acne in two Local Government Areas of Plateau State, Nigeria (Jos North and Jos South), over a 4-week period from September 19 to October 16, 2022.

The study used a multistage sampling technique to select one private and one public secondary school in each of Jos North and Jos South Local Government Areas of Plateau State, for a total of 4 schools. Eligible schools were co-educational day schools with a complete six-year structure (the first three years constituting junior secondary and the final three years senior secondary). We drew participants aged 10 to 19 years from a school-wide sampling frame that included every class, selecting them using a predetermined sampling interval. Participants without written consent were excluded.

Weight was measured to the nearest 0.1 kg using a Seca digital scale, and height was measured to the nearest 0.1 cm using a Seca stadiometer. Body Mass Index (BMI) was calculated using the weight and height (weight in kg / height in meters [kg/^{2}]) and classified into three categories as underweight (less than the 5th percentile), normal (more than the 5th percentile and less than the 85th percentile), and overweight or obese (more than the 85th percentile) based on the WHO classification.[17]

We conducted the physical examination in a private, naturally lit room, away from other students and staff. Only the participant, the examiner, and, when necessary, another designated research team member (chaperone) were present during the examination, limiting exposure to the areas required for examination (face, neck, shoulders, and trunk). Among 482 secondary school students examined, only those with acne were included in the study.

We collected information on socio-demographic characteristics and treatment-seeking behaviors using pretested, self-administered questionnaires. Age was classified as younger (10-14 years) and older (≥15 years) adolescents, while Class was categorized as Junior and Senior secondary school.

Acne severity was assessed using a four-level clinical classification: mild, moderate, moderately severe, and severe. Acne was also classified into two main sites of involvement; the first group had acne on the face and neck only, and the second group had lesions at other sites (chest, back, arms, and shoulders), irrespective of whether lesions were present on the face and neck. [18] The Teenagers' Quality of Life Index (T-QOL), which assesses children with skin disease and evaluates physical, social, emotional, and educational functioning, derives physical and psychosocial summary scores. It was self-

administered and used to estimate quality of life. [19] The questionnaire comprises 18 questions across three domains: self-image (8 questions; score range: 0–16), physical well-being and future aspirations (4 questions; score range: 0–8), and psychological impact and relationships (6 questions; score range: 0–12). Answer options for each question were never, sometimes, and always, scored 0, 1, and 2, respectively. The sum of the questions ranges from a maximum of 36 to a minimum of 0 points/units. Higher cumulative scores indicate more severely impaired QoL.

All information was anonymized, and all examination findings were kept confidential and accessible only to the research team.

Statistical Analysis: Completed questionnaires were entered into a computer. Data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 26. Continuous variables, including age, BMI, and duration of acne since onset, were grouped into categories. Categorical data were compared using the Chi-square test. Mean QOL between groups was compared using a Student's t-test. P-values less than 0.05 were considered statistically significant.

Ethical considerations: The Research and Ethics Committee of the Jos University Teaching Hospital (JUTH/DCS/IREC/XXXI/127/2750) approved the study. Permission was obtained from the principal of each school selected for the study. Subjects and their parents/guardians were informed about the study, and written consent was obtained.

Results

Among two hundred and sixty-five (265) students, 227 (85.7%) had acne on the face alone, 25 (9.4%) had acne on the chest, 8 (3%) had acne on the arms and shoulders, and 22 (8.3%) had acne on the back. Two hundred and twenty-two (83.8%) students had mild acne, 41 (15.5%) had moderate acne, and 1 student each had moderately severe and severe acne (together 0.8%). Forty-one (41) subjects actively sought treatment for acne, and among them, only 10 (24.4%) accessed health facilities or health workers. About a third (94/265; 33.5%) had used items or medication to manage acne. Table I presents the socio-demographic, acne-related, and treatment-seeking characteristics of the subjects.

