

Psycho-social Evaluation of University of Chenab Students for HRQoL Based on Acne Specific Quality of Life Questionnaire (Acne-QoL)

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Abstract

Background: Acne is a common inflammatory skin condition that profoundly impacts quality of life, especially in teenagers and adults. Several patient-reported outcome measures (PROMs) for health-related quality of life (HRQoL) through the Acne Specific Quality of Life Questionnaire (Acne-QoL) have been evaluated previously.

Objective: To assess (HRQoL) on the Acne Specific Quality of Life Questionnaire (Acne-QoL) in university graduates both male and female students.

Methodology: The study was designed at the University of Chenab, Gujrat, Pakistan, between January–June 2022. Undergraduate students aged 18–30 yrs of both genders were recruited in a dermatological clinic linked with the University of Chenab, Gujrat after an IRB approved the study protocol and informed consent form. Criteria for the selection of participants for the study were those who were diagnosed with acne and were on oral and topical treatment of acne for 6 months, moreover, all those participants who felt acne hurt their lives. Pathological assessment included 3 nodules, ≥ 15 inflammatory lesions, and mild severity according to AAD classification). Participants were interviewed to complete the acne-specific quality of life questionnaire (Acne-QoL) to assess HRQoL in both male and female students. It was assessed on 4 items including Self Perception, Role-social, Role-emotional, and Acne Symptoms ranging from 0-30.

Results: Among 236 university graduates 92 (38.98) were males and 144 (61.02) were females. Male students have a lower ratio of inflammatory to non-inflammatory types of acne than females. Similarly, females were more conscious of maintaining their hydration levels by taking appropriate cups of water daily. Male participants also have a high history of smoking 70.65, which may aggravate already-existing acne lesions. Female patients have been prescribed antibiotics and retinoids in oral and topical dosage forms, more than males. While male patients adopted Light therapy, Laser skin resurfacing, Microdermabrasion, and Drainage and extraction.

Conclusion: In conclusion, the acne-specific quality of life questionnaire (Acne-QoL) is a reliable and accurate outcome measure for acne patients and can be used to assess HRQoL.

Keywords: Acne-QoL; HRQoL; AAD; PROMs

Background

Acne is most prevalent among adolescents, but it can distress people of all ages. It is characterized by oily and dead skin cells clogging hair follicles, resulting in blackheads, pimples, and whiteheads [1]. Despite the availability of effective drugs, treating acne can be difficult. It is the 8th most prevalent condition globally, affecting 9.4% of individuals globally. Boys are most afflicted by acne, especially the more severe types, and it is most common in postpubescent teens [2].

Acne vulgaris, the most common type of acne, has a significant health cost. Excruciating pain, permanent facial scars, psychological distress, physical discomfort, work-related consequences, and possible psychological abnormalities including depression and suicidal thoughts are all possible outcomes [3]. Acne is caused by several reasons, including increased sebum, increased material build-up in the hair follicle, inflammation, and higher quantities of Propionibacterium acnes. This bacterium is normally found on the skin in small amounts. There are 3 types of acne: nodular (big, painful cysts), inflammatory (red bumps), and comedones (whiteheads and blackheads) [4].

The oil glands in the skin are instructed by hormones to produce more sebum. Whiteheads and blackheads are caused by the formation of sebum and keratin, a protein that helps to maintain the structure of the skin, hair, and nails, which obstructs the hair follicle entrance. Moreover, large, painful nodules may grow as a result of an obstruction of the entry and an increase in inflammation that occurs when a hair follicle ruptures. Acne is influenced by insulin and insulin-like growth factors, both of which increase blood glucose levels. by directly boosting the oil gland's activity and indirectly increasing the levels of insulin, insulin-like growth factor, and other hormones that stimulate it [5].

Acne can be assessed by terms like lesion counts, grading, and dermatologist-related global improvement among patients. Patient QoL changes are rarely visible from above [6]. Therefore, much of the literature on acne focuses on its psychological effects, such as anxiety, melancholy, social seclusion, and low self-esteem. Physician global appraisal and patient assessment of condition and change are uncorrelated, according to several studies. This lack of association shows that general assessments may miss essential disease features that patients care about. These factors may also motivate patients to seek treatment [7].

