Impact of acne on quality of life among university students

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Abstract

Objective: To know the impact of acne among female university students on their quality of life.

Methodology: A cross sectional study conducted included 260 female students at the King Khalid University. A self-administered questionnaire was used in Arabic for data collection. It consisted of personal data, practices and conditions related to health, specific questions on acne vulgaris and the Acne Quality of Life (QOL) questionnaire.

Results: Prevalence of acne among participant students was 87%. Its severity among 48% of participants was mild, 39.6% was moderate, while 12.3% had severe acne. Its prevalence did not differ significantly according to participants' personal characteristics. The mean score for self-perception was 18.4+8.0, for role emotional was 14.4+8.8, for role social was 14.4+6.4, for acne symptoms was 13.4+5.2, while mean overall score was 60.5+24.4. Acne QOL scores for all domains were significantly lower among students who have acne. Scores for all domains and overall scores were lowest among students having severe acne. Students' acne QOL scores differed significantly according to their family monthly income regarding "self-perception" (p=0.005), role emotional (p=0.037) and overall (p=0.012).

Conclusions: Prevalence of facial acne is very high among students and significantly affects their QOL. During management of acne patients, health care professionals should consider its psychosocial aspect.

Limitations: Generalizability of the results is limited to female university students only and limited personal characteristics were assessed in the present study.

Conflict of interest: There is no conflict of interest involved with this study

Key words: Acne, quality of life, female university students.

Introduction

Acne vulgaris is one of the commonest dermatological problems. In adolescent age group its prevalence is about 80% (1). It is a disease of the pilo-sebaceous glands and its clinical manifestations range from seborrhea, comedones, papules, pustules, nodules and in some severe cases it can even cause scarring (2).

Acne effects mostly adolescent people, and it has multiple effects on patients which include not only physiological and social impacts but also psychological. Literature shows that psychological effects of acne on patients can be drastically significant. The relationship of acne and psychosocial issues is very complex among adolescents; it is highly associated with body image, socialization and also sexuality (3). Previous studies showed that acne causes dissatisfaction with appearance, embarrassment, self-consciousness, and lack of self-confidence among patients (3).   Social dysfunction has also been observed among acne patients which has different aspects such as hesitation with their interactions with opposite gender, low feeling about personal appearances in public, avoiding interaction with strangers, and lack of employment opportunities (4-6). Furthermore, related to psychological issues acne is directly associated with anxiety, depression (7), anger (8) and lower self-esteem (9). Psychological impact affects female patients more than male patients (7). Because of their avoiding behavior and low confidence level these patients have low tendency or intention to participate in sports and exercise as compared to those who don't have acne (10).

Among acne patients depression is common although depression has also found to be associated with the medications which are being used for the treatment of acne, such as Accutane. A study in Norway found that acne is associated with serious mental disorders itself. They discovered that depression and suicidal thoughts were two to three times more common among teenagers with severe acne than in those who did not have any kind of skin problem (11). Even suicidal ideation was found to be around 6-7% in acne patients (12).

Therefore this study aims to examine the impact of acne among female university students on their different domains of QOL.

Methodology

A cross sectional study design was followed and included 260 female students at King Khalid University (KKU), Abha City, Saudi Arabia. The sample was almost equally distributed between the academic years (1st – 6th) according to the selected colleges. Through a simple random sampling technique, students were selected from a list obtained from the university clinic for the girls who had an appointment to diagnose their acne and its stage.

