

The impact of acne vulgaris on quality of life and psychic health in young adolescents of Rehman Medical College, Peshawar, Pakistan: a cross-sectional study

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ABSTRACT

Introduction: Acne is a common inflammatory pilosebaceous dermatosis which affects the face, chest, and the back, during adolescence with a prevalence rate of almost 80%, being more prevalent and severe in boys than girls. Major complications of acne involve scarring and psychosocial distress as well as emotional and psychological challenges.

Objective: To determine the relationship between severity of facial acne and quality of life in students of a medical college of Peshawar, Khyber Pakhtunkhwa, Pakistan.

Materials & Methods: A cross-sectional survey on 150 medical students was conducted in Rehman Medical College, Peshawar from February to July 2020 using the Acne-QoL questionnaire. Data were collected by convenience sampling from students who were willing to participate in the study after informed consent and analyzed for descriptive and comparative statistics by SPSS 23, keeping $p \leq 0.05$ as significant.

Results: Male and female students were approximately equal in number, 76 male (50.7%) and 74 females (49.3%). The ages ranged from 18 to 31 years old with a mean age of 22.75 ± 2.822 years; most (72%) were in the age group of 22-26 years. Facial acne as single site involvement was the most common (48%) type encountered, followed by Back (14%) and Chest (11.3%) whereas multiple site involvement (face, chest, and back together) was seen in 26.7% cases. Grade 1 acne (56.7%) was the most common clinical type found, followed by Grade 2 (24.7%), Grade 3 (14%), and Grade 4 (4.7%). A majority (57.7%) of students had varying degrees of acne scars, whereas post-acne hyperpigmentation was seen in 41.3%. The impact of acne on quality of life was associated with the severity of the acne.

Conclusion: Presence of Acne, particularly its severe forms, may cause significant impairment in the quality of life of adolescents suffering from the condition, with males affected more than females.

Keywords: Acne Vulgaris; Adolescent; Quality of Life; Skin Diseases.

The authors declared no conflict of interest. All authors contributed substantially to the planning of research, data collection, data analysis, and write-up of the article, and agreed to be accountable for all aspects of the work.

INTRODUCTION

Acne vulgaris is a chronic inflammatory skin disease of the pilosebaceous unit (hair follicle, hair shaft, and sebaceous gland) affecting up to 80% of adolescents and many adults at some stage. Acne typically begins at puberty when the rise in androgens causes an increase in size and activity of the pilosebaceous glands, and incidence peaks at about 18 years.¹ Acne is neither life threatening nor physically debilitating, however, acne causes profound negative psychological and social effects on quality of life in vulnerable patients.^{2,3}

Skin disease can have a major impact on one's quality of life. The concept can be divided into several components, including psychological, social and physical domains.^{4,5}

The major mechanisms involved in the development of acne include altered sebaceous gland activity associated with hyper seborrhea (that is, increased sebum production) and a change in sebum fatty acid composition, dysregulation of the hormone microenvironment, interaction with neuropeptides, follicular hyper keratinization, induction of inflammation and dysfunction of the innate and adaptive immunity.³

Acne commonly involves the face followed by chest and back. Facial appearance represents important aspects of one's perception of body image.⁶ Therefore, it is not surprising that a susceptible individual with facial acne may develop significant psychosocial disability and psychiatric problems.⁴

Epidemiological studies show that acne vulgaris can affect both genders but appears to be more prevalent in men. According to a Korean study with prevalence of 80% stated that acne was more predominant and severe in boys than girls.⁷

Whereas according to a research in Iran, the prevalence was around 85% mostly affecting the females.⁸

In a study done in Pakistan, 53.1% people suffered from acne and the most bothersome feature of acne amongst those people was found out to be acne spots (61.3%).⁹

A study conducted in a high school in Turkey showed the prevalence of acne as 63.6%, of which 34.4% was non-inflammatory and 29.2% was inflammatory.¹⁰

Major complications of acne involve scarring and psychosocial distress which persists long after the active lesions have disappeared. Its onset in adolescence may add to the emotional and psychological challenges experienced during this period, and it can lead to the developmental issues of body image, socialization, and sexuality. Psychological issues such as dissatisfaction with appearance, embarrassment, self-consciousness, lack of self-confidence, and social dysfunction such as reduced/avoidance of social interactions with peers and opposite gender, reduced employment opportunities have been documented.¹¹

However, the relationship between severity of acne and emotional distress, as well as the relationship between the severity of acne and quality of life are poorly understood and rather controversial.²

It is therefore important to know the psychological effect of acne vulgaris for its wholesome management.¹¹

The present study was conducted to determine the magnitude of acne vulgaris among young adolescents, the impact of facial acne on the social, emotional and functional life of subjects, and to determine the relationship between the severity of facial acne and quality of life.

MATERIALS & METHODS

This was a cross sectional study conducted in Rehman Medical College, Peshawar, from February to July 2020, on 150 medical students of all MBBS years after getting approval from the Department of Medical Research (DMR) of Rehman Medical College. Convenience sampling technique was adopted to approach the students to be a part of the study after obtaining their informed consent. Data were collected by a standard questionnaire of acne (Acne-QoL Questionnaire) which supported assessment of QoL. The tool was composed of 24 items with four Domains (Self-Perception, Role-Emotional, Role-Social, Acne-Symptoms) which address the various aspects of acne and its effects on quality of life of adolescents. Collected data were subjected to descriptive and comparative statistics, including Spearman Correlation, using SPSS statistics software version 23. The extent of significance was set at $p \leq 0.05$.

Table 1 Domain structure of Acne-QoL Questionnaire.

Self-Perception	Role-Emotional	Role-Social	Symptoms
Feeling unattractive	Upset about having facial acne	Concern about meeting new people	Bumps on your face ^a
Feeling embarrassed	Annoyed about time spent cleaning and treating face	Concern about going out in public	Bumps full of pus on face ^a
Feeling self-conscious	Concern about not looking your best	Socializing a problem	Scabbing from facial acne ^a
Dissatisfied with appearance	Concern about acne medication not working fast enough	Interacting with the opposite sex a problem	Concern about scarring from facial acne
Self-confidence (negatively affected)	Bothered by need to have medication and cover-up available		Oily facial skin

All questions are framed to be disease specific ('...because of your facial acne'). The response options for all but three questions include: extremely, very much, quite a bit, a good bit, somewhat, a little bit, and not at all. a The response options for these questions include extensive, a whole lot, a lot, a moderate amount, some, very few, and none.

RESULTS

Table 2 shows the clinicodemographic profile of students; both male and females were approximately equal in number, with 76 males (50.7%) and 74 females (49.3%). Their ages ranged from 18 to 31 years with a mean age of 22.75 ± 2.82 years. The majority of students (100, 66.7%) were in the age group of 20-23 years.

Facial acne as single site involvement was the most common (48%) type encountered, followed by Back (14%) and Chest 11.3%, whereas multiple site involvement (face, chest, and back together) was seen in 26.7% cases.

Grade I acne, seen in 56.7% students was the most common clinical type, followed by Grade 2 (24.7%), Grade 3 (14%) and Grade 4 (4.7%).

Most students (57.7%) had varying degrees of acne scars, whereas post-acne hyperpigmentation was seen in 41.3% cases.

Table 2: Clinicodemographic characteristics of students (n=150).

Clinicodemographic characteristics	f (%)
Site of Acne	
Face	72 (48.0%)
Chest	17 (11.3%)
Back	21 (14.0%)
Multiple Sites (Face, chest, back)	40 (26.7%)
Grade of Acne	
Grade 1	85 (56.7%)
Grade 2	37 (24.7%)
Grade 3	21 (14.0%)
Grade 4	07 (4.7%)
Post Inflammatory Hyperpigmentation	
Present	62 (41.3%)
Absent	88 (58.7%)
Acne Scar	
Present	86 (57.7%)
Absent	63 (42.3%)

Table 3 shows the significance of correlation between clinicodemographic factors (Gender, Age, Site, Grade, Acne Scar and Post Acne Hyperpigmentation) with four domains (Self Perception, Role- Emotional, Role-Social, Acne-Symptoms) of Acne-QoL questionnaire. Statistically significant correlation ($p < 0.05$) was seen between Age and post acne Hyper-

pigmentation with the Domains Self-Perception and Role-Emotion. Acne-Symptoms showed statistically significant correlation to the Acne Scars and Post Acne Hyper-Pigmentation while Grade of Acne showed significant correlation with all of the Four Domains.

Table 3: Significance (p values) of correlation between the clinicodemographic factors and four domains of the Acne-QoL questionnaire (n=150).