In most cases, non-standardized unvalidated scales were employed to assess patients' social and psychological qualities, while standardized scales were usually established for mental patients, not acne sufferers [8].

The current study is based to assess the impact of facial acne on Acne-Specific Quality of Life (Acne-QoL) in both Male students and female students. Acne-specific instruments such the Acne Disability Index (ADI)10, Cardiff Acne Disability Index18, and Dermatology-specific Quality of Life (DSQL)19. The DSQL was developed for facial acne clinical studies. In clinical studies, the Acne-specific Quality of Life questionnaire (Acne-QoL) measures the impact of therapy on the quality of life of 13-35-year-old adults with facial acne. So, in the current study Target population was University graduates 18-30 years of both genders [9].

Methodology

The study was designed in January- June 2022 at the University of Chenab, Gujrat, Pakistan. University graduates of 18-30 years of both genders were recruited based on their presentation for routine facial acne care at a local dermatology clinic affiliated with a teaching university in the city of Gujrat under the supervision of Dr Tauseef Ansar. Selection was made based on the following parameters: [10].

- i. subjects visiting a dermatologist for their acne
- ii. subjects who feel acne hurts their lives
- iii. subjects who have started oral and topical treatment for acne > 6 months
- iv. subjects who fulfill specified criteria for acne (3 nodules, ≥ 15 inflammatory lesions, and at least mild severity according to the AAD classification).

The study protocol and informed consent form received approval from an Institutional Review Board. Eligible participants were requested to complete the acne-specific quality of life questionnaire (Acne-QoL) upon entering the study. A week later, university students returned to the clinic for global photography, which would serve as a reference for assessing improvement at the study's conclusion. This included lesion counts utilizing a facial template as outlined by [11] well as acne severity ratings evaluated by both patients and dermatologists, alongside a second administration of the Acne-QoL instrument.

Patient perceptions of acne severity were assessed using a 5-point scale (minimal, mild, moderate, severe, very severe), while physician assessments utilized the AAD classification (mild, moderate, severe). Patients were advised to commence the medications prescribed 1 week prior. All study medications were documented in the case report forms. Participants attended follow-up sessions at weeks 12 and 16 for lesion counting, evaluations of acne severity, assessments of therapy efficacy, and completion of the Acne-QoL questionnaire. The final testing of the questionnaire was conducted in two randomized, double-blind, placebo-controlled clinical trials, as summarized in Fehnel et al.

General demographics and Acne specific data were also inquired including family history, type of skin and water intake, etc [12]. The Acne-QoL questionnaire comprises questions categorized into 4 domains to evaluate the influence of facial acne on HRQoL. Self-perception, Role-Social, Role-Emotional, and Acne Symptoms. The items within each domain are deemed significant by individuals with facial acne, capable of differentiating between acne severity groups and responsive to variations in acne severity over time post-treatment in an uncontrolled study [13]. Responses were tabulated and ANOVA was performed

Results

Among 236 university graduates who were selected for a clinical study about acne 92 (38.98%) were Male students and 144 (61.02%) were female students. Family history data showed male students were more inclined to genetically induced disease. Male students have a lower ratio of inflammatory to non-inflammatory types of acne than female students. Similarly, female students were more conscious of maintaining their hydration levels by taking appropriate cups of water daily (Table 1).

Table 1: Disease history of participants.

	Male Students		Female Students	
	Yes	No	Yes	No
Family History of Acne	10.87	89.1	6.94	95.1
Type of Acne	Inflammatory	Non-inflammatory	Inflammatory	Non-inflammatory
	38.04	61.96	54.5	45.1
Daily intake of 15.5 cups (3.7L for men)? Water	Yes	No	Yes	No
	14.13	85.87	48.61	51.39

Table 2: Assessment of grading of Acne.