A self-administered questionnaire was constructed by the researcher in simple Arabic language and was used for data collection. It consists of:
1. Personal data: age, scholastic year, marital status, family income.
2. Condition and practices related to health: smoking, obesity and menstrual problems.
3. Specific questions on acne vulgaris (history of acne, duration, treatment and severity).
4. Acne QOL questionnaire: It contains 19 questions organized into four domains (self-perception, role-social, role-emotional, and acne symptoms) which refer to facial acne. For all domains, higher scores reflect better rate for quality of life. The total "overall" score varies from zero to 114, distributed as follows: 0-30 (self-perception), 0-24 (role-social), 0-30 (role-emotional), and 0-30 (acne symptoms). It is to be noted that all questions of the Acne-QOL questionnaire are framed to be disease-specific ('. . . because of your facial acne'), which means that the effect on the QOL is unlikely to be due to other factors (13). An Arabic version was translated first by the researcher which has been translated back to original English language again to validate the Arabic version.

Scoring of the Acne-QOL was done in the following manner:
1. Each response was coded. Responses were numbered starting with '0' in ascending order (i.e. extremely=0, very much=1, quite a bit=2, a good bit=3, somewhat=4, a little bit=5, not at all=6). This coding scheme is adopted so that higher scores for each domain in Acne-QOL reflects increased health related quality of life, i.e. less negative self-perception, social, emotional and symptomatic effects associated with acne.
2. Missing values were identified and any missing value was replaced with the mean of the given sub-score. However, if there was less than 3 questions answered in a given domain then the sub-score was not calculated.
3. The scores for each domain were calculated by summing the coded responses to each question in the domain. The sub-scores for different QOL domains were calculated.
4. The overall score for QOL was calculated by summing the total scores for all four domains.

Diagnosis of acne was based on presence of whitehead comedone and blackhead comedone, papule, pustule, pseudocyst and scar. It was done by a trained dermatology female resident. Acne is categorized into three degrees according to its severity into mild, moderate and severe. Mild acne has less than 20 non-inflamed blackheads or whiteheads, or a moderate number of small, mildly irritated pimples. Blackheads are characterized by small bumps with small black dots at their centers. Whiteheads have a similar appearance to black heads but lack the dark or black dots in center. Pimples have a pus filled white center surrounded by a small area of erythema around it. Moderate acne is characterized by more comedones and pimples. Severe acne have more larger, red, painful pus-filled lumps (nodules) that sometimes even join together under the skin into giant, oozing abscesses or cystic lesions (14).

The researcher distributed the self-administered questionnaire to the target population by direct contact with target population with permission from the college administrators. Care was taken to not disturb the student lectures. The researcher and the dermatology resident first diagnosed the students who have acne by arranging with the college clinic to make an appointment for the girls who were suspected to have acne to come to the clinic on specific days to meet the researcher and the dermatology resident to make the diagnosis. Both the researcher and the dermatology resident were always available to clarify any issues and the questionnaires were distributed and collected immediately. Appreciation was used to encourage the participants to participate in the study

A pilot study was conducted on 30 volunteers from the College of Medicine who were excluded from the study. The internal consistency of the questionnaire at all and every domain were assessed by Cronbach's α coefficient. The test-retest reproducibility was assessed by the intra-class correlation coefficient (ICC) for each domain and by comparison between subjects' answers at baseline and second visit (an average of two weeks in between). Content validity was assessed by three consultants (one in Family Medicine, one in Psychiatry and one in Dermatology).
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Collected data were verified by hand and then coded before computerized data entry. The statistical Package for Social Sciences (IBM, SPSS version 22) was used for data entry and analysis. Descriptive statistics (e.g., number, percentage, mean, range, standard deviation) and inferential statistics, using chi-square test ($\chi2$), t-test, analysis of variance (ANOVA) and correlation analysis were applied. P-values less than 0.05 were considered as statistically significant

Results

Table (1) shows that more than two thirds of participants were aged 20-24 years, while 18.1% were <20 years old and 12.3% were > 24 years old. Participants' scholastic years were almost equally represented, but only 13.8% of them belonged to the sixth year. The majority of participants were non-smokers, however, 3.1% were smokers. More than one quarter of students (26.2%) were overweight and 4.2% were obese, while 16.9% of students had a chronic disease. About one quarter of participants (26.9%) had menstrual problems. Most participants were single (84.2%), while 15.8% were married and 8.8% had children, while 6.2% used contraceptive pills.

