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Original Article

Correlation of stress and self-esteem with acne in undergraduate medical students: Multi-center cross-sectional study

Zainab Ansari, Moizza Tahir*, Ali Bin Waqar, Huda Kazim, Moiz Majeed Khan, Fatima Hasnat, Zarmeen Khawer, Irfan Ahmed#**

MBBS students, Army Medical College, Rawalpindi.
* Department of Dermatology, Combined Military Hospital, Gujranwala.
** Rawalpindi Medical University, Rawalpindi.
# Health Care Administrator, Combined Military Hospital, Gujranwala.

Abstract

Objective To correlate stress and self-esteem in undergraduate medical students with acne.

Place and duration Multicenter cross- sectional study. Medical Students from Army Medical College, Rawalpindi, CMH Lahore Medical College, Rawalpindi Medical University, Sargodha Medical College and Karachi Institute of Medical Sciences were enrolled, for a duration of six months, from November 2021 to May 2022.

Methods The study was conducted on 136 medical students fulfilling inclusion and exclusion criteria by non-probability, consecutive sampling technique. Self-esteem was analyzed by validated tool of Rosenberg Self-esteem scale (RSES), Acne disability was measured by Cardiff Acne Disability Index (CADI) and Stress levels were determined by Self Perceived stress scale (PSS-4). Data was analyzed by SPSS-25.

Results Total of 136 medical students participated in the study. There were 80 (58.8%) females and 56 (41.2%) males. The mean age was 20.2±1.57 years. Fifty-Five students had mild, 36 moderate, 45 had severe acne. The mean Cardiff Acne Disability Index score was 5.76±2.593, range 0-12). Seventy-six students (55.07%) had a low, 50 (36.2%) had medium and 10 (7.24%) had high disability index to acne vulgaris. Mean Rosenberg self-esteem scale was 10.01±3.211 (range 0–27). Stress level secondary to acne was recorded as high in 32.1% of the medical students, moderate in 36.2% and low in 28.3%. Perceived stress scale (PSS)-4 in undergraduates had Mean PSS score of 7.3456 (±2.8854, Range 0-16). There was significant ($p<0.007$) association between Cardiff acne disability index and perceived stress scale among medical students. Cardiff acne disability index is significantly associated with self-esteem ($p<0.001$).

Conclusion Rosenberg self -esteem scale and Cardiff Acne Disability Index demonstrated significant correlation between stress and acne and its impact on self -esteem levels. Health Care givers need to recognize impact of acne on self- esteem while devising management strategies and counseling sessions.

Key words
Acne Vulgaris; Self-esteem; Cardiff disability Index; Perceived stress scale (PSS).

Introduction

Acne vulgaris (AV) affects pilosebaceous units under the influence of normal levels of dehydroepiandrosterone (DHEA).[1] Sequalae of acne are post inflammatory hyper pigmentation and/or atrophic scars that influence quality of life (QoL) and self-image. Anxiety and depression have been linked with acne.[2]

Address for correspondence
Prof. Col. Moizza Tahir,
Classified Dermatologist,
Combined Military Hospital, Gujranwala.
Email: drmoizzatahir@yahoo.com

Researchers reported lower self -esteem in both male and female with acne.[3]

Psycho- social impact of acne should be the guiding principle of its management. It needs an effective treatment and psychiatric screening of patients with the condition.[4] Its impact is multidimensional as it lowers self-confidence, and affects social relations.[5]

The Cardiff Acne Disability Index (CADI) is a validated instrument to assess QoL with acne. It has been globally used in clinical research.[6] Rosenberg Self-Esteem Scale (RSES) is research instrument to evaluate self-esteem, that is person's self-assessment of his or her worthiness. The RSES has 10-questions, intended to signify self-worth statements which has been used in the current study.[7]

Many psychological and emotional concerns are present among acne patients. Medical students are vulnerable to negative psychological and societal effects of acne. Study on the effects of acne vulgaris and the mental health of medical students is needed.[8] Present study aims to correlate stress and self-esteem levels in undergraduate medical students with acne. The study would contribute in wholistic management of acne.

Method

This was a cross-sectional study done in five different medical colleges; Army Medical College Rawalpindi, Rawalpindi Medical University, Karachi Institute of Medical Sciences, CMH Lahore Medical College and Institute of Dentistry and Sargodha Medical College. Institutional ethical review board (ERB No;07-2022) approved study. It was conducted for six months from 15 May 2022 to 15 Nov 2022. Sample size of 136 patients was calculated by sample size calculator. net with confidence interval of 95%, margin of error of 5%,[1] population proportion of 10%, with estimated population size of 75000. All medical students between 18-25 years of age willing to participate, were included by non-probability purposive sampling technique. Medical students on medication for mental health, drug addiction and diabetes were excluded from the study.

Data was collected by Google form Software, sent via link and email to medical students. Demographic details included age, gender, year of study and grading of acne were recorded. QOL was measured using CADI, stress using PSS-4, while self-esteem using RSES. CADI is a short five-item questionnaire, set of five questions with four answers with 0-3 score, with a score of 15 to 0, adding scores of questions.0-5 transcribe mild quality of life disability, 6-10 moderate and 11-15 impaired QOL.PSS-4 is a stress assessment questionnaire, set of questions with four answers (0=never, 1=almost never, 2=sometimes, 3=fairly often, 4=very often). PSS-4 scores were obtained by summing across all four items. Scoring items 2 and 3 required reverse coding. The scores of maximum 16 and minimum 0, 0-7 transcribe low stress, 8 as moderate and 16 as high stress. RSES is a ten-question based scale with 4 answers with 0-3 score, with a score range of 30 to 0. Score less than 15 indicated low self-esteem, with 0 being problematic low self-esteem and 40 being high self-esteem.

Data was evaluated by statistical package for the social sciences (SPSS-25). Quantitative variables of age, PSS, CADI and RSES were described as mean ±SD while qualitative data of gender was described in frequency and percentage. Paired sample t-test was employed for association of CADI with RSES and PSS. p value of ≤ 0.05 was taken as significant.

Results

Total 136 medical students joined the study. There were 80 (58.8%) females and 56 (41.2%) males. The mean age was 20.2±1.57 years. Seventy students were in first year and 66 were in second year MBBS. Mild acne was reported in 55 (40.4%), moderate in 36 (26.5%) and severe in 45 (33.5%). Mild acne was observed in 24 males and 31 females. In moderate group, males were 14 (30.8%) and females were 22 (56.5%). Severe acne was present in 18 (7.7%) males and 27 (11.3%) females. Perceived stress scale, CADI and RSES score in acne among medical students are listed in **Table 1**.

The mean CADI score was 5.76±2.593 (range 0-12). Mean RSES score was 10.01±3.211 (range 0–27). Perceived stress scale (PSS)-4 in undergraduates had mean PSS score of 7.3456 (±2.8854, Range 0-16). There was significant (p<.007) association between Cardiff acne disability index with perceived stress scale and self-esteem among medical students.

Table 1 Self -esteem, perceived stress score and acne disability index in relation to mild moderate and severe acne in medical students.

Scores	*Acne grading*		
	Mild	*Moderate*	*Severe*
	55 (40.4%)	*36 (26.5%)*	*45 (33.5%)*
Self -esteem score			
Low (<12)	50	22	38
Moderate	4	8	7
High (>15)	1	6	0
Perceived stress score			
Low	31	18	24
Moderate	8	7	6
High	16	11	14
Acne disability index			
Low	33	17	26
Medium	22	16	12
High	0	3	7

Discussion

Stress is a known trigger of acne. It releases neuroactive substances with in epidermis that activate inflammatory processes in skin.[9] Zari S *et al.* in Jeddah in a cross -sectional study of 151medical students reported acne in 83.4%of females.[10] Baber O *et al.* in cross sectional study of undergraduate medical female students at Rawalpindi reported prevalence of acne in 14.47% cases.[11] Acne was reported in 58.8% cases in female undergraduate medical student in our study. Whereas Al Khubaisy *et al.* reported acne in young male (p<.0001).[12] These variations are attributed to differences in intrinsic immunity, diet in particular dairy products in individuals between 7-30 years of age,[13] hormones and the cutaneous microbiome[14] in acne.

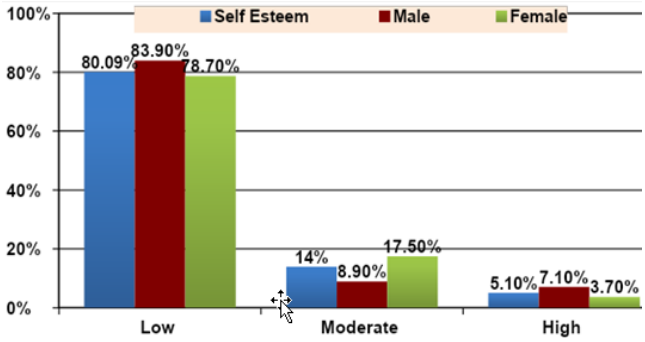

Figure 1 Self-esteem in males and female with acne using Rosenberg self-esteem scale.

Table 2 Correlation of acne disability with stress and self esteem.

Parameters	*Mean +Sd*	*p-value*
Pair 1		
Perceived stress	1.76+.89	0.007
Acne disability index	1.51+.63	
Pair 2		
Acne disability index	1.51+.63	<0.001
Self -esteem	1.24+.53	

Cardiff acne disability index represented impairment of QoL in undergraduate medical students in our study. Shams N *et al.* in a cross-sectional study of 205 adolescent patients at Islamabad reported no impairment in 7.3%, minimal (19.5%), moderate (61%) and maximum in (12%) as per CADI score.[15] Raza A *et al.* in a cross-sectional study in undergraduate

medical students in Lahore reported severe impairment in 4.7% cases, moderate 27.7%, mild 58.7% and no impairment in 8.9% cases.[16] T Walker N *et al.* in another cross-sectional survey of 200 Scottish adolescents reported that acne significantly impacts QOL in teen. Differences in QoL impairment are attributed to social and cultural norms and demographics. Misconceptions in knowledge of medical students about acne need education.[17]

Acne was related to low self-esteem (.001) and stress (.007) in undergraduate medical students. In a study conducted in Nigerian undergraduates' acne severity was correlated with CADI score. Acne patients who had hyperpigmentation ($p<0.001$) had poor quality of life in comparison to without hyperpigmentation.[18] Hosthota H *et al.* related positive correlation of acne and CADI scores ($R=0.51$), as acne worsens, the QOL impairs. Acne severity and RSES score ($R= –0.18$) were negatively corelated, acne gets severe, QOL and self-esteem declines.[19] Although acne is considered as minor cosmetic concern, it has a negative influence on self-respect. It is important to optimize treatment strategies to acne and to facilitate treatment compliance and adherence.[20]

Disturbances in self-respect and impaired QoL in adults with acne demands that dermatologists should focus on unidentified psychological aspects of acne during treatment.[21]

In the present multicentric study acne is correlated with stress, self-esteem, and QoL with validated tools. Qualitative data related to myths, factors which influence attitude of adults with acne to seek treatment was not taken and remained limitation of our study.

Conclusion

Rosenberg self-esteem scale and CADI demonstrated significant correlation between stress and acne and its impact on self -esteem levels. Health Care givers need to recognize effect of acne on self- esteem while devising management strategies and counseling sessions.

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