

Psychosocial Impact of Acne Vulgaris, its prevalence and associated Risk Factors in University Students of Rawalpindi/ Islamabad

Asima, Shahzad, Syed Fawad Masshadi, Aiman Zia, Maryam Masood, Namaan Ashfaq, Najm us Saqib Khan*

Army Medical College/National University of Medical Science (NUMS) Rawalpindi Pakistan, *Bahria University, Islamabad Pakistan

ABSTRACT

Objective: To determine the prevalence of Acne Vulgaris, its effects on quality of life of the patient and its associated risk factors.

Study Design: Analytical quantitative cross-sectional study.

Place and Duration of Study: University of Rawalpindi/ Islamabad Pakistan, from Mar to May 2021.

Methodology: Non-probability convenience sampling was used. A total sample of 218 diagnosed cases of acne was included in our study. The data was collected via online Google forms and analyzed using SPSS 25.0.

Results: The prevalence of acne vulgaris was 16.8% in university students of Rawalpindi/ Islamabad Pakistan. Among 218 acne cases, the overall Dermatology Life Quality Index score showed 36(17%) cases had no effect at all and 182(83%) had some effect on their quality of life. The impaired quality of life was associated with education and family history ($p<0.05$). Relatively more impaired aspects of life were physical symptoms (67%), one's own perception of acne (68%) and interference with work/studies (60%).

Conclusion: The impact of acne on physical symptoms and self-confidence of people affected their mental health. As a result, these patients found difficulties in studies, work, and their social life. Knowledge about one's ailment, early access to treatment and improved compliance significantly improves one's quality of life. Acne is a deeply rooted issue with serious psychological and social implications which need to be addressed.

Keywords: Acne vulgaris, Dermatology life quality prevalence, Perception of acne, QOL, Risk factors.

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INTRODUCTION

Skin is an organ of communication; therefore, is essential for socialization. Acne vulgaris is a chronic skin condition associated with inflammation of the sebaceous glands of hair follicles caused by *Cutibacterium acnes*.^{1,2} Commonly, acne is dismissed as a cosmetic abnormality because it is not associated with decreased general health, increased morbidity, or mortality however it can cause huge social and psychological burden on patients.³⁻⁵ There is no single disease which causes more psychic trauma, more maladjustment between parents and children, more general insecurity & feelings of inferiority and greater sums of psychic suffering than does acne vulgaris.⁶

Acne is the disease with 8th highest prevalence (9.4%) in the world and 5% prevalence in Pakistan.^{1,7} A study by White showed a prevalence of 85% in adolescents and 66% in adults.⁸ The psychosocial implications are comparable to certain chronic diseases like asthma, epilepsy, diabetes and arthritis.⁹

Disfigurement due to acne produces social

disapproval and increases self-consciousness.¹⁰ The prevalence of mental disorders in acne patients is 30-60%.³ The prevalence of depression in acne patients is 2-3 times more than non-acne patients.^{9,11} Studies have shown that those with acne suffer from a significantly lower quality of life (QOL) than those without acne,⁴ and their level of satisfaction with life is significantly lower well.¹²

Due to the serious implications, it can have, we wanted to explore the topic in our community of university students of Rawalpindi/ Islamabad Pakistan. The goal of our research is identifying the prevalence of acne in our community, the psychosocial impact and identify the risk factors associated with it so that those at risk can be identified early on and receive proper referrals for effective treatment.

METHODOLOGY

Our study is a Quantitative cross-sectional study conducted among university students of Islamabad/ Rawalpindi from March to May 2021.

Inclusion Criteria: An online questionnaire was disseminated via Google forms, which was filled by 218 students diagnosed with acne.

Correspondence: Dr Asima Shahzad, Department Community Medicine Army Medical College Rawalpindi Pakistan

Exclusion Criteria: Those who were not diagnosed were excluded from the study.

A non-probability convenience sampling was used. These individuals were assessed using a Dermatology Life Quality Index (DLQI).¹ Consent was taken from everyone who filled the DLQI questionnaire. It was mentioned in the questionnaire that the confidentiality of personal information would be maintained. Statistical Package for Social Sciences (SPSS) version 25. was used analyze data.

Chi-square test was applied to determine statistical association of various risk factors with grades of QOL. The *p*-value of <0.05 was considered statistically significant.

Ethical approval from Ethical review board of Army Medical College was taken under *ERC certificate number 195*.

RESULTS

The DQLI questionnaire was disseminated among 1300 students from which 218 were diagnosed cases of acne vulgaris. The mean age of participants was 20.5±1.82 years. The prevalence was 16.8% and the mean DQLI score was 6.38 which fell within the moderate effect range (6-10).

According to the DQLI score among 218 acne cases, 36 (17%) had no effect (DLQI=0-1), while 182 (83%) cases showed some level of QOL impairment (Figure-1).

