



Evaluation of the quality of life in adolescents with acne

Procena kvaliteta života kod adolescenata sa aknama

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Abstract

Background/Aim. Acne is well recognized condition that adversely affects quality of life (QoL) of the patients. The aim of this study was to determine the self-reported prevalence of acne and its main characteristics in high school pupils, and to assess their QoL. **Methods.** The cross-sectional study conducted in May 2011 comprised 440 pupils from Serbia (281 from Belgrade and 159 from Užice). Participation in the study was voluntary and anonymous. Two questionnaires were administered: a short demographic questionnaire, and Children's Dermatology Life Quality Index (CDLQI). Internal consistency was assessed using the Cronbach's alpha while item-total score correlations were assessed using Spearman's correlation analysis. **Results.** The majority of the study population (84.3%) were girls, and 15.7% were boys. The total mean age of the pupils was 16.48 ± 0.55 years. A total of 228 (51.8%) pupils self-reported their acne with significantly higher prevalence in Užice (73.6%) than in Belgrade (39.5%). The mean CDLQI score was 3.55 with the similar quality of life impairment in adolescents from the two cities. The mean Cronbach's alpha was 0.83. There was a statistically significant positive correlation between the mean overall CDLQI score and CDLQI subscale scores that ranged from 0.401 to 0.841. **Conclusion.** Our study confirmed that acne is associated with impairment in QoL that is in accordance with previous studies performed on teenagers. The CDLQI is a reliable and valid measure, and can be used as a practical tool for measuring the impact of acne on patients' QoL.

Key words:

acne vulgaris; quality of life; adolescents; questionnaires.

Apstrakt

Uvod/Cilj. Poznato je da su akne bolest koja pogoršava kvalitet života obolelih. Cilj ove studije bio je da se utvrdi prevalencija akni i sagledaju glavne karakteristike ove bolesti među učenicima srednje škole, kao i da se proceni kvalitet života obolelih od akni. **Metode.** Studijom preseka sprovedenom u maju 2011. godine obuhvaćeno je 440 učenika iz Srbije (281 učenik iz Beograda i 159 učenika iz Užica). Učešće u studiji bilo je dobrovoljno i anonimno. Primenjena su dva upitnika: kratak upitnik o demografskim karakteristikama i dermatološki indeks kvaliteta života kod dece (CDLQI). Unutrašnja konzistentnost upitnika procenjena je pomoću Kronbahovog alfa koeficijenta, dok je korelacija između skorova za pