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THE BURDEN OF ACNE ON MEDICAL STUDENTS: PREVALENCE, QUALITY OF LIFE, AND SELF-TREATMENT PRACTICES

Ameer Afzal Khan[1], Rahman syed[2], Mohammad Idrees[1], Aftabur Rahman[1], Anfal khan[1], Mohsin Ali[1]

1.Saidu medical college, Swat, Pakistan.

2.Swat medical College, Swat, Pakistan.

Corresponding Email: Ameerafzalkhan78@gmail.com

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ABSTRACT

BACKGROUND Acne is a common skin condition, especially among young adults like medical students. It can affect self-esteem, cause anxiety, and lead to social withdrawal, making the already stressful academic life even harder.

OBJECTIVE This research aims to explore the prevalence of acne among this demographic, assess its effects on their quality of life (QoL), and investigate common self-treatment practices employed by students to manage their condition.

METHODOLOGY This cross-sectional study involved 258 medical students from Khyber-Pakhtunkhwa (KPK), employing a simple random sampling technique for data collection. A 37-question questionnaire was administered, and quality of life was assessed using the Cardiff Acne Disability Index (CADI), with data analyzed using SPSS.

RESULTS : This study highlights that acne is common among medical students and impacts their physical and mental well-being. Offering better mental health support, nutrition advice, and dermatological care can reduce its effects and improve overall health, serving as a model for healthcare systems that address both physical and mental health.

CONCLUSION: This study highlights that acne is common among medical students and impacts their physical and mental well-being. Offering better mental health support, nutrition advice, and dermatological care can reduce its effects and improve overall health, serving as a model for healthcare systems that address both physical and mental health.

KEYWORDS : Acne, Prevalence, Quality of life, medical students, self-medication.

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INTRODUCTION

Acne vulgaris is the most common skin disorder worldwide, affecting 9.4% of the global population and ranking as the eighth most prevalent disease.[1,2] It is a chronic inflammatory condition that impacts 85% of adolescents, both males and females and can persist into adulthood.[3] The condition is characterized by various lesions, including comedones, papules, nodules, cysts, and post-treatment pigmentation or scarring.[4] These lesions typically appear during adolescence and can continue into adulthood, causing both physical and emotional challenges.[5]

Acne is hypothesized to be caused by various reasons, including increased sebum production by androgens, altered keratinization, Propionibacterium acnes, inflammation, and sebaceous follicle obstruction.[6] However, the exact etiology and risk factors associated with acne development remain unknown.[7] Assessing the severity of acne vulgaris remains a challenge for dermatologists. Its severity ranges based on the kind and size of lesions, the degree of involvement, inflammation, and scarring.[8]

Acne on the face can negatively impact body image and socializing. Therefore, it is not surprising that individuals with face acne may experience significant psychosocial disabilities.[9] Adolescents are often obsessed with images of perfection. Acne can have a significant impact on individuals, potentially leading to functional or emotional breakdown. Researchers who have looked into the psychological impacts of acne have found that people who have it are unhappy with their looks, feel embarrassed, self-conscious, and have low self-esteem.[10] Acne-deforming lesions may have a greater influence on individuals of this age range due to their lack of maturity. Considering all the bad effects acne can have on your mental and social life, it's clear that it can seriously lower your QoL.[11]

Medical students often self-medicate due to their knowledge of pharmacology and easy access to medications from various sources, including medical representatives, hospital pharmacies, wards, and senior students. Medical students practice self-medication at rates ranging from 57.7% to 76% which is higher than in the general population (60%).[12,13] Acne is often viewed as a minor condition, leading medical students to self-medicate based on pharmaceutical expertise and peer influence. Acne patients may use self-medication for several reasons, including mild sickness, knowing the treatment from past prescriptions, drugs being easily available, lack of time, embarrassment to discuss their own symptoms, and pharmacological knowledge.[14]

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While there is existing research on the prevalence, QoL, and self-treatment practices of acne among medical students, these studies have been conducted in different setups and contexts. Since no comparable research has been undertaken in our setting in the last five years, this study will give the most up-to-date information on the prevalence, QoL, and self-treatment behaviors of acne among medical students in our setup.