Clinicodemographic Factors	Self-perception	Role-Emotional	Role-Social	Acne Symptoms
Gender	0.726	0.335	0.129	0.174
Age of patient	0.003	0.006	0.067	0.067
Site of lesion	0.692	0.772	0.847	0.461
Grade of acne	<0.001	<0.001	0.001	<0.001
Acne Scar	0.039	0.067	0.155	0.012
Post-Acne Hyper-pigmentation	<0.001	0.001	0.069	0.020

Table 4 shows the results of the QoL scores based on three categories (mild, moderate, and severe) defined on cutoff scores to classify impairment in the quality of life of students; 07 (04.67%) patients scored 0-73 interpreted as very large

impairment of QoL, 50 (33.33%) each had QoL scores in the range of 39-76 interpreted as moderate impairment, and 93 (62.0%) scored 77-114, interpreted as mild effects on patients quality of life. The mean scores in each category are also given.

Table 4: Interpretation of Effects of QoL based on scoring groups (n=150).

Statistics	Severe Score (0-38)	Moderate Score (39-76)	Mild Score (77-114)
Frequency (%)	07 (04.67%)	50 (33.33%)	93 (62.0%)
Mean ± SD	34.86 ± 03.80	65.08 ± 09.32	104.06 ± 11.60

Table 5 describes the range of scores and the mean values for each of the four domains of the Acne-QoL questionnaire, as well as the overall score obtained for all domains. The mean scores depict a satisfactory status of the QoL in all four domains (scores between 70-80% of maximum possible scores), as well as the

overall score (>75% of maximum possible score). These findings go along with the classification shown in Table 4, where 62% of students scored in the mild category of QoL impairment. There were no significant differences in mean scores by gender.

Table 5: Descriptive Statistics of the domains for all subjects (n=150).

Domains	Minimum	Maximum	Mean	S.D.
Total Self-Perception	4	30	22.47	7.732
Total Role-Emotional	2	30	22.09	7.960
Total Role-Social	2	24	19.39	5.298
Total Acne Symptoms	4	30	23.89	6.625
Overall Total Score	27	114	87.84	24.13

DISCUSSION

The acne QOL questionnaire contains 24 questions organized into four domains which address the impact of acne on health related quality of life. These are Self-Perception, Role Social, Role Emotional, and Acne Symptoms.¹ Amongst a study population of 150 patients, facial acne as a single site involvement was the most common type (40%) encountered. Our results agreed with previously published studies and provide evidence that acne which is regarded as a simple disease often has a great impact on patients' quality of life.¹²

In this study it was found that patients with the age group of 18 to 21 that is 38.7% ($p=0.003$) had statistically significant QOL scores. This group was found to have a major impact on self-perception; a possible explanation for this finding could be that in late adolescence and early adult life peer pressure and romantic relationships form an important component towards an

individual's self-perception and thus appearance has significant weightage.²

Another study conducted in South of India among young adults showed a similar result with the age group 18 to 21 having a significant impact of acne on self-perception ($p=0.0129$).¹³

This study indicates that 50.7% ($n=76$) of the males were affected with acne which was greater than the percentage of females affected (49.3%). Here it should be noted that the number of males and females selected for the study were equal. These results were found to be in contrast to a study performed in the suburban areas of India in 2016 where females were significantly more affected than males (57%).¹⁴ Studies conducted in England¹⁵ and Singapore¹⁶ also indicated that more females (25%) suffered from a longer duration of acne and post acne hyper pigmentation as compared to males.

In the present study, Grade 1 Acne was found to be of the highest prevalence (56.7%) indicating a condition in which almost no acne lesions are present but blackheads and white heads are prominent. This was followed by Grade 2 acne (24.7%), and Grade 3 acne (14%). A similar study conducted in south India¹³ showed a majority of patients having Grade 1 acne with no gender difference between the scores. This duly supports the hypothesis suggested in a previously conducted research in Rio de Janeiro that, in subjects with even mild acne the disease may undermine their self-confidence and henceforth their quality of life to a significant degree.¹⁷

In our study it was also found that the relationship between the severity of acne and oily skin was significant ($p=0.028$). This was in concordance to a study which showed that increased sebum secretion is a major concurrent event associated with the development of acne.¹⁸ A significant relation was seen between the Grade of the acne and the 4 domains of the quality of life scores with $p<0.001$. Studies conducted in Greece and Oman were in agreement to the results obtained in this study.^{2,12}

The most common site affected by the acne was the face which constituted about 40% followed by back acne at 14% and chest acne at 11.3%, whereas multiple site involvement i.e. face chest and back together were seen in 26.7% of the cases. Since facial acne is highly visible and carries a certain degree of social negativity it has been hypothesized that even mild acne can decrease a person's self-confidence and desire to be seen in public and/or social interactions.¹⁹ It was observed in a study by Martin et al.,²⁰ that the QOL scores were impacted negatively with the increasing severity in facial acne. Severity of facial acne was significantly associated with increased social self-consciousness in women, but not in men.¹⁵ In this study it was observed that there was also an association between the severity of facial acne alone than with the face and trunk combined.