The monthly family income of 38.1% of participants was less than 5,000 SR, that of 23.1% was 5,000-9,999 SR, 18.1% had 10,000-14,999 SR and 20.8% had ≥15,000 SR.

Prevalence of acne was found to be 227(87%) among participants. Severity of acne among 48% of participants was mild, that of 39.6% was moderate, while 12.3% had severe acne. Treatment for acne was not received by 42.7% of participants while 41% received a local treatment.

Oral treatment was received by 5.7% of participants while 10.6% received both oral and local treatment for acne.

Table 2 shows that the students attained acne QOL scores (Mean+SD) for all its four domains including self-perception, role emotional, role social and acne symptoms. Mean score (+SD) for self-perception was 18.4+8.0, for role emotional was 14.4+8.8, for role social was 14.4+6.4, for acne symptoms was 13.4+5.2, while for the overall score was 60.5+24.4

Table 3 shows that acne QOL scores for all domains, especially the "role emotional" and "role social" were significantly lower among female university students who have acne. Similarly, acne QOL scores for all 4 domains and overall scores (Mean+SD) were lowest among female university students who have severe acne. Differences were statistically significant for all domains and the overall score. However, acne QOL scores did not differ significantly according to received treatment modality.

Table 4 shows that students' acne QOL scores were not significantly significant for age, scholastic years, smoking, BMI, marital status and menstrual problems. While students' acne QOL scores only differed significantly according to their family monthly income regarding "self-perception" (p=0.005), role emotional (p=0.037) and overall (p=0.012). For all domains, students with high monthly family income had higher acne QOL scores.

Table 1: Personal and disease characteristics of participants (n=260)

Personal characteristics	No.	%
Age groups		
• <20 years	47	18.1
• 20-24 years	181	69.6
• >24 years	32	12.3
Scholastic year		
• First	49	18.8
• Second	44	16.9
• Third	46	17.7
• Fourth	44	16.9
• Fifth	41	15.8
• Sixth	36	13.8
Smoking status		
• Smoker	8	3.1
• Nonsmoker	252	96.9
Grade of body mass index		
• Normal weight	181	69.6
• Overweight	68	26.2
• Obese	11	4.2
Menstrual problems		
• Yes	70	26.9
• No	190	73.1
Marital status		
• Single	219	84.2
• Married	41	15.8
Monthly family income		
• <5000 SR	99	38.1
• 5000-9999	60	23.1
• 10000-14999	47	18.1
• ≥15000	54	20.8
Presence of acne		
• Yes	227	87.3
• No	33	12.6
Severity of acne (n=227)		
• Mild	109	48.0
• Moderate	90	39.6
• Severe	28	12.3
Receiving treatment for acne (n=227)		
• Nothing	97	42.7
• Local treatment	93	41.0
• Oral treatment	13	5.7
• Both oral and local treatment	24	10.6

Table 2: Students' attained acne QOL scores (Mean+SD) for its four domains

Acne QOL Domains	Maximum score	Mean+SD
Self-perception	30	18.4±8.0
Role emotional	30	14.4±8.8
Role social	24	14.4±6.4
Acne Symptoms	30	13.4±5.2
Overall	114	60.5±24.4

Table 3: Students' acne QOL scores (Mean+SD) according to disease characteristics