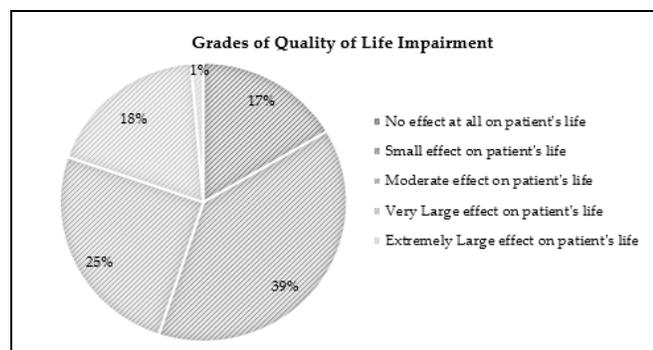


Figure-1: Grades of QOL Impairment in acne cases according to Dermatology Quality of Life Index (DQLI) (n=218)

Among those with high QOL impairment, 66.7% were of 21-24 years, 33.3% were 18-20 years and none were below 16 years of age. A greater portion of females (66.7%) experienced this level of impairment than males (33.3%). Age and gender did not have significant association with QOL impairment (*p*-value 0.473, 0.911 respectively).

Education level showed a statistically significant association with QOL impairment (*p*-value=0.009*). 100% of those with an extremely large QOL impairment had a College/FA/FSc degree or equivalent. Generally, higher level of education was associated with reduced QOL impairment.

The number of family members did have a significant association with QOL (*p*-value=0.506). 33.3% of those with 2-9 family members claimed to have experienced an extremely large impact.

Amidst those with extreme QOL impairment, 66.7% spent<1 hour, 33.3% spent 1-2 hours and none spent more than 2 hours outdoors. The association between time spent outdoors and impaired QOL is not significant (*p*-value=0.425).

Family history of acne vulgaris was associated with absence of extreme QOL impairment and it has statistical significantly associated QOL (*p*-value=0.00).

Prescription of Acne Vulgaris did not show any association with impaired QOL (*p*-value=0.825). However, 66.7% of those using no treatment experienced greater impairment of QOL. Those who were using medications did not experience extreme QOL impairment. Those using treatment for >1 week do not have extreme impairment of QOL. Those not receiving any treatment mainly experienced extreme QOL impairment. The *p*-value shows no statistical significance (*p*=0.382). Among those suffering from extreme QOL impairment, 100% of them have no co-morbidities (*p*-value=0.081).

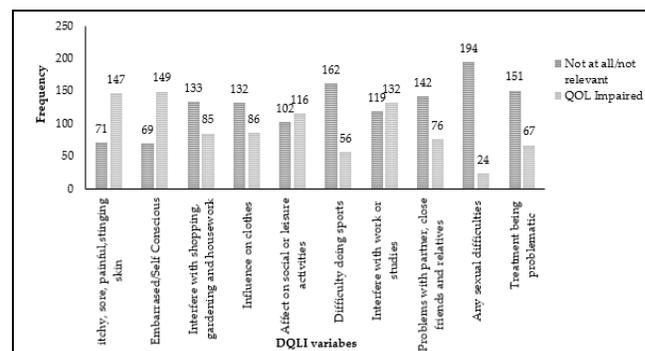


Figure-2: Impaired QOL in different dimension of daily life

Overall, general symptoms and self-perception appear to be the most affected. Surprisingly, a greater portion of the individuals state that acne interferes with their work and/or studies than those not affected by it. However, most cases are not affected in other functional or social aspects of daily life.

Table-I: DQLI Score - Level of Impairment

Risk Factors	No effect at all on patient's life (0-1)	Small Effect on Patient's Life (2-5)	Moderate Effect on Patient's Life (6-10)	Very Large Effect on Patient's Life (11-20)	Extremely Large Effect on Patient's Life (21-30)	p-value
Age						
16 or younger	0(0.0%)	1(1.2%)	1(1.2%)	1(1.2%)	0(0.0%)	0.473
18-20	14(38.8%)	50(59.5%)	28 (50.9%)	24(60%)	1(33.3%)	
21-24	22(61.1%)	33(39.3%)	26(47.3%)	15(37.5%)	2(66.7%)	
Gender						
Female	23(63.9%)	48(57.1%)	34(61.8%)	22(55%)	2(66.7%)	0.911
Male	13(36.1%)	36(42.9%)	21(38.2%)	18(45%)	1(33.3%)	
Education						
College/FA/FSc degree or equivalent	9 (25.0%)	40(47.6%)	26(47.3%)	13(32.5%)	3 (100%)	0.009*
Bachelor's Degree	21(58.3%)	35(41.7%)	17(30.9%)	24(60.0%)	0(0.0%)	
Graduate Degree	6(16.7%)	9(10.7%)	12(21.8%)	3(7.5%)	0(0.0%)	
Family Members						
2	0(0.0%)	2(0.9%)	0(0.0%)	0(0.0%)	1(33.3%)	0.506
3-5	19(52.8%)	47(56%)	26(47.3%)	20(50%)	1(33.3%)	
5-9	16(44.4%)	33(39.3%)	26(47.3%)	19(47.5%)	1(33.3%)	
>9	1(2.8%)	2(2.4%)	3(5.5%)	1(2.5%)	0(0.0%)	