Our study observed that the effect of Acne on the emotional and self-perception aspect of the QOL was worse when compared to the other two domains. This is because appearance has a significant role on the emotions and the self-perception often individual.

It was found that age with $p=0.003$, and post acne hyper pigmentation with $p<0.001$ significantly affected the self-perception of individuals. Self-perception included those aspects of the QOL which corresponds to the feelings of unattractiveness, self-consciousness, decreased self-confidence, feelings of embarrassment and dissatisfaction with self-appearance. This was the most negatively affected amongst all the four domains of the QOL. Studies conducted in Pakistan^{21,22} and India²³ indicated that more males have moderate to severe acne vulgaris and post acne scarring but severe depression occurred significantly more in females. It was also shown that the age $p=0.006$ and post acne hyper pigmentation $p=0.001$ had a significant effect on the patient emotionally. The "role emotional" domain is focused on the emotional effect or the impact of facial acne which included questions about the respondent's time spent on treating their face

and their concerns about the efficacy of the medications align with their feelings of worry and unhappiness. Similar results were seen in a research performed in Greece and Oman.^{2,12}

Post acne hyper pigmentation is the most common frequent and important complication which is also associated with scarring and had a significant effect on all four domains of the quality of life scores $p=0.020$ in relation to acne symptoms, and $p=0.001$ and $p<0.001$ in relation to the domains of role emotional and self-perception respectively. However no statistically significant difference could be found amongst the incidence of post acne hyper inflammation between male and female patients in this study. On the other hand, it was found that a significant number of people had not suffered from post inflammatory hyperpigmentation i.e. 58.7%. This result is contrary to previously conducted studies which showed that there is a significant association ($p<0.001$) of post acne hyper pigmentation with gender.^{14,24} In a corresponding study patients with post acne hyper pigmentation had greater impairment in the quality of life which can be explained by anxiety and embarrassment experienced by the patients in a social setting due to hyper pigmentation from acne.²⁵

It was found that 57.7% of the patients presented with acne scars which had a notable effect on their quality of life scores. Studies showed that even mild scars can pose a cosmetic problem to some patients thus diminishing their quality of life.¹⁴ A research analysis conducted in Singapore concluded that 36% of patients suffering from post-acne scarring were self-conscious about it and 24% amongst them felt that their acne scars was affecting their social activities.¹⁶

LIMITATIONS

The limitations of the study are passive search for subjects with acne and lack of analysis of other measurement of properties such as treatment and responsiveness to treatment.

The small sample size also limited statistical inference.

There was also an absence of therapeutic assessment hence future studies of the Acne quality of life index should be carried out in context of clinical trials.

CONCLUSION

Worsening of the quality of life in adolescent students suffering from acne was affected by the severity of acne and post acne complications, particularly in males with Facial acne.

RECOMMENDATIONS

Data from clinical trials should be gathered through the Acne-QoL questionnaire in order to evaluate the responsiveness and the effect of treatment outcomes in patients with acne.

The psychological impact of acne on the community should also be assessed through the Acne-Qol questionnaire, so further studies using larger sample sizes to represent the general population are needed.

