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The Impact of Acne Vulgaris on Quality of Life in Adolescents in Tirana: Results of a Cross-Sectional Study

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Abstract

Background: Acne vulgaris may significantly impact quality of life and self-esteem of adolescents. Data on this issue among Albanian adolescents and the impact of acne vulgaris in quality of life are missing.

Aim: The aim of this study was to assess the psycho-social impact of acne vulgaris on a representative sample of adolescents in high schools in Tirana.

Methods: The study was conducted in 10 high schools selected at random out of 19 schools functioning in the urban area of Tirana. A total of 2036 students were interviewed. The impact of acne on the quality of life of affected adolescents was assessed through the Cardiff Acne Disability Index (CADI), validated in Albanian language. Study Design: Cross-sectional study. The General linear model was used to assess the impact of acne on adolescent's quality of life by independent variables.

Results: The mean age of adolescents in the study was 16.2 ± 0.9 years (57% female, 43% male). Among adolescents with acne, 1.1% reported severe or very severe acne. One in five adolescents have felt frustrated because of acne in the past month, about 11% have limited social life or avoided public environments. 7% have experienced depression and about 15% claimed that acne was at least a major problem for them. The negative psychosocial impact of acne was maximal in adolescents with severe and very severe acne and significantly higher in

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adolescents with acne at visible body sites, in girls and older adolescents (> 16 years).

Conclusions: Acne vulgaris has a significant psychosocial impact in some groups of Albanian adolescents. Early detection of the problem can help provide appropriate treatments and reduce the negative impact of acne on their lives.

Key words: Acne, Adolescents, Quality of life, CADI

INTRODUCTION

Acne vulgaris is a common skin disease that affects about 80-90% of adolescents, with no statistically significant gender differences (1). Many scientific studies have identified that acne-induced imperfections or disfigurement are undoubtedly associated with negative psychosocial effects and quality of life impairment (2, 3, 4, 5, 6, 7, 8).

The emergence of acne in adolescence can affect the adolescent's image of himself, the psychological well-being, the feelings, social life, participation in sport activities, personal relationships, etc., and may even play a role in suicide ideation and commitment (2, 3, 4, 5, 6).

Adolescents affected by acne are often victims of bullism as well (9, 10, 11). Physical appearance and the presence of skin diseases such as acne vulgaris are closely related to increased chances of being a victim of bullism. Acne mainly affects adolescents, an age when individuals are more susceptible to bullying or bullism (12).

Suicidal ideation and suicide attempts were statistically significantly higher among adolescents affected by severe acne; also, among these individuals there were significantly higher levels of low bonding with peers, poor school performance, lack of romantic relationships, lack of sexual relations, etc. (13).

Studies report that severe acne can affect the daily lives of adolescents and have negative impact on relationships with friends and on how they spend their free time (5, 14). Various studies have identified a strong association between the presence of acne and problems with self-esteem or appearance satisfaction, highlighting the fact that acne presence is associated with decreased feelings of pride as well as with poor self-esteem among adolescents of both sexes (4, 5, 11, 15).

Experts claim that acne is not just a cosmetic problem; in fact, acne today is considered a genuine disease, with serious psychosocial consequences (9, 16, 17, 18). Nevertheless, psychological aspects associated with acne vulgaris are often overlooked during the medical encounter of patients with health care staff. The consultations focus mainly on the management of physical manifestations which may lead to a lower commitment from the patient to follow the prescribed routine and a lower success rate of treatment protocols (19).

There are very few studies in Albania that report on the psychological impact of acne on adult patients (20, 21, 22). While data on the psychosocial impact of acne vulgaris on adolescents are missing. In this context, the aim of this study was to assess the impact of acne vulgaris on high school adolescents in Tirana in order to fill the information gap in this issue regard and to early identify adolescents at high risk for acne-related adverse effects, to support them appropriately and reduce the negative socio-economic consequences of acne.

MATERIAL AND METHODS

Study type and sample selection

This cross-sectional study was conducted in high school adolescents in the urban area of Tirana.

Among the 19 high schools that were operational in the urban area of Tirana Municipality, 10 of them were randomly selected to participate in the study. Random selection of schools was done and data were evaluated through Excel program.

The size of the sample was calculated with WinPepi statistical program as 1537. The calculation was based on these parameters: assumed prevalence: 50%; expected change: 2.5%; alpha error rate: 5%; beta error rate: 20%; level of the study power 80%. We decided to interview around 2000 students in order to increase the power of the study. 2036 students accepted to participate in the study.

Data collection

The data collection was conducted through a self-administered questionnaire, completely anonymous. This questionnaire contained a set of general data on the subjects who completed it as well as other specific data on acne and related factors. The questionnaire aimed to obtain different kinds of information like socio-demographic data (gender and age), lifestyle habits, family history of acne, severity of acne, acne localization, knowledge and beliefs about acne. Acne severity was assessed according to Comprehensive Acne Severity Scale (CASS), a grading system based on textual descriptions, developed by Tan et al (23).

The last section of the questionnaire consisted of 5 questions of the Cardiff Acne Disability Index (CADI), an international instrument designed to measure the effect of acne on quality of life (24). The CADI contains 5 questions, each of which has 4 Likert-type categories, ranging from 0 (no effect) to 3 (maximum effect). In this way, the total score of the CADI ranges from a minimum of 0 to a maximum of 15. The higher the score, the more the quality of life is impaired. Prior to using CADI in our study, the questionnaire was validated in Albanian language undergoing these steps: preparation, forward translation, reconciliation, back translation, back translation review, harmonization, pilot testing, review of cognitive debriefing results and finalization.

Ethical considerations

Before completing the questionnaire, the students were explained the aims and objectives of the study. Each student was asked to orally approve the participation in the study. All students included in the study were informed that the questionnaire was anonymous and completely voluntary. They could decide not to answer any questions that they considered inappropriate and that they were free to interrupt the questionnaire and leave the study at any time. This study was approved by the Ministry of Education, Sport and Youth of the Republic of Albania and the Ethical Committee in the Ministry of Health of Albania.

Data Analysis

For the comparison of the mean score of CADI according to the categories of independent variables (age, gender, acne localization and acne severity), the student test was used, through the execution of the General Linear Model test. In all

cases, statistical correlations were considered statistically significant where the values of P were <0.05. SPSS for Windows version 20 was used for the statistical analyses.

included in the study was 16.2 ± 0.9 years (Table 1).

Data on acne prevalence, localization, and severity of acne are presented in Table 2. The

Table 1. General data of students involved in the study

Variable	Absolute number	Percentage
Gender		
Girls	1151*	56.7
Boys	878	43.3
Age (in years)	16.2 ± 0.9 *	
Agegroup		
14-15	478 *	23.7
16	828	41.1
>16 (16-18)	709	35.2

* The noncompliance with the total number is due to lack of information. In this case

Table 2. Data on acne prevalence, localization and severity

Variable	Absolut number	Percentage
Acne status		
I've never had acne	639 *	31.5
I currently have acne	1021	50.3
I had acne, but now I don't	369	18.2
Acne localization on face †	1275	91.7
Acne localization on face /neck †	90	6.5
Acne localization on chest †	150	10.8
Acne localization on back †	425	30.6
Current state of acne †		
Clear	198	14.2
Almost clear	574	41.3
Mild acne	524	37.7
Moderate acne	78	5.6
Severe acne	6	0.4
Very severe acne	10	0.7

* The noncompliance with the total number is due to lack of information. † Only among students who have or have had acne (n=1390)

RESULTS

The study involved 2036 high school adolescents in the urban area of Tirana Municipality (56.7% female, 43.3 male). The mean age of the students

actual acne prevalence was 50.3% while 18.2% of students stated that they had have acne in the past but currently did not. Thus, the lifetime prevalence of acne was 68.5%.

Table 3 presents information on students' responses to the CADI questionnaire. The mean score of the CADI was 3.56 ± 3.24, ranging from the minimum score 0 (no impact on quality of life) to a maximum score of 15 (maximum impact on quality of life).

Table 4 presents the mean score of the CADI by independent variables in the study. It can be observed that the impact of acne on quality of life is significantly higher among females (mean CADI score = 3.90) than among males (mean CADI = 2.99) and this difference is statistically significant (P <0.001). The impact of acne on quality of life is significantly higher among adolescents over 16 years of age (mean CADI score = 3.82) than among those aged 14-15 years (mean CADI score = 3.08) and this difference is statistically significant (P = 0.012, Model 2, Table 4).

The impact of acne on quality of life increases significantly with acne vulgaris clinical severity. The mean score of the CADI is 2.19 in adolescents with almost clear acne but then rises to 3.45 in those with mild acne, to 6.89 in those with moderate acne to increase significantly to about 9.7 in those with severe acne and a very high increase of 12.86 in adolescents with very severe acne. All these differences were statistically significant (P <0.001) (Model 2, Table 4).

Finally, the mean score of the CADI is significantly higher among students with acne in prominent places, such as the face, neck and chest. Adolescents with facial acne had a significantly higher CADI score (5.36) than adolescents without facial acne (CADI = 3.29), and this difference was statistically significant (P <0.001, Model 2, Table 4).