Acne-related characteristics	No.	Self perception	Role emotional	Role Social	Acne symptoms	Overall
Having acne						
• Yes	227	18.1±8.0	13.5±8.5	14.1±6.4	12.8±5.0	58.5±23.7
• No	33	20.3±7.7	20.2±8.5	16.7±6.2	17.4±4.8	74.5±25.0
P-value		0.141	<0.001*	0.029*	<0.001*	<0.001*
Severity of condition						
• Mild	109	20.3±7.8	15.8±8.8	15.2±6.3	14.1±5.2	65.4±23.8
• Moderate	90	17.4±6.9	12.6±7.5	13.8±6.0	12.2±4.1	55.9±19.7
• Severe	28	11.8±8.6	7.8±7.4	10.7±6.7	9.4±5.4	39.6±24.0
P-value		<0.001*	<0.001*	0.003*	<0.001*	<0.001*
Received treatment for acne						
• Nothing	97	19.4±7.9	14.2±8.8	14.9±6.5	12.6±5.2	61.1±23.6
• Local	93	17.3±7.4	13.1±7.9	13.3±6.3	13.3±4.9	57.0±22.5
• Oral	13	18.8±10.9	11.6±7.4	14.5±6.7	14.1±4.9	58.9±26.6
• Oral and local	24	15.5±8.7	13.7±10.3	13.3±6.1	10.6±4.9	53.1±26.6
P-value		0.105	0.684	0.332	0.081	0.425

Table 4: Acne QOL scores (Mean+SD) according to participant's sociodemographic characteristics

Personal characteristics	No.	Self perception	Role emotional	Role Social	Acne symptoms	Overall
Age groups						
• <20 years	47	18.1±7.7	14.1±8.7	14.4±6.1	12.7±5.5	59.4±22.4
• 20-24 years	181	18.5±8.3	14.8±9.1	14.5±6.5	13.6±5.2	61.5±25.5
• >24 years	32	18.2±7.2	12.2±6.4	13.7±6.1	12.8±5.1	56.8±20.5
P-value		0.937	0.292	0.801	0.444	0.573
Scholastic year						
• First	49	17.8±7.5	14.7±8.2	14.7±6.0	13.0±5.4	60.1±22.7
• Second	44	19.3±8.8	15.2±10.6	14.4±7.2	12.8±5.3	61.8±27.5
• Third	46	19.8±8.1	14.2±8.5	15.3±6.3	14.3±5.3	63.5±23.9
• Fourth	44	17.4±8.2	14.0±8.8	13.8±6.7	13.6±4.8	58.8±25.2
• Fifth	41	18.5±8.1	15.4±8.9	14.3±6.2	13.9±5.3	62.1±25.1
• Sixth	36	17.4±7.4	12.3±7.3	13.6±6.3	12.6±5.5	55.9±22.3
P-value		0.640	0.680	0.847	0.644	0.778
Smoking status						
• Smoker	8	18.5±10.0	14.1±5.9	12.4±6.4	10.9±6.4	53.3±25.3
• Nonsmoker	252	18.5±7.9	14.4±8.9	14.5±6.4	13.4±5.2	60.7±24.4
P-value		0.369	0.936	0.367	0.172	0.384
BMI						
• Normal weight	181	18.5±7.9	15.1±8.7	14.6±6.4	13.9±5.4	62.1±24.6
• Overweight	68	17.3±8.2	12.5±8.7	13.3±6.5	12.0±4.4	55.1±23.0
• Obese	11	22.6±7.9	14.5±10.4	17.3±5.2	13.5±6.5	67.9±25.9
P-value		0.105	0.120	0.118	0.135	0.075
Marital status						
• Single	219	18.4±8.0	14.7±8.8	14.6±6.4	13.5±5.3	61.2±24.5
• Married	41	18.1±8.2	12.7±8.7	13.4±6.4	12.6±4.6	56.9±23.7
P-value		0.836	0.193	0.301	0.286	0.300
Menstrual problem						
• Yes	70	18.4±8.4	13.7±9.1	14.2±6.9	13.1±5.3	59.4±25.2
• No	190	18.4±7.9	14.6±8.7	14.5±6.3	13.4±5.2	60.9±24.2
P-value		0.973	0.437	0.770	0.683	0.650
Family monthly income (SR)						
• <5000	99	15.7±7.7	11.5±8.8	14.7±6.1	13.6±5.1	51.6±23.5
• 5000-9999	60	17.2±8.2	14.2±9.3	14.6±6.4	12.9±5.7	58.8±25.7
• 10000-14999	47	19.4±7.3	15.2±6.7	12.3±6.5	12.1±5.3	63.0±22.0
• ≥15000	54	19.9±8.3	15.2±9.3	15.5±6.7	14.5±4.7	65.1±24.7
P-value		0.005*	0.037*	0.066	0.118	0.012*