METHODOLOGY

This was a cross-sectional study, designed to investigate the prevalence, QoL, and self-treatment practices of acne among medical students from Khyber-Pakhtunkhwa (KPK). This study was conducted over two months from 5 August to 5 October 2024. The sample size was calculated using the WHO sample size calculator by keeping a 95% confidence interval, and a population size of 8000. A simple random sampling technique was used to have representation from different medical colleges. The participants included in this study were medical students aged 18-27 years and currently enrolled in a medical college in Khyber Pakhtunkhwa (KPK). Pupils who were absent or reluctant to participate were excluded.

Participants were recruited through messages sent via social media platforms, including Facebook and WhatsApp groups associated with medical colleges in Khyber Pakhtunkhwa (KPK). Announcements were made inviting students to voluntarily participate in the study. The participation was voluntary, and no incentives were offered.

Data was collected using a questionnaire. The questionnaire was prepared with the help of literature. The questionnaire consists of a total of 37 questions. It had 9 demographic questions, 9 questions to gather personal experiences regarding acne, including frequency and severity, 5 questions were related to the QoL Impact, assessed using the Cardiff acne disability index (CADI) focusing on the effects of acne on emotional well-being, social interactions, and academic performance of medical students, 6 questions about diet and lifestyle factors and 10 questions regarding Self-Treatment Practices, describing methods for managing acne, including products and treatments used. In CADI, each question is assessed on a 4-point Likert scale (0-3), with 0 indicating no influence on QoL and 3 indicating the greatest effect. The CADI total score is computed by adding the scores from each question, yielding a theoretical maximum of 15 and a minimum of 0. A higher overall score indicates a greater QoL impairment caused by acne.

The data was collected using Google Forms. The questionnaire was initially pilot tested for reliability with fifteen randomly selected students from the participating students. Some modest improvements were made to improve the questionnaire's reliability and validity based on the findings of the pilot test. Participants were requested to voluntarily sign an attached online consent form before proceeding to answer the questionnaire.

Data Analysis: The data from the completed questionnaires were inputted into SPSS version 25 for analysis. In descriptive analyses, continuous variables were reported as medians and standard deviations, while categorical variables were expressed as frequencies and proportions. The chi-square test was used to determine the significance of categorical variables. A 95% confidence interval (CI) was calculated for all estimates, and a p-value of below 0.05 was considered statistically significant.

This study followed ethical guidelines to protect participants. Informed consent was obtained electronically, and participants were informed about the study's purpose, procedures, and their right to withdraw anytime. Confidentiality was ensured by keeping responses anonymous, with no personal information recorded. Participation was voluntary, and no incentives were provided.

Ethical approval with reference no. 174-ERB/024 was obtained from Ethical Review Board of Saidu Medical College, Swat on 13/10/24.

RESULTS

A total of 258 students participated in the study. Among participants 185 (71.7%) were male and 73 (28.3%) were female. 180 (69.8%) students have acne while 78 (30.2%) students don't have acne. This indicates the prevalence of acne among medical students as 69.8%.

Table 1 shows the different demographic characteristics and their association with acne incidence. Gender, BMI, Smoking, Current mental status, and Skin type were significantly ($p<0.05$) associated with acne incidence.

DOI: 10.69723/njms.03.04.0447

Table 1: Characteristics of the participants and the associations between sample characteristics and acne incidence.