(Test of significance; Chi-square test; *significant p<0.05); n=218

Table-II: DQLI Score - Level of Impairment

Risk Factors	No effect at all on patient's life (0-1)	Small effect on patient's life (2-5)	Moderate effect on patient's life (6-10)	Very large effect on patient's life (11-20)	Extremely large effect on patient's life (21-30)	p-value
Time Spent Outdoors (hours)						
<1	10(27.8%)	21(25%)	16(29%)	14(35%)	2(66.7%)	0.425
1-2	6(16.7%)	27(32.1%)	13(23.6%)	12(30%)	1(33.3%)	
3-4	4(11.1%)	14(16.7%)	9(16.4%)	7(17.5%)	0 (0.0%)	
>4	16(44.4%)	22(26.2%)	17(30.9%)	7(17.5%)	0(0.0%)	
Family History						
Yes	5(13.9%)	24(28.6%)	19(34.5%)	27(67.5%)	0(0.0%)	0.00*
No	31(36.1%)	60(71.4%)	36(65.5%)	13(32.5%)	3(100%)	
Comorbidities						
Yes	1(2.8%)	3(3.6%)	1(1.8%)	6(15.0%)	0(0.0%)	0.081
No	35(97.2%)	81(96.4%)	54(98.2%)	34(85%)	3(100%)	

(Test of significance; Chi-square test; *significant p<0.05); n=218

DISCUSSION

Acne frequently occurs in adolescents and persists into adulthood in 64% of the individuals in their 20s and 43% of the individuals in their 30s.¹³ Many studies have been conducted to assess how dermatological conditions impair patient's QOL; however, these issues have not been adequately addressed in developing countries such as Pakistan.^{14,15}

Our study showed a prevalence of 16.8% among university students in Rawalpindi/Islamabad. Comparatively, a study from Saudi Arabia and China found a prevalence of 14.3% and 38% among female students respectively,^{16,17} while a study in Malaysia reported a prevalence of 68.1%.¹⁸

QOL showed greater impairment in younger patients although there is no significant association between age and QOL. A study in India also echoed our results.¹⁹

There were more female respondents (41%) than male (28%) in our study. This may show the regional predominance of acne among university students in Rawalpindi/Islamabad Pakistan. Another reason could be that females are more likely to use topical steroids for acne, other skin conditions, or for skin bleaching. This may subsequently lead to steroid-induced acne.⁷

Although not significant, females show greater grades of impairment than men in our study. Societal beauty standards place an immense psychosocial bur-

den on females more so than men⁹ thus even a slight skin deformity may cause distress or depression. Other studies have also found no significant gender difference in QOL.^{19,20} A study in Spain showed a statistically significant deterioration of QOL in a female patient in all items of the DQLI questionnaire as compared to male patients except in the treatment item.¹⁵

The influence of education helps shape one's personality as well as social and psychological traits such as self-confidence and perceived personal well-being.²¹ Studies have shown that education was found to have a positive effect on QOL.^{19,22} Educated females had better physical and psychological health and social relationships than their uneducated counterparts.²² Acne patients who were well informed about their condition will be more likely to seek appropriate help, show greater treatment compliance, and feel that they have greater control of their condition.²³

Some studies have shown an opposite trend, where higher education results in greater impairment of QOL. A possible explanation may be that relatively better-educated groups tend to have higher expectations and thus set a higher standard of reference in assessing their subjective life situation. Another possibility may be that greater awareness of the problem leads to greater psychological impact from disease.²²

The relationship between family members and QOL impairment was not significant. Generally, it is seen that with greater family members, the dermatological QOL impairment was decreased. This may be due to increased family support in a larger family.

There is no significant association with time spent outdoors. Those spending more than 4 hours seem to experience little impairment while those spending 1-2 hours outdoors appear to experience a greater level of impairment. Instead of time spent outdoors as a risk factor, it could be the consequence of acne. The greater the level of QOL impairment due to acne, the less time patient spends outdoors.