Table I: Socio-demographic, acne-related, and treatment-seeking characteristics (N-265)

Characteristics	Frequency (n)	Percentage (%)
Age in years (Range 10-19; Mean age ± SD: 15.5 ± 2.03)		
≤14	95	35.8
≥15	170	64.2
Gender: Male	87	32.8
Female	178	67.2
Class: Junior	106	40.0
Senior	159	60.0
School type: Private	140	52.8
Public	125	47.2
BMI (13.8-29.0; Mean-20.15± 3.09)		
Underweight	76	28.7
Normal	171	64.5
Overweight	18	6.8
Family history of acne: Present	176	66.4
Absent	89	33.6
Site of acne: Face only	227	85.7
Involving other sites	37	14.3
Grading of acne: Mild	222	83.8
Moderate	41	15.5
Severe	2	0.8
Duration since onset of acne (2mths -6yrs; Mean duration- 2.23±1.26)		
≤2years	175	66.0
>2years	90	34.0
Sought treatment from places/persons		
Yes	41	15.5
No	224	84.5
Used any medication for acne: Yes	94	33.5
No	171	64.5
Picking Acne as a way of management (n=225)		
Yes	176	76.4
No	53	23.6

*Descriptive statistics on Quality-of-life scores in students with acne:*A wide range of total scores was observed, from 0 to 31 (mean, 6.7 ± 6.11). Among the three domains, self-image was the most affected, accounting for 22.5% of the maximum possible score (mean, 3.56 ± 3.62; range, 0–16). Psychological impact and relationships followed, at 17.16% of the maximum (mean, 2.06 ± 2.21; range, 0–12). Physical well-being and future aspirations showed the least impairment, at 13.5% of the maximum (mean, 1.08 ± 1.21; range, 0–7).

*Relationship between mean Overall Quality of Life score, socio-demographic and acne-related characteristics:*Table II shows that the overall mean TQoL score was significantly higher in females than in males, in those with acne involving other parts of the body than the face, and in those with more severe presentations than mild (P=0.001, 0.015, <0.001, and 0.001, respectively)

Table II: Relationship between mean Overall Quality of Life score and socio-demographic and acne-related characteristics (n=265)

Characteristic	Mean ± SD	t-test	p-value
Age group (years)			
≤14	6.37±5.96	0.655	0.513
≥15	6.88±6.20		
Gender			
Male	5.00±4.78	3.23	0 .001*
Female	7.54±6.57		
Family history of Acne			
Yes	6.83±6.28	0.482	0.63
No	6.44±5.77		
Duration since onset (years)			
≤2	4.93±5.09	1.855	0.065
>2	6.48±5.87		
Body Site affected			
Face only	6.61±5.73	3.534	<0.001*
Involved other sites	9.57±7.31		
Grading			
Mild	6.14±5.80	3.453	0.001*
Moderate-severe	9.58±6.87		

Test Statistic- Student's t-test; * Means in the same column but are significantly different at p<0.05

Relationship between self -image scores and selected characteristics: As shown in the table, females show significantly greater self-image impairment than males (p = 0.001). Greater impairment was noted in those who have had acne for more than 2 years (p-0.030), those with acne at other sites (p-0.001), and those with more severe acne (p < 0.001).

Table III: Relationship between self -image scores and selected characteristics (n=265)

Characteristics	Mean ± SD	t-test	p-value
Age group (years)			
≤14	3.32±3.39	0.796	0.427
≥15	3.70±3.72		
Gender			
Male	2.57±2.80	3.245	0.001*
Female	4.06±3.86		
Family history of Acne			
Yes	3.47±3.59	0.559	0.577
No	3.74±3.66		
Duration since onset (years)			
≤2	2.48±2.49	2.188	0.030*
>2	3.59±3.44		
Site			
Face only	3.26±3.29	3.342	0.001*
Involved other sites	5.34±4.83		
Grading			
Mild	3.21±3.98	3.622	<0.001*
Moderate-severe	5.35±4.59		

Test Statistic- Student's t-test; * Means in the same column are significantly different at p<0.05

Relationship between mean score in physical wellbeing and future aspiration domain with selected characteristics: There is considerably greater impairment of overall quality of life among those with a positive family history of acne (p = 0.014), and those with acne in extra facial sites (p – 0.04). Physical and future aspiration mean scores differed significantly between those with a positive family history of acne and those without (p-0.014) and by acne site (p-0.040).