Type of Lesions	Comedones and occasional small cysts	Comedones with occasional pustules	comedones and small and large inflammatory papules and pustules	comedones and deep lesions tending to coalesce (Severe)		
Male students	39.13	50.00	9.78	1.09		
Female students	34.03	55.56	6.94	3.47		
Type of Skin	Oily	Sensitive	Dry	Combination		
Male students	29.35	8.70	6.52	55.43		
Female students	30.20	8.70	7.00	55.2		
Morphological Appearance	Small red or pink bumps	blackheads	pimples containing bumps	Whiteheads	Mix	
Male students	5.43	19.57	46.74	21.74	6.52	
Female students	6.02	19.57	50.00	21.74	3.00	
Area affected by Acne on the body	Face, nose, cheeks, chin, and forehead	Chest	Face Sebaceous glands in various parts of the body	Upper back		
Male students	51.09	8.70	29.35	10.87		
Female students	53.00	8.70	29.35	08.87		
Grading	Grade=1	Grade=2	Grade=3	Grade=4		
Male students	38.04	51.09	9.78	1.09		
Female students	34.72	54.86	6.94	3.47		
Proposed reason of your acne told you by physician	Genetics	Diet	Stress	Cosmetics	Meds	Hormonal Products
Male students	7.61	46.74	4.35	39.13	2.17	
Female students	6.94	2.08	0.69	27.70		62.50

Assessment of grading of Acne:

Assessment of grading was done by observing the responses of participants regarding the type of skin and morphological appearance of acne. Moreover, the type of lesion was also helpful in evaluating the grade of acne. Table 2. Represented More female students have comedones, cysts, and deep lesions tending to coalesce (Severe) along a slightly increased number of oily skin types. Female students have more lesions on the Face, nose, cheeks, chin, and forehead, suggesting that more female students were categorized in grade 2 and grade 4 than Male students. Data gathered regarding the Proposed reason for acne told by a physician revealed that female students were affected more by cosmetics and hormonal products. Male students and female students almost have the same genetic linkage of their disease. Physicians suggested that the cause of acne was diet and medications, more in Male students than female students. Male participants also have a high history of smoking 70.65, which may aggravate the already-existing acne lesions [14].

Impact of Hormonal Disturbance in Female students

Female students were inquired about the impact of hormonal products on disease progress in Table 3. Data depicted positive responses from female students regarding the impact of menstrual cycle irregularity on acne [15].

Mode of acne- treatment prescribed to patients

Female patients were prescribed more oral and topical antibiotics than Male students. Retinoids both oral and topical were prescribed to both Male students and female students. Table:4. depicted that Male students have adopted procedures like Laser skin resurfacing, microdermabrasion, and Drainage & extraction more than female students [16].

One-way ANOVA analysis

One-way ANOVA was applied to parameters to compare Male students and female students and a significant difference among P-values was found

Table 3: Impact of Hormonal Disturbance on the progress of acne in Female students.

Impact of Hormonal Disturbance in Female students	Yes	No	No idea
Does your acne worsen around or during menses?	69.44	13.80	13.8
Are your periods irregular?	79.17	20.83	
Do you notice any abnormal hair growth	51.39	41.67	6.94
Do you have any family history of endocrine or polycystic ovarian disease	55.56	27.78	16.67

Table 4: Mode of acne- treatment prescribed to patients.

Mode of treatment	Male students	Female students
Topical and oral medications:		
Oral Antibiotics		
Doxycycline	44.57	100
Clindamycin	-	10
Tetracyclines	-	
Trimethoprim/sulfamethoxazole	46.74	5
None	8.6	29
Topical medications for hormonal acne	29.3	27.2
Retinoids		
Tretinoin	59.7	76.08
Tazarotene	18.48	17.4
Adapalene	-	3.3
Trifarotene	-	3.3
None	21.74	-
Topical creams with acids	27.17	26.14
Light therapy	21.74	22
Chemical peels	10.87	9
Laser skin resurfacing	48.91	41.2
Microdermabrasion	48.91	43
Drainage and extraction	48.91	47.2
Sulfur	0.00	0
Dapsone	70.65	65.2

Table 5: One-way ANOVA analysis.