VARIABLE	FREQUENCY (%) N= 258	PARTICIPANTS WITH ACNE n= 180	PARTICIPANTS WITHOUT ACNE n= 78	p-value
AGE				
Less than 20 years	42 (16.3%)	32(17.8%)	10(12.8%)	
20-25 years	186 (72.1%)	124(68.9%)	62(79.5%)	0.206
Greater than 25 years	30 (11.6%)	24(13.3%)	6 (7.7%)	
GENDER				
Male	185 (71.7%)	121(67.2%)	64(82%)	**0.015**
Female	73 (28.3%)	59(32.7%)	14(18%)	
YEAR OF STUDY				
First-year	53 (20.5%)	38((21.1%)	15(19.2%)	
Second year	64 (24.8%)	46(25.5%)	18(23%)	0.810
Third year	46 (17.8%)	30(16.6%)	16(20.92%)	
Fourth-year	52 (20.2%)	34(18.8%)	18(23%)	
Final year	43 (16.7%)	32(17.8%)	11(14.1%)	
BMI				
Underweight	37 (14.3%)	32(17.7%)	5(6.4%)	
Normal weight	163 (63.2%)	96(53.3%)	67(85.9%)	**0.0001**
Overweight	40 (15.5%)	36(20%)	4(5.1%)	
Obese	18 (7%)	16(8.9%)	2(2.5%)	
HOURS OF SLEEP EACH NIGHT				
4-6 hours	110 (42.6%)	80(44.4%)	30(38.5%)	
7-9 hours	120 (46.5)	80(44.4%)	40(51.3%)	0.584
10-12 hours	21 (8.1%)	14(7.8%)	7(9%)	
Greater than 12 hours	7 (2.7%)	6(3.3%)	1(1.3%)	
SMOKING				
Yes	41 (15.9%)	36(20%)	5(6.4%)	**0.006**
No	217 (84.1%)	144(80%)	73(93.6%)	
CURRENT MENTAL STATUS				
Stressful	127 (49.2%)	101(56.1%)	26(33.3%)	**0.001**
Not stressful	131 (50.8%)	79(43.9%)	52(66.6%)	
SKIN TYPE				
Normal	54 (20.9%)	18(10%)	36(46.1%)	
Dry	24 (9.3%)	7(3.9%)	17(21.7%)	**0.0001**
Oily	104 (40.3%)	90(50%)	14(17.9%)	
Combination	76 (29.5%)	65(36.11%)	11(14.1%)	
WATER INTAKE IN A DAY				
Less than 1 liter	77 (29.8%)	61(33.9%)	16(20.5%)	
1-2 liters	142 (55%)	95(52.8%)	47(60.2%)	0.079
More than 2 liters	39 (15.1%)	24(13.3%)	15(19.2%)	
PHYSICAL EXERCISE				
Daily	41 (15.9%)	24(13.3%)	17(21.8%)	
Several times a week	71 (27.5%)	51(28.33%)	20(25.6%)	0.093
Once a week	61 (23.6%)	49(27.2%)	12(15.3%)	
Rarely	85 (32.9%)	56(31.1%)	29(37.1%)	

DOI: 10.69723/njms.03.04.0447

Table 2 shows the association between diet and acne incidence. Fast food (e.g. burgers, fries, pizza), and processed food (e.g. chips, packaged snacks) were significantly ($p<0.05$) associated with acne incidence.

Table 2: Association between diet and acne incidence.

Variable	Frequency (%) N=258	Participants with acne n= 180	Participants without acne n=78	p-value
How often do you consume the following foods?				
Dairy products (e.g. milk, cheese, yogurt)				0.087
Daily	133(51.5%)	102(56.6%)	31(39.7%)	
Weekly	90(34.9%)	56(31.1%)	34(43.6%)	
Monthly	31(12%)	19(10.5%)	12(15.3%)	
Never	4(1.5%)	3(1.6%)	1(1.2%)	
Sugary foods (e.g. candy, pastries, soda)				0.844
Daily	95(36.9%)	66(36.6%)	29(37.1%)	
Weekly	130(50.4%)	93(51.66%)	37(47.4%)	
Monthly	28(10.9%)	18(10%)	10(12.8%)	
Never	5(1.93%)	3(1.66%)	2(2.5%)	
Fast food (e.g. burgers, fries, pizza)				**0.027**
Daily	36(14%)	28(15.5%)	8(10.2%)	
Weekly	116(64.3%)	89(49.4%)	27(34.6%)	
Monthly	97(37.6%)	58(32.2%)	39(50%)	
Never	9(3.5%)	5(2.7%)	4(5.1%)	
Fruits and vegetables				0.648
Daily	133(51.5%)	96(53.33%)	37(47.4%)	
Weekly	88(34.1%)	57(31.6%)	31(39.7%)	
Monthly	34(13.2%)	25(13.8%)	9(11.5%)	
Never	3(1.1%)	2(1.1%)	1(1.28%)	
Whole grain (e.g. brown rice, whole wheat bread)				0.476
Daily	138(53.5%)	99(55%)	39(50%)	
Weekly	105(40.7%)	73(40.5%)	32(41%)	
Monthly	12(4.65%)	6(3.33%)	6(7.7%)	
Never	3(1.15%)	2(1.1%)	1(1.28%)	
Processed food (e.g. chips, packaged snacks)				
Daily	91(35.3%)	62(34.4%)	29(37.2%)	
Weekly	129(50%)	97(53.8%)	32(41%)	**0.038**
Monthly	24(9.3%)	11(6.1%)	13(16.6%)	
Never	14(5.4%)	10(5.5%)	4(5.1%)	
Dry fruits				0.227
Daily	56(21.7%)	39(21.6%)	17(21.8%)	
Weekly	98(38%)	65(36.1%)	33(42.3%)	
Monthly	97(37.6%)	73(40.5%)	24(30.7%)	
Never	7(2.71%)	3(1.6%)	4(5.1%)	

Table 3 shows the diagnosis, severity, locations, and complications of acne. 74.4% of the participants were diagnosed with acne by a healthcare professional. Most of the participants (78.9%) first experienced acne at age 10-20 years. Regarding acne flare-ups, most of the participants (51.7%) experience it weekly. The face (90.6%) was the most common location for acne. The most common complication of acne was scarring, with 82.8% of the participants experiencing it.

DOI: 10.69723/njms.03.04.0447

Table 3: Diagnosis, severity, locations, and complications of acne.

VARIABLES	FREQUENCY (N=180)	PERCENTAGE (%)
Diagnosed with acne by a healthcare professional		
Yes	134	74.4%
No	46	25.6%
Age at which first experienced acne		
Less than 10 years	17	9.4%
10-20 years	142	78.9%
Greater than 20 years	21	11.6%
Acne severity		
Mild	80	44.4%
Moderate	79	43.9%
Severe	18	10%
Very severe	3	1.7%
Number of acne lesions experienced on face/body		
0	2	1.1%
1-5	96	53.3%
6-10	66	36.7%
11-20	12	6.7%
Greater than 20	4	2.2%
Experiences acne flare-ups		
Daily	25	13.9%
Weekly	93	51.7%
Monthly	45	25%
Rarely	17	9.4%
Experiences acne at		
Face	163	90.6%
Back	70	38.9%
Chest	44	24.4%
Shoulders	55	30.6%
Scarring as a result of acne		
Yes	149	82.8%
No	31	17.2%
Scarring is		
Mild	90	60.4%
Moderate	50	33.6%
Severe	9	6%

Table 4 shows that the overall mean CADI score was 5.44±4.06 which indicates mildly impaired QoL among medical students due to acne.

DOI: 10.69723/njms.03.04.0447

Table 4: Cardiff acne disability index of the participants.

CADI ITEMS	MEAN±SD	RANGE
As a result of having acne, during the last month have you been aggressive, frustrated, or embarrassed?	1.14±0.77	0-3
Do you think that having acne during the last month interfered with your daily social life, social events, or intimate personal relationships?	1.06±0.88	0-3
During the last month have you avoided public changing facilities or wearing swimming costumes because of your acne?	0.77±0.86	0-3
How would you describe your feelings about the appearance of your skin over the last month?	1.23±0.85	0-3
Please indicate how bad you think your acne is now.	1.24±0.70	0-3
Total	**5.44±4.06**	**0-15**

Table 5 shows the treatment and self-medication practices of acne among participants. 76.6% of students have sought treatment for their acne. 62.3% of the participants self-medicate for their acne. 60.7% of the participants believe that their self-treatment practices are effective.

Table 5: Treatment and Self-medication practices of acne among participants.

VARIABLE	FREQUENCY	PERCENTAGE (%)
Sought treatment for acne		
Yes	138	76.6%
No	42	23.3%
Type of treatment used		
Over-the-counter products	34	24.6%
Prescription medications	58	42%
Home remedies	51	36.9%
Dermatological treatments	65	47.1%
Herbal products	39	28.3%
Acne face wash	72	52.2%
Cosmetic creams	46	33.3%
Self-medicate for acne		
Yes	112	62.3%
No	68	37.7%
Self-treatment practices effective		
Yes	68	60.7%
No	44	39.3%
Consulted with a healthcare professional about acne		
Yes	124	68.9%
No	56	31.1%
Satisfaction with the advice or treatment received		
Very satisfied	7	5.6%
Satisfied	20	16.1%
Neutral	61	49.2%
Dissatisfied	30	24.2%
Very dissatisfied	6	4.8%