Table IV: Relationship between mean score in physical well-being and future aspiration domain with selected characteristics (n=265)

Characteristics	Mean ± SD	t-test	p-value
Age group (years)			
≤14	1.19±1.35	1.17	0.243
>14	1.01±1.20		
Gender			
Male	1.01±1.06	0.61	0.542
Female	1.11±1.27		
Family history of Acne			
Yes	1.21±1.34	2.485	0.014*
No	0.82±0.83		
Duration of acne (years)			
≤2	0.90±1.03	2.188	0.282
>2	1.09±1.21		
Affected Site			
Face only	1.01±1.18	2.066	0.040*
Involved other sites	1.45±1.31		
Grading			
Mild	1.04±1.21	1.07	<0.286
Moderate-severe	1.26±1.16		

Relationship between mean score in the area of psychological impact and relationships with selected characteristics:

Table V shows that the psychological impact and relationships were significantly affected more in females (p-0.001), those with acne in extra-facial sites (p-0.002), and those with more severe acne than mild presentation (p-0.003) .

Discussion

The current study found that mild acne predominated among participants, consistent with reports from southern Nigeria,[4] Egypt,[13] and India.[20] In contrast, Hanish et al. reported a higher proportion of moderate-to-severe acne (67%) than mild acne (33%) in a hospital-based study in Turkey.[21]

Table V: Relationship between mean score in the area of psychological impact and relationships with selected characteristics (n=265)

Characteristics	Mean ± SD	t-test	p-value
Age group (years)			
≤14	1.85±1.91	1.149	0.252
≥15	2.18±2.35		
Gender			
Male	1.44±1.65	3.283	0.001*
Female	2.37±2.38		
Family history of Acne			
Yes	2.15±2.22	0.909	0.364
No	1.89±2.19		
Duration of acne (years)			
≤2	1.55±1.85	1.02	0.309
<2	1.85±2.01		
Affected Site			
Face only	1.89±2.11	3.124	0.002*
Involved other sites	3.08±2.50		
Grading			
Mild	1.88±2.17	3.02	0.003*
Moderate-severe	2.98±2.19		

Test Statistic- Student's t-test; * Means in the same column but are significantly different at p<0.05

This is unsurprising, as people with more severe acne are more likely than those with mild acne to seek hospital care, leading to severity patterns that differ from those found in community-based studies.[22] Only a small percentage (15.5%) of the participants sought treatment for acne, and of those who did, the majority accessed PMVs as treatment providers. This contrasts with findings from Yahaya's study of adolescents in northwest Nigeria more than a decade ago, which found that most respondents sought acne treatment at hospitals or from doctors.[14] Differences between that study and ours may stem from sociocultural and infrastructural factors, as well as the relatively similar socioeconomic

backgrounds of adolescents at the single school studied and their families. These factors may have shaped access to healthcare and care-seeking patterns. Another possibility is that adolescents' health-seeking behavior, or that of the general population in northern Nigeria, has shifted over time, possibly driven by the current state of the healthcare system.[23]

Where people obtain healthcare typically determines whether conditions such as acne, as examined in the current study, are managed appropriately. This explains why a significant number of individuals inappropriately used over-the-counter (OTC) topical preparations to manage acne, especially those that contained steroids and other unidentified topical preparations.[24]