	Male students		Female students		F	P-Value	R-squared
	Yes	No	Yes	No			
Family History of Acne	10.87	89.1	6.94	95.1	3.5	0.0173	0.10
Type of Acne	38.04	61.96	54.5	45.1			
Daily intake of 15.5 cups (3.7L for men)? Water	14.13	85.87	48.61	51.39			
Wash your face in the morning and again in the evening. Follow	54.35	45.65	97.22	2.78			
Apply no more than a pea-sized amount of any acne product.	16.3	83.7	69.44	30.56			
Applying too much can dry out your skin and increase irritation.	16.3	83.7	62.5	0			
Wear sunscreen every day.	21.74	76.09	93.75	6.25			
Use only noncomedogenic products to reduce your risk of clogged pores.	21.74	76.09	120	24			
Oral Antibiotics							
Doxycycline	44.57	51	100	93			
Clindamycin	None	None	6.94	0			
Tetracyclines	None	None	None	97.9			
Trimethoprim/sulfamethoxazole	46.74	49	3.47	79.86			
None	8.6	84	20.14	0			
Anti-androgen agents	29.3	65	0	0			
tretinoin	59.78	37	76.09	23.91			
tazarotene	18.48	75	17.39	82.61			
adapalene	None	None	3.261	96.74			
trifarotene	None	None	3.261	96.74			
Topical creams with acids	27.17391	64.83	26.14	73.86			
Light therapy	21.73913	70.26	22	78			
Chemical peels	10.86957	81.13	9	91			
Laser skin resurfacing	48.91304	43.09	41.2	58.8			
Microdermabrasion	48.91304	43.09	43	57			
Drainage and extraction	48.91304	43.09	47.2	52.8			
Dapsone	70.65217	21.35	65.2	34.8			

Table 6: Acne-QoL Domains.

Self-Perception		Role-emotional	
1	Feel unattractive	5	Spending time treating the face
3	Feel self-conscious	9	Need to have meds or cover-up available
10	Self-confidence affected	8	Meds won't clear face fast enough
2	Feel embarrassed	7	Not looking your best
6	Dissatisfied with self-appearance	4	Feel upset
Role-Social		Acne Symptoms	
12	Going out in public	15	Bumps on face
11	Meeting new people	16	Bumps full of pus
14	Interacting with the opposite sex (or same sex if gay) is a problem	17	Scabbing from acne
13	Socializing with people is a problem	18	Concerned with scarring
		19	Oily skin

Table 7: Analysis of Acne-Specific Quality of Life Questionnaire (Acne-QoL).

		Acne-Specific Quality of Life Questionnaire (Acne-QoL) Male students		Acne-Specific Quality of Life Questionnaire (Acne-QoL) Female students	
		Yes	No	Yes	No
1	Feeling Unattractive	54.35	45.65	69.44	30.56
2	Feeling embarrassed	76.09	23.91	83.33	16.67
3	Feeling self-conscious	70.65	29.35	65.97	34.03
4	Feeling upset	76.09	23.91	86.81	13.19
5	Feeling spend More time	70.65	29.35	76.39	23.61
6	Dissatisfied with your self-appearance	76.09	23.91	76.39	23.61
7	Concerned or worried about your appearance	81.52	18.48	52.08	47.92
8	Concerned or worried about your medication	76.09	23.91	55.56	44.44
9	Bothered to have medication all time	70.65	29.35	55.56	44.44
10	self-confidence effected negatively	86.96	13.04	55.56	44.44
11	concerned or worried about meeting people	54.35	45.65	62.5	37.5
12	concerned or worried going in public	54.35	45.65	48.61	51.39
13	Find it difficult to socialize with people	54.35	45.65	52.08	47.92
14	Interaction with the opposite sex	79.35	20.65	50.69	49.31
15	Bumps have on your face	70.65	29.35	48.61	51.39
16	bumps full of pus on your face	65.22	34.78	45.14	54.86
17	scabbing from your facial acne	65.22	34.78	52.08	47.92
18	concerned or worried about scarring you	70.65	29.35	59.03	40.97
19	oily skin	29.35	70.65	20.83	79.17
	Mean	67.51	32.49	66.15	41.23
	Std. Deviation	13.37	13.37	15.99	15.37
	Std. Error of Mean	3.067	3.067	3.668	3.526
	Lower 95% CI of mean	61.06	26.05	58.45	33.82
	Upper 95% CI of mean	73.95	38.94	73.86	48.64
	Coefficient of variation	19.81%	41.15%	24.17%	37.28%