Studies have shown that family history is associated with an earlier and more severe onset of acne.^{13,23} Surprisingly, our study shows a reduced impairment of QOL with family history despite having a severe grade of acne. This may be due to earlier and better understanding of their ailment and its risk factors, consequently leading to earlier initiation of appropriate treatment and preventative health behaviours.²³ The amalgamation of past experiences, expectations, and beliefs along with new information help formulate decisions. Patients who are aware of the risk factors of

their condition felt more in control of their fate by making behavioural changes.²³ The patient may feel less conscious and embarrassed knowing that he/she is not the only person suffering from acne and feels supported by those family members with similar acne experiences.

A study by Chilicka *et al.* showed a statistically significant decrease in impairment in aspects of daily activities, leisure, school and work, personal relations, and treatment after receiving treatment for their acne.² Our study also showed a decrease in QOL impairment with any given treatment; however, this trend is not statistically significant.

The three main comorbidities in our study include anxiety, depression, and polycystic ovarian syndrome (PCOS). The first two may be due to acne while PCOS may be the cause.^{9,13} Alternatively, an individual may have depression and anxiety independent of their skin condition or may be exacerbated by it thus causing an even greater QOL impairment. PCOS shows elevation of androgenic hormones which cause excess keratinization of the hair shaft and increased sebum production. This results in the formation of white and black comedones. Subsequent infection with *C. acne* causes inflammation resulting in the formation of nodules and pustules.²⁴

Around 67% of our cases reported physical symptoms due to acne. A study conducted in Rawalpindi showed that 66% of cases suffered from itchiness, burning, and stinging.¹ A study in Saudi Arabia showed that 33.2% of their patients were bothered by their symptoms.¹⁶ In addition to physical discomfort, deterioration of self-esteem and self-image is a psychological sequelae of acne vulgaris sufferers. This is supported by our study in addition to several other studies.^{1,4,7,9,13} Some subjects believed that their acne had adversely affected their personalities.¹⁹

In our study, 39% of cases felt their acne affected their clothing choices. In 2014, a study reported 14.4% of adolescents avoided wearing clothes that revealed their extra-facial acne. Considering Pakistani cultural values, clothing choices don't have a detrimental impact on QOL, since people generally prefer to wear clothes that cover most of their bodies. However, this factor may have greater implications in other cultural settings where wearing revealing garments is not considered taboo.

Almost half the cases in our study claimed that their skin condition affected their social and leisure activities. However, most of them experienced a little

QOL impairment. Studies have shown that acne is a major predisposing factor to social withdrawal and the development of avoidance behaviour.^{9,19} Up to 60% of female medical students felt their social activities were affected by their acne.¹

In this study, 60% of cases felt acne negatively affected their work and studies. Another study showed parallel results. Those with acne are perceived to be unattractive, unhealthy, insecure, having a lower educational level, and poor leadership qualities.¹⁰ A significantly higher unemployment rate is seen among acne patients than those with clear skin. This may be due to their lower self-esteem which affects their performance. Additionally, interviewers are less willing to hire those with acne or other skin conditions.

In terms of sexual difficulties, many of our participants marked the question as not relevant either because most of the participants being students were not married or due to stigmatization around discussing such matters as they are considered taboo in Pakistan. Other studies have shown that females believe that their physical appearance plays a huge role in their sexual relationships.⁸

With access to multiple means of hiding acne including makeup application, females have found ways to improve their QOL. However, a study in 2019 showed that 61.2% of the females found acne treatment messy and time-consuming.¹

LIMITATIONS OF STUYD

The cross-sectional design of our study limits us from drawing any conclusions on causality. The data collected in our research was self-reported thus depends on our subjects for authenticity. The study included only those who have been previously diagnosed with acne, thereby creating a slight underestimation of the prevalence due to the presence of undiagnosed cases. Since the study was limited to a specific and small set of populations, it is difficult to generalize it to the general population.

CONCLUSION

The struggle of acne sufferers from their physical symptoms and self-esteem affects their mental health. As a result, these patients find difficulties in studies, work, and their social life. Education and family history showed a statistically significant improvement in QOL. The multidimensional nature of acne requires that dermatologists to not just treat the physical symptoms but also to identify those at a greater risk of developing psychosocial impairment.

Conflict of Intrest: None.

Author's Contribution

Following authors have made substantial contributions to the manuscript as under

AS: Supervision, Conception of Research idea and techniques, revising article for final intellectual improvements, data interpretations & final apporval of the version to be published.

SFM: Co- Supervision, Conception of Research idea and techniques, revising article for final intellectual improvements, data interpretations & final apporval of the version to be published.

AZ: Literature Review, Introduction writing, data collection, abstract writing, methodology writing, SPSS data entry and analysis, results, writing discussion writing, conclusion writing & final apporval of the version to be published.

MM: Literature review, Introduction writing, data entry, discussion writing, proof reading & final apporval of the version to be published.

NA: & NUSK: Data collection, data entry on SPSS, results wring, Discussion writing, proof reading & final apporval of the version to be published.

Authors agree to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investi-gated and resolved.

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