Consultations at cosmetic shops, unorthodox centers like traditionalists, with the corresponding use of traditional concoctions, and even at religious bodies are suggestive of the burden that acne has on these adolescents. The capacity of attendants in such outlets to identify, refer, or treat without causing harm is in question. The use of the Aloe vera plant as a home remedy was common among adolescents. Although the plant is well known for its anti-inflammatory and antibacterial properties, little is known about how adolescents use the unprocessed form or how effective it is acne.[25] Adolescents commonly begin picking at acne in an effort to manage individual lesions. This behavior has been shown to lead to scarring and to worsen the quality of life of those affected. [10,11]

Quality of life was measured across three important domains: self-image, physical impact, and future aspirations, as well as psychological and relationship aspects. The wide range of summary scores, from 0 (no impairment) to 31 (severe impairment), reflects the markedly different impact acne has on individuals. The few high scores and the low mean overall TQoL suggest that acne minimally impairs quality of life, which may not be unconnected to the large proportion (83.8%) of mild acne in our study population. Other community studies conducted in Nigeria, using different QoL tools, reached similar conclusions. [1,13,14] Similarities in education type, contemporary culture, and media exposure among secondary school students across the nation may also contribute to this commonality.

The impact of acne on overall quality of life was significantly greater in females than in males. Females also showed significant impairment in both the self-image domain and the psychological impact and relationships domain. Other researchers have likewise reported higher psychiatric morbidity in adolescent girls, which they linked to the

failure to achieve the flawless skin that has been promoted globally for centuries as a standard of beauty for females.[26]

Our findings on the sites of involvement are consistent with those of other studies, which reveal that the facial region is the most frequently affected, with the chest, back, and shoulders less frequently affected. [1,21] Those with more severe facial acne were assessed to have a higher total mean score, indicating a lower quality of life. The composite physical wellness and future aspiration domains also showed significantly higher values. Lowered physical wellness may be linked to itching or pain from widespread lesions, leading to greater physical discomfort. Furthermore, scores were significantly higher in the psychological impact and relationships domains. It is possible that the affected individuals perceived their condition as more severe, therefore felt more psychologically burdened, especially at this stage of life, which is characterized by peer acceptance, increased sexuality, and sexual attraction. [27,28] Contrary to our findings, Papadopoulos et al. found that those with facial acne had lower self-esteem and body image than those with truncal acne, a difference explained by the visibility of facial lesions.[29]

It is noteworthy that acne at extra-facial sites was the only pattern, compared with other acne-related characteristics of interest, that showed significantly greater impairment across all domains. This calls for further exploration of why the relatively less common and less visible lesions exert such an influence in this population. The finding that severe acne caused greater impairment in quality of life, particularly in the domains of self-image and interpersonal relationships, aligns with clinical expectations. Conversely, the absence of a significant difference between mild and more severe acne in terms of physical well-being was unexpected. This may be explained by the composition of the "more severe" group, which combined moderate, moderately severe, and severe acne. Because moderate acne does not involve the inflamed, painful lesions typical of severe disease, it tends to look clinically more like mild acne. Consequently, collapsing these categories likely obscures the distinction in physical well-being between mild and the combined "more severe" group.

The major limitation of this study is its cross-sectional design, which cannot establish acne as the sole basis of QoL impairment. Information obtained and QoL were both self-reported, which may be affected by reporting bias. Based on the findings of this study, it is recommended that school health programs with appropriate education, referral, and psychological support for those who need it be

targeted at adolescents. Training health workers and patent medicine vendors in proper acne management is essential to making quality care accessible to affected adolescents.

Conclusion

This study revealed that mild acne predominantly affects adolescents in Jos, with the face the most commonly involved body area. It generally has minimal impact on overall quality of life. Greater quality-of-life impairment was observed among females, those with extra-facial lesions, and individuals with more severe acne. Treatment-seeking behavior was poor, with few adolescents accessing appropriate care and most relying on unorthodox sources and using unconventional or unidentified substances.

Acknowledgment: The Authors wish to thank Drs. Yusuf Hope and Otene Queen-Amina of the College of Health Science, University of Jos, Jos, Plateau State. Nigeria, for their support in data collection

Author Contribution – AR, IMI, and MDJ: AR, OO, and IR contributed to developing the research concept and design. AR, OO, and IR analyzed and interpreted the data. AR, MDJ, OO, and IMI drafted the manuscript. All authors revised and approved the final version of the manuscript.

Funding: This research received no funding from agencies in the public, commercial, or not-for-profit sectors.

Conflicts of interest: All authors have no conflicts of interest to declare

Publication History: Submitted 7 March 2025, Accepted 10 July 2026

References

1. Anaba EL. Quality of life assessment in adolescents with facial acne vulgaris: impact of family history, history of treatment. Dermatol Clin Res.2019;5(1):232-237.

2. Tan JK, Bhate K. A global perspective on the epidemiology of acne. Br J Dermatol. 2015;172(Suppl 1):3-12. doi:10.1111/bjd.13462.

3. Henshaw EB, Olasode OA, Ogedegbe EE, Etuk I. Dermatologic conditions in teenage adolescents in Nigeria. Adolesc Health Med Ther. 2014;5:79-87. doi:10.2147/AHMT.S62231.

4. Rapp DA, Brenes GA, Feldman SR, Fleischer AB Jr, Graham GF, Dailey M*, et al*. Anger and acne: implications for quality of life, patient satisfaction and clinical care. Br J Dermatol. 2004;151(1):183-189. doi:10.1111/j.1365-2133.2004.06078.x.

5. Purvis D, Robinson E, Merry S, Watson P. Acne, anxiety, depression and suicide in teenagers: a cross-sectional survey of New Zealand secondary school students. J Paediatr Child Health. 2006;42(12):793-796. doi:10.1111/j.1440-1754.2006.00979.x.

6. Pawin H, Chivot M, Beylot C, Faure M, Poli F, Revuz J, et al. Living with acne: a study of adolescents' personal experiences. Dermatology. 2007;215(4):308-314. doi:10.1159/000107624.

7. Timms RM. Moderate acne as a potential barrier to social relationships: myth or reality? Psychol Health Med. 2013;18(3):310-320. doi:10.1080/13548506.2012.726363.

8. Loh KC, Chan LC, Phang LF. Perceptions and psychosocial judgement of patients with acne vulgaris. Med J Malaysia. 2020;75(1):18-23.

9. WHOQOL Group. The World Health Organization quality of life assessment (WHOQOL): position paper from the World Health Organization. Soc Sci Med. 1995;41(10):1403-1409. doi:10.1016/0277-9536(95)00112-K.

10. Ali EYA, Soliman EF, Maklad SA. The effect of acne vulgaris on body image satisfaction, self-esteem and quality of life of adolescents at Tanta city. Tanta Sci Nurs J. 2022;27(4):188-206. doi:10.21608/tsnj.2022.267578.

11. Tayel K, Attia M, Agamia N, Fadl N. Acne vulgaris: prevalence, severity, and impact on quality of life and

self-esteem among Egyptian adolescents. J Egypt Public Health Assoc. 2020;95(1):30. doi:10.1186/s42506-020-00056-9.

12. Aiyedun S, Onayemi O, Olasode OA, Oninla O, Israel M. Clinical characteristics of acne vulgaris and its effect on patients' quality of life. Texila Int J Public Health. 2019;7:862-869.

13. Ogedegbe EE, Henshaw EB. Severity and impact of acne vulgaris on the quality of life of adolescents in Nigeria. Clin Cosmet Investig Dermatol.2014;7:329-334. doi:10.2147/CCID.S73302.

14. Yahya H. Acne vulgaris in Nigerian adolescents: prevalence, severity, beliefs, perceptions, and practices. Int J Dermatol. 2009;48(5):498-505. doi:10.1111/j.1365-4632.2009.03922.x.