P-value significant= <0.05*

Discussion

There are many factors that contribute to the confidence level of a person about his/her physical appearance. Healthy and glowing skin is one of the leading factors influencing how a person feels regarding his/her perceived attractiveness towards others (15). This study aimed to examine the impact of acne among female university students on their different domains of QOL.

Results of this study showed that the majority of female university students were non-smokers. In addition, more than one quarter of students (26.2%) were overweight and 4.2% were obese. A study conducted at King Abdul-Aziz University Saudi Arabia among non-medical female students showed prevalence of smoking about 4.2% (16) whereas prevalence of cigarette smoking at King Saud University Saudi Arabia was reported as 4.3% among female students (17). Over weight and obesity was reported in up to 47.9% among female students of Princess Nora Bint Abdul Rahman University, Riyadh, KSA (18).

The present study found that the prevalence of acne among female university students in KKU was 87%. Almost 48% of participants had mild acne, 39.6% had moderate while 12.3% had severe acne. Around 42.7% of participants were not taking any treatment while 41% received a local treatment. Those findings are consistent with other studies as well. Tasoula et al (19) found that acne vulgaris is a common skin disease affecting up to 80% of adolescents and many adults at some stage in their life. Yolac et al. (20) reported that acne, once thought to be an ailment of teenagers, affects more than 85% of the population.

Several studies have reported that acne is a complex disorder that requires individualized treatment (21). Samanthula and Kodali stated that acne has a wide range of treatment modalities starting from non-pharmacological measures including modifying lifestyle factors and psychosocial support to pharmacological management including topical creams, systemic medications, and laser treatments as well (22). Our study showed that 41%, 5.7% and 10.6% of participants were on topical treatment, oral treatment and combined treatment respectively. The present study showed that scores for acne symptoms (which represent the severity of acne) correlated significantly with all other domains of acne QOL index. This finding is similar to that reported by Al-Shidhani who reported a significant association between scores for acne symptoms and those for all other domains. They explained this finding by any increase in acne severity would subsequently lead to an increase in the negative effects on the patients' feelings, self-perception, and socialization as the lesions became more prominent and especially if scarring occurred (23).

Results of the present study revealed that prevalence of acne increased with some personal characteristics of participants, (e.g., age, scholastic year, and smoking status, body mass index and presence of associated chronic diseases). However, differences were not statistically significant. Moreover, prevalence of acne among participants increased with some gynecological and obstetric characteristics, (e.g., married and those with menstrual problems). However, differences in prevalence rates of acne were not statistically significant. In addition, prevalence rates of acne among participants did not differ significantly according to their monthly family income.

The lack of significant differences in acne QOL domains according to personal variables is due to the fact that all questions of the acne-QOL questionnaire are framed to be disease-specific, which means that the effect on the QOL is unlikely to be due to other factors (13, 23). Epidemiological studies can be a helpful tool to identify risk factors for acne in a community, to quantify its burden and contribute to health care planning (18). Acne among adolescent females is becoming more and more common. Its prevalence is estimated to range from 40% to 50% (24). Therefore it is required to assess and treat the causes of acne among females as well. Acne is very widespread worldwide, affecting 75-80% of adolescents. Its risk factors are not always the same in the various populations, and the treatments proposed are also not always well tolerated by all individuals. In Senegal it is found that around 75% of acne cases were young women, 76.3% of whom were single (25).