Acne-Specific Quality of Life (Acne-QoL) in both Male students and female students

As discussed in the methodology Acne-QoL questionnaire comprised questions into 4 domains that address the impact of facial acne on HRQoL. Including Self Perception, Role-social, Role-emotional, Acne Symptoms. Ingredients of each domain are important for facial acne sufferers as they distinguish between acne severity groups. Moreover, were responsive to changes in acne severity over time following treatments in an uncontrolled study. For all domain scores, the responses to items in the domain are summed. Table 5 depicted the four domains and the items that comprise each domain with the corresponding Acne-QoL question numbers [17].

Self-Perception

This domain of the Acne-QoL is comprised of 5 questions like feeling self-conscious, feeling unattractive, and dissatisfaction with self-appearance. The response was assessed on a 0-6 scale (extremely, very much, quite a bit, a good bit, somewhat, a little bit, not at all). The range of possible scores is 0 to 30 [18].

Social-Role

This domain comprised 4 questions to assess the impact of facial acne on a respondent's inter-social relationships e.g., going out in public, meeting new people, and socializing. The range of possible scores is 0 to 24

Role-emotional

This domain was focused on respondents' spending time cleaning and treating their face, their worry or concern that medications were not working fast enough, the bothersomeness of needing always to have cover-up available, etc. The range of possible scores is 0-30.

Acne Symptoms

This domain comprised 5 questions related to the Acne Symptoms such as the number of bumps on the face, the extent of scabbing from the acne, and the level of worry associated with scarring from the acne where scores range from 0 to 30.

More Positive responses were recorded in questions 1,2,4,5,8,9,11,13,16 & 18. This means female students are found to be more stressed regarding being unattractive, embraced, and upset. Moreover, they tend to find more time to seek medications for acne. Results also revealed that female students were shyer to interact with the general public due to their facial appearance. Female students are found to have pus-filled bumps more than Male students due to abnormal hormonal, which is a main causative factor in acne and they are also more conscious about scarring. On the other hand, Male students have responded about their feelings to be shattered self-confidence while interacting in society. More oily skin and with facial acne full of bumps male students find it difficult to interact with the opposite gender. Table 7.

Analysis of the 19 questions included in different sections of the Acne-Specific Quality of Life Questionnaire (Acne-QoL) showed that among the Normality testing D'Agostino & Pearson test, Female responses have passed the Anderson-Darling test, Shapiro-Wilk test, and Kolmogorov-Smirnov test. Moreover, when one sample Wilcoxon test was applied on Positive responses from Male students and female students. Sample data showed significant alpha and p values <0.0001.

Conclusion

Acne can lower adolescent self-esteem, mood, and quality of life accompanied by an increase in anxiety, sadness, and suicidal ideation. These and other co-morbid psychiatric illnesses should be considered when treating acne. A solid physician-patient connection and comprehensive history collection may help identify acne patients at risk for psychological harm. Acne treatment with isotretinoin increases quality of life and reduces depression. Acne patients may also have damaged familial and social interactions. Adolescents' treatment attitudes and adherence may suffer as they gain independence. Complete therapy adherence improves the quality of life for other cutaneous disorders such as psoriasis while poor adherence to therapy hinders acne treatment.

Limitations: Most of the research is qualitative, questionnaire-based, case-controlled, or cross-sectional, which may involve self-reporting bias. Acne-Specific Quality of Life Questionnaire (Acne-QoL) is suitable for screening for psychological illnesses but not for diagnosing clinical depression or anxiety.

Recommendations: Future prospective trials may clarify the psychological impacts of acne on patients and their families and assess if anti-acne medication improves them.

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