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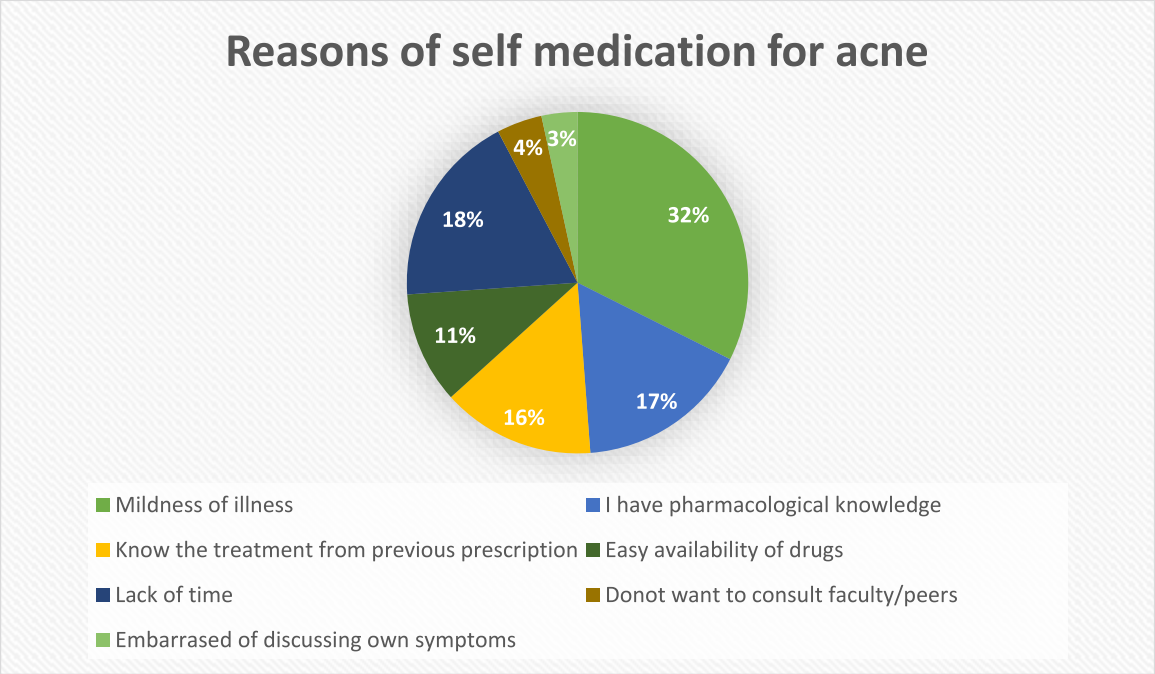

Figure 1: Reasons for self-medication for acne.

DISCUSSION

The study has offered valuable insight into several aspects of acne among medical students, including prevalence, quality of life, and self-treatment practices.

Our study revealed that the prevalence of acne among medical students was 69.8%. Other research from around the world found that acne was common in a range of places, from 34.4% in Bangladesh to 97.9% among Saudi female medical students.[15,16] In Saudi Arabia, two other studies found that acne was common in 55% and 55.5% of people.[17,18] Furthermore, acne was also prevalent in Malaysia (68.1%), India (66.6%), Portugal (62.2%), and several European nations (57.8%).[19-22] This indicates that the prevalence of acne in our study is consistent with that of other studies. In our study, 63.2% of the students had normal BMI (BMI=18.5-<25), 15.5% were overweight (BMI=25-<30), 14.3% were underweight (BMI<18.5), and 7% were obese (BMI≥30). Our findings also reveal that BMI was significantly associated with acne incidence. Another study conducted in Palestine found that 63.1% of the students had a normal BMI, 23.1% were overweight, 6.6% were obese, and 7.1% were underweight.[1] This shows that the BMI of the participants in our study is consistent with that of other studies. Since BMI is significantly associated with acne according to our study, educational programs focusing on maintaining a healthy BMI through balanced diets and regular physical activity should be promoted.

Skin type has a crucial and significant role in acne development and propensity. In our study skin type was significantly ($p<0.05$) associated with acne incidence. The most predominant skin type in our study was oily (40.3%). It was found that this distribution is important for both acne and its development. The pathogenesis of acne probably explains this; it causes overproduction because sebum clogs pores and gives bacteria a place to grow.[6] Previous research done in Seoul, Korea, on this topic, supports the idea that people with oily skin produce more sebum.[23] As oily skin is found to be significantly associated with acne, medical students with oily skin should be encouraged to follow appropriate skincare regimens, including gentle cleansing and oil-free moisturizers.