REFERENCES

- Station W, Reserved AR. Acne-specific Quality of Life Questionnaire (Acne-QoL) Manual & Interpretation Guide. 2003; 3-9.
- Tasoula E, Gregoriou S, Chalikias J, Lazarou D, Danopoulou I, Katsambas A, et al. The impact of acne vulgaris on quality of life and psychic health in young adolescents in Greece: results of a population survey. *An Bras Dermatol*. 2012 Nov-Dec;87(6):862-9.
- Moradi Tuchayi S, Makrantonaki E, Ganceviciene R, Dessinioti C, Feldman SR, Zouboulis CC. Acne vulgaris. *Nat Rev Dis Prim*. 2015 Sep;1:15029.
- Hanisah A, Omar K, Shah SA. Prevalence of acne and its impact on the quality of life in school-aged adolescents in Malaysia. *J Prim Health Care*. 2009;1:20-5.
- Quirk F, Jones PW, Hyland ME. Defining Quality of Life. *Pharmacoeconomics*. 1992;2:252-7.
- Raju B, Nagaraju U. Quality of life among adolescents with acne in a tertiary referral centre in Bangalore, South India. *Indian J Paediatr Dermatol*. 2017;18:94.
- Do JE, Cho S-M, In S-II, Lim K-Y, Lee S, Lee E-O. Psychosocial aspects of acne vulgaris: A community-based study with May;21:125-9.
- Noorbala MT, Mozaffary B, Noorbala M. Prevalence of acne and its impact on the quality of life in high school-aged adolescents in Yazd, Iran. *J Pak Assoc Dermatol* 2013.;23:168-72.
- Ali G, Mehtab K, Sheikh ZA, Ali HG, Kader SA, Mansoor H, et al. Beliefs and perceptions of acne among a sample of students from Sindh Medical College, Karachi. *J Pak Med Assoc*. 2010 Jan;60:51-4.
- Uslu G, Şendur N, Uslu M, Savk E, Karaman G, Eskin M. Acne: Prevalence, perceptions and effects on psychological health among adolescents in Aydin, Turkey. *J Eur Acad Dermatol Venereol*. 2008 Apr;22:462-9.
- Hazarika N, Archana M. The psychosocial impact of acne vulgaris. *Indian J Dermatol*. 2016;61:515-20.
- Al-Shidhani A, Al-Rashdi S, Al-Habsi H, Rizvi S. Impact of acne on quality of life of students at Sultan Qaboos University. *Oman Med J*. 2015 Jan;30:42-7.
- Durai PCT, Nair DG. Acne vulgaris and quality of life among young adults in South India. *Indian J Dermatol*. 2015;60:33-40.
- Hazarika N, Rajaprabha R. Assessment of life quality index among patients with acne vulgaris in a suburban population. *Indian J Dermatol*. 2016;61:163-8.
- Hassan J, Grogan S, Clark-Carter D, Richards H, Yates VM. The individual health burden of acne: appearance-related distress in male and female adolescents and adults with back, chest and facial acne. *J Health Psychol*. 2009;14:1105-18.
- Chuah S, Goh C. The impact of post-acne scars on the quality of life among young adults in Singapore. *J Cutan Aesthet Surg*. 2015;8:153.
- Kamamoto CDSL, Hassun KM, Bagatin E, Tomimori J. Acne-specific quality of life questionnaire (Acne-QoL): translation, cultural adaptation and validation into Brazilian-Portuguese language. *An Bras Dermatol*. 2014 Jan-Feb;89:83-90.
- Chularojanamontri L, Sethabutra P, Kulthanan K, Manapajon A. Dermatology life quality index in Thai patients with systemic sclerosis: A cross-sectional study. *Indian J Dermatol Venereol Leprol*. 2011 Nov-Dec;77:683-7.
- Wu SF, Kinder BN, Trunnell TN, Fulton JE. Role of anxiety and anger in acne patients: a relationship with the severity of the disorder. *J Am Acad Dermatol*. 1988 Feb;18:325-33.
- Martin AR, Lookingbill DP, Botek A, Light J, Thiboutot D, Girman CJ. Health-related quality of life among patients with facial acne - assessment of a new acne-specific questionnaire. *Clin Exp Dermatol*. 2001 Jul;26:380-5.
- Naveed S, Masood S, Rahman A, Awan S, Tabassum S. Impact of acne on quality of life in young Pakistani adults and its relationship with severity: A multicenter study. *Pak J Med Sci*. 2021;37(3):727-32. <https://doi.org/10.12669/pjms.37.3.281>.
- Shams N, Niaz F, Zeeshan S, Ahmed S, Farhat S, Seetlani NK. Cardiff Acne Disability Index based Quality of Life in Acne Patients, Risk Factors and Associations. *J Liaquat Uni Med Health Sci*. 2018;17(01):29-35. doi: 10.22442/jlumhs.181710545.
- Mishra N, Rastogi MK, Gahalaut P, Srivastava N, Aggarwal A. Assessment of depression in patients of acne vulgaris and its correlation with severity of acne, postacne scarring and gender. *J Pak Assoc Dermatol*. 2017; 27(4): 313-9.
- Kane A, Niang SO, Diagne AC, Ly F, Ndiaye B. Epidemiologic, clinical, and therapeutic features of acne in Dakar, Senegal. *Int J Dermatol*. 2007 Oct;46(Suppl 1):36-8.
- Akinboro AO, Ezejiofor OI, Olanrewaju FO, Oripelaye MM, Olabode OP, Ayodele OE, et al. The impact of acne and facial post-inflammatory hyperpigmentation on quality of life and self-esteem of newly admitted Nigerian undergraduates. *Clin Cosmet Investig Dermatol*. 2018 May 10;11:245-52.