15. Wei B, Pang Y, Zhu H, Qu L, Xiao T, Wei HC, *et al*. The epidemiology of adolescent acne in North East China. J Eur Acad Dermatol Venereol. 2010;24(8):953-957. doi:10.1111/j.1468-3083.2010.03590.x.

16. Okoro EO, Ogunbiyi AO, George AO, Subulade MO. Association of diet with acne vulgaris among adolescents in Ibadan, southwest Nigeria. Int J Dermatol. 2016;55(9):982-988. doi:10.1111/ijd.13166.

17. World Health Organization. Physical status: the use and interpretation of anthropometry. Report of a WHO Expert Committee. WHO Technical Report Series No. 854. Geneva: World Health Organization; 1995. hors: doi.org/10.1017/s0021932098261359

18. Strauss JS, Krowchuk DP, Leyden JJ, Lucky AW, Shalita AR, Siegfried EC, *et al*. Guidelines of care for acne vulgaris management. J Am Acad Dermatol. 2007;56(4):651-663. doi:10.1016/j.jaad.2006.08.048.

19. Basra MK, Salek MS, Fenech D, Finlay AY. Conceptualization, development and validation of T-QoL© (Teenagers' Quality of Life): a patient-focused measure to assess quality of life of adolescents with skin diseases. Br J Dermatol. 2018;178(1):161-175. doi:10.1111/bjd.15853.

20. Sharma RK, Dogra S, Singh A, Kanwar AJ. Epidemiological patterns of acne vulgaris among adolescents in North India: a cross-sectional study and brief review of literature. Indian J Paediatr Dermatol. 2017;18(3):196-201.

21. Hanisah A, Omar K, Shah SA. Prevalence of acne and its impact on the quality of life in school-aged adolescents in Turkey. J Prim Health Care. 2009;1(1):20-25.

22. Suh DH, Shin JW, Min SU, Lee DH, Yoon MY, Kim NI, *et al.* Treatment-seeking behaviors and related epidemiological features in Korean acne patients. J Korean Med Sci. 2008;23(6):969-974. doi:10.3346/jkms.2008.23.6.969.

23. Oyeyemi AS, Oladepo O, Adeyemi AO, Titiloye MA, Burnett SM, Apera I. The potential role of patent and proprietary medicine vendors' associations in improving the quality of services in Nigeria's drug shops. BMC Health Serv Res. 2020;20:567. doi:10.1186/s12913-020-05379-z.

24. Nnoruka E, Okoye O. Topical steroid abuse: its use as a depigmenting agent. J Natl Med Assoc. 2006;98(6):934-939.

25. Kanlayavattanakul M, Lourith N. Therapeutic agents and herbs in topical application for acne treatment. Int J Cosmet Sci. 2011;33(4):289-297. doi:10.1111/j.1468-2494.2011.00647.x.

26. Aktan S, Ozmen E, Sanli B. Anxiety, depression, and nature of acne vulgaris in adolescents. Int J Dermatol. 2000;39(5):354-7. doi:10.1046/j.1365-4362.2000.00907.x.

27. Hazarika N, Archana M. The psychosocial impact of acne vulgaris. Indian J Dermatol. 2016;61(5):515-520. doi:10.4103/0019-5154.190102.

28. Afsar FS, Seremet S, Demirlendi Duran H, Karaca S, Mumcu Sonmez N. Sexual quality of life in female patients with acne. Psychol Health Med. 2020;25(2):171-178. doi:10.1080/13548506.2019.1679845.

29. Papadopoulos L, Walker C, Aitken D, Bor R. The relationship between body location and psychological morbidity in individuals with acne vulgaris. Psychol Health Med. 2000;5(4):431-438. doi:10.1080/713690219.

This open-access document is licensed for distribution under the terms and conditions of the Creative Commons Attribution License (http://creativecommons.org/licenses/by-nc/4.0). This permits unrestricted, non-commercial use, reproduction and distribution in any medium provided the original source is adequately cited and credited.