Our study finding also revealed that smoking is significantly ($p<0.05$) associated with acne incidence. A previous study also shows similar findings.[1] This indicates the need for anti-smoking campaigns targeted at medical students. Educational programs highlighting the negative effects of smoking on skin health, including its contribution to acne, should be integrated into student wellness programs. Our study also shows that 49.2% of the students were stressful and stress was significantly ($p<0.05$) associated with acne incidence. Previous studies also show similar results.[1,16] This indicates that the findings of our study are consistent with previous research.

In dietary habits, fast food (e.g. burgers, fries, pizza) was significantly ($p<0.05$) associated with acne incidence in our study. Previous studies also revealed similar findings.[24,25] An interesting finding was that eating processed food (e.g. packaged snacks) was also significantly ($p<0.05$) associated with acne incidence in our study. Previous studies suggest that salt and salty snacks

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influence the formation of acne changes.[26-28]

Our study also revealed that the mean overall CADI score was 5.44±4.06 indicating a mildly impaired QoL among medical students due to acne. The mean ± SD score for questions 1, 2, 3, 4, and 5 of CADI respectively was 1.14 ± 0.77, 1.06 ± 0.88, 0.77 ± 0.86, 1.23 ± 0.85, and 1.24 ± 0.70. A previous study conducted in Egypt found that the mean score ± SD for each question was 1.04 ± 0.99, 0.72 ± 0.91, 0.47 ± 0.83, 1.35 ± 0.98, and 1.36 ± 0.82 respectively.[29] Our study reveals a greater impact on QoL due to social interference and the avoidance of public settings compared to previous research.

Our study findings show that 62.2% of the participants self-medicate for acne. Previous studies conducted in Pakistan and India show similar results, where 50.4%, and 59.2% of the participants respectively, were self-medicating for acne.[14,30] Our study revealed the reasons for self-medication for acne among medical students as mildness of illness (32%), lack of time (18%), pharmacological knowledge (17%), knowing the treatment from previous prescriptions (16%), easy availability of drugs (11%), do not want to consult faculty/peers (4%), and embarrassed of discussing own symptoms (3%). A previous study conducted in India also found these reasons respectively as 42.3%, 15.6%, 2.3%, 28.9%, 17.9%, 9.8%, and 3.6%.[14]

Our study has several strengths, including a relevant focus on medical students, which demonstrates their unique challenges, and a broad strategy that investigates not only the prevalence of acne but also its impact on QoL and self-treatment practices, aided by a cross-sectional design that allows multiple variables to be evaluated at the same time point. However, the study also has limitations; its cross-sectional nature limits the ability to establish a relationship between acne and its effects while relying on self-reported data could lead to bias or inaccuracies. Furthermore, the findings might not be generalizable beyond the medical student population, and potential confounding factors, such as stress levels and pre-existing mental health conditions, weren't accounted for, which could influence the results.

CONCLUSION

Acne was common among medical students, with significant associations found between acne incidence and factors such as gender, BMI, smoking, mental status, and skin type. Additionally, fast food and processed foods were linked to higher acne rates. Most students self-medicate, citing reasons like mild illness, pharmacological knowledge, time constraints, and familiarity with previous treatments.

To address acne among medical students, colleges should raise awareness about prevention and treatment, promote healthy diets and lifestyles, and offer skincare advice. Smoking cessation and stress management programs should be provided, along with mental health support for acne's emotional impact. Students should be educated on the risks of self-medication, and access to professional dermatological care should be made available for proper diagnosis and treatment. This approach can help reduce acne prevalence and improve students' quality of life.

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CONFLICT OF INTEREST

The authors declare no conflict of interest related to this publication

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Key Contributions of the Authors	
Author Names	**Author Contributions**
Ameer Afzal Khan	A, C, D
Rehman Syed	A, C, D
Mohammad Idrees	B, D
Aftab ur Rehman	C, D
Anfal Khan	C, D
Mohsin Ali	A, D

Key for Author Contributions:
A.Conception or Design
B.Acquisition, Analysis, or Interpretation of Data
C.Manuscript writing
D.Critical Review and approval
All the 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 investigated and resolved