Results of the present study showed that acne QOL scores did not differ according to their personal characteristics or their gynecological and obstetric characteristics. Moreover, according to family-related characteristics, there were significantly higher (i.e., better) acne QOL scores among students with higher monthly family income. Previous study reported the prevalence of acne is 58.6% in Chinese adolescent females, and showed that increased age was related to higher prevalence of acne vulgaris (26).

The significantly better acne QOL scores among participants with higher family income may reflect more healthy nutrition. Some studies analyzed socioeconomic levels as well, and showed that individuals with lower income categories were more prone to develop acne because of difficulty to buy medications because of low income (27).

Results of the present study showed that acne QOL scores were lower among female university students who have acne. Moreover, their scores were lowest among those who have severe acne. These results are consistent with several studies worldwide, which reported that the impact of acne on quality of life was proportional to acne severity. Those patients who have severe acne reported more burden on their QOL than those with mild acne or no acne. This indicates that the impact of acne on QOL is influenced by perceived severity of acne (28-31). Some studies reported significant psychological impact of acne for example anxiety, depression, low self-esteem, fragile emotions, low self-confidence, and even suicidal thoughts and tendency (29; 30). However more severe acne has been shown to be associated with more symptoms of

anxiety and depression and more negative impact on their lives (31). The association between social inhibition and phobia with acne is also reported (33). Moreover degree of severity of acne is highly correlated with more stress (34).

This study showed that treatment for acne was not received by almost half of participants (42.7%). Moreover, although acne QOL scores were significantly associated with severity of acne, these scores did not differ significantly according to received acne treatment modality. This finding reflects the fact that acne is frequently undertreated because it is often regarded as a simple disease by family physicians and primary care physicians. This information can be very helpful for doctors and other health care professionals for better understanding of the psychological and social impact of acne on patients' lives (28-29).

Although acne can have major effects on the patients' QOL, perhaps these effects are sometimes not fully appreciated and recognized by the treating physician and even not considered as a cosmetic concern (30).

QOL is defined by four important domains: self-perception, role-social, role-emotional, and acne symptoms. Moreover literature shows a similar impact on quality of life with acne than that of asthma, epilepsy, diabetes, back pain, arthritis, and coronary heart diseases (32).

This study found that there is worst impact on emotional and social aspect of QOL compared to self-perception and acne symptoms (23). There is a significant impact of acne on patients' emotions in terms of self-embarrassment, low self-esteem, low self-confidence, feeling of selflessness and disturbance in daily life due to acne symptoms such as pain and itching, and discomfort from the side effects of the treatment itself (18).

Conclusion

In conclusion, this study showed that prevalence of facial acne is very high among female university students and acne significantly affects their quality of life. Moreover, results of the present study indicate that prevalence of overweight and obesity is quite high among female university students, while their physical activity and practice of exercise are low and some students are cigarette smokers. Therefore, it is recommended that family physicians and other health care professionals should consider the psychosocial aspect of acne during the management of patients with acne. Health education programs should focus on healthy lifestyle practices, including proper healthy nutrition and physical activity to prevent obesity as well as measures to quit smoking. Further studies, using a larger sample size representing the general population are needed to address the extent of the problem among the acne patients.

Strengths and limitations of this study
Perhaps a point of strength in the present study is that it was conducted on female university students, whose age group is early adulthood, during which acne is highly

prevalent and when the effects of any health problem on their quality of life would have greater effects on their future. Another point of strength, is that this study used a self-administered questionnaire with fulfilled confidentiality and anonymity, thus minimizing participants' response bias.

However, the study group included only female university students who were relatively homogenous regarding their age group and educational level. Consequently, they constitute only a special subgroup within the community. Therefore, generalizability of the results is limited to female university students not the whole population. In addition, limited personal characteristics were assessed in the present study. Nevertheless, the scope of this study was mainly focused on acne vulgaris and all differences in prevalence and severity of acne attributed to personal characteristics proved to be not statistically significant. Moreover, this limitation might not have significant effects as the acne QOL index which was used in this study is disease specific, i.e., the questions contained the statement "because of your facial acne".

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