DISCUSSION

The current study, for the first time provides information on acne vulgaris impact on the quality of life of Albanian adolescents, representing an absolute innovation in this regard. Based on scientific evidence, the study identified the impairment of quality of life in this group. It was noticed that 1 in 5 adolescents reported to have felt frustrated or aggressive during the last month due to acne. About 1 in 6 adolescents have felt commonly anxious due to their acne and about 1 in 7 adolescents think acne has put them in the worst possible situation. Adolescents mentioned and in our study was noticed that about 1 in 10 adolescents have avoided public places because of acne. During the last months more than 1 in 15 teens have experienced depression due to acne. In our study the mean score of the Cardiff index was 3.56, which generally indicates a slight impact of acne on the quality of life of adolescents currently suffering from acne vulgaris. Similar findings have been identified in other studies that have used the same instrument to assess the impact of acne on the quality of life of adolescents affected by acne: the Cardiff Acne Disability Index (CADI). A study in India among 140 adolescents aged 13-18 reported that the mean score of CADI was 4.8, higher than in our study (3.56) and proving a slight impact on quality of life of

Table 3. Results of CADI questionnaire among students who had acne at the time of the study

CADI Questionnaire	Absolut Number	Percentage
CADI total score (mean score ± standard deviation)	3.56 ± 3.24	
1. As a result of having acne, during the last month have you been aggressive, frustrated or embarrassed?		
Very much indeed	60*	6.4
A lot	143	15.4
A little	380	40.8
Not at all	348	37.4
2. Do you think that having acne during the last month interfered with your daily social life, social events or relationships with members of the opposite sex?		
Severely, affecting all activities	41	4.5
Moderately, in most activities	62	6.8
Occasionally or in only some activities	168	18.3
Not at all	645	70.4
3. During the last month have you avoided public changing facilities or wearing swimming costumes because of your acne?		
All of the time	36	4.0
Most of the time	60	6.7
Occasionally	142	15.8
Not at all	659	73.5
4. How would you describe your feelings about the appearance of your skin over the last month?		
Very depressed and miserable	60	6.6
Usually concerned	158	17.3
Occasionally concerned	385	42.3
Not bothered	308	33.8
5. Please indicate how bad you think your acne is now:		
The worst it could possibly be	26	2.9
A major problem	111	12.2
A minor problem	421	46.4
Not a problem	350	38.5

* The noncompliance with the total number is due to lack of information.

Table 4. Quality of life in adolescents with acne by gender, age, severity and localization - CADI mean scores from the General Linear Model test

Variable	Modeli 1 ‡			Modeli 2 ¶		
	Average score §	95% CI *	Score of P †	Average score §	95% CI *	Value of P †
Gender						
girls	3.90	3.63-4.16	**<0.001**	3.92	3.64-4.18	**<0.001**
boys	2.99	2.64-3.33		2.95	2.61-3.29	
Age group			***<0.001 (2)***			***<0.001 (2)***
14-15	3.20	2.76-3.65	**0.010**	3.08	2.64-3.52	**0.012**
16	3.45	3.12-3.77	**0.041**	3.33	3.01-3.66	0.056
>16	3.97	3.59-4.34	Reference	3.82	3.44-4.19	Reference
Acne severity at the study moment			***<0.001 (2)***			***<0.001 (2)***
Clear	0.52	0.01-0.89	**<0.001**	0.61	0.07-0.96	**<0.001**
Almost clear	2.33	2.03-2.63	**<0.001**	2.19	1.90-2.49	**<0.001**
Mild acne	3.62	3.36-3.88	**<0.001**	3.45	3.19-3.71	**<0.001**
Moderate acne	7.05	6.43-7.68	**<0.001**	6.89	6.28-7.51	**<0.001**
Severe acne	9.50	7.28-11.72	**0.015**	9.70	7.53-11.8	**0.024**
Very severe acne	13.00	11.28-14.7	Reference	12.86	11.2-14.5	Reference
Face						
Yes	5.32	4.50-6.14	**<0.001**	5.36	4.55-6.17	**<0.001**
No	3.43	3.21-3.65		3.29	3.07-3.52	
Neck						
Yes	4.83	4.23-5.44	**<0.001**	4.68	4.08-5.28	**<0.001**
No	3.38	3.15-3.61		3.26	3.03-3.49	
Chest						
Yes	4.25	3.88-4.62	**<0.001**	4.10	3.73-4.47	**<0.001**
No	3.22	2.97-3.48		3.12	2.86-3.38	
Back						
Yes	3.55	3.33-3.78	0.836	3.43	3.20-3.65	0.848
No	3.65	2.78-4.52		3.52	2.66-4.37	

§ CADI mean score according to General Linear Model test

* Confidence interval 95% (95% CI) for the mean score of the CADI

† Statistical significance value (P value) according to General Linear Model test and degrees of freedom (in parentheses)

‡ Model 1: unadjusted (unchecked) for no factor. Crude average values of average value

¶ Model 2: adjusted for age

adolescents (25), similarly to the finding of our study. Another study among 478 adolescents aged 15-18 years in Serbia reported that the mean CADI score was 3.57 (26), thus an average level of impact on quality of life equal to that reported in our study (3.56). However, adolescents with very mild forms of acne are also included in this study, and this is what neutralizes the impact of acne on quality of life among all adolescents with acne in the study. As we shall see below, the mean score of CADI is proportional to acne severity. In our study, 46.4% of adolescents

currently with acne stated that acne was a minor problem for them, while 12.2% stated that acne was a major problem and 2.9% stated that acne represented "the worst possible condition". Thus, 15.1% of adolescents with acne at the time of the study claimed that acne was a "serious problem" for them. These findings are comparable to similar reports in international literature. A large study in adolescents aged 12-18 in New Zealand reported that 53.2% of adolescents with acne thought that acne was a "minor problem" for them (versus 46.4% in our study), 10% stated that acne was "a major problem" (versus 12.2% in our study) and 4.1% stated that acne was the “worst possible condition” (versus 2.9% in our study) (27). In total, 14.1% of adolescents with acne reported that acne was "problematic" for them (27), compared to 15.1% who reported the same in our study.

Our study showed that the impact of acne on quality of life is significantly higher among females (mean CADI score = 3.90) than males (mean CADI = 2.99) and this difference is statistically significant (P <0.001). A study among adolescents aged 13-18 in Serbia reported that 10% of boys and 18% of girls felt embarrassed, upset or sad because of their acne with a mean score of CADI higher among girls than boys (26). This fact may demonstrate that girls may be more vulnerable to the psychological effects of acne compared to boys. This conclusion is supported by a number of studies in the international arena (26, 27, 28, 29). Differently, a study in Egypt showed that male patients had a higher CADI score compared to girls (30). This could be related to the limited public display of woman’s faces in this country. Meanwhile, other studies have not found any statistically significant gender difference of the impact of acne on quality of life (21, 31).

Our study demonstrated a higher impact of acne in older adolescents (mean CADI score is 3.82 in students older than 16 years old, 3.33 in 16 years old and 3.08 in 14-15 years old, P <0.001). Association between quality of life and age was also reported in other studies (31). While Refatllari et al. reported that demographic features like age and gender, did not influence occurrence of depression, anxiety and stress in Albanian patients with acne, aged 18-40 years (21).

According to some investigators, impairment of quality of life is not affected by factors such as acne severity and age (1). Meanwhile in our study we found a strong and statistically significant association between acne severity and impairment of quality of life, with adolescents with severe or very severe acne having a higher score of CADI. This association has also been evidenced in other studies conducted in the international arena, where acne severity is self-reported (14, 32, 33). Literature suggests that under-reporting of serious acne among adolescents is common; however, a separate validation study conducted in adolescents showed an overall agreement of 74% between reported and observed acne by dermatologists (34).

Embarrassment and decreased self-esteem appear to be related to acne localization as well being more prominent in patients with acne localized on exposed areas. Behaviors such as hair growth, application of heavy facial makeup to conceal or cover the acne lesions or avoidance of eye contact with other persons are reported (35). The relation between acne localization and the impact on quality of life of affected adolescents was also evidenced in our study, supporting the finding that localization of acne in visible places (especially in the face, neck and chest) is very concerning for adolescents.

In our study about 27% of adolescents with acne stated that they have tried to modify their outfit during the last month due to acne, about 63% felt frustrated or embarrassed and about 30% claimed that acne had an impact in their daily activities. These findings are relatively similar to those reported by Tasoula et al., where 21.3% of adolescents with acne had modified outfit because of their acne, 31.4% felt worthless because of acne, and 21.4% % claimed that acne has affected their daily activities (31). Acne may have negative impact on personal activities, relationships with other people or with opposite sex, and sport activities (26, 31, 36). Acne can also be linked to anxiety (20), depression, and suicidal ideation (26). For this reason, it is very important to identify adolescents to whom acne has a significant impact on their quality of life in order to take all measures to prevent these psychological conditions. On the other hand, adolescents with problematic acne are reported to have difficulty accessing medical treatment for acne (27). Since problematic acne has important psychosocial effects, such as anxiety, frustration, social isolation, depression, etc., providing access to effective anti-acne treatments can reduce these adverse social phenomena while simultaneously decrease the costs of treatment bringing benefits to the whole society.

CONCLUSIONS

In summary, this study confirms that acne vulgaris has a significant negative psychological impact in adolescents affected by this skin disease, especially in female adolescents. This impact is higher among older patients with acne located in visible areas of the body and among them with severe or very severe acne. It is critical to identify these adolescents - to offer effective anti-acne treatments and psychological support as early as we can in order to reduce the psychosocial burden related to disease.

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Conflict of interest

We declare no conflict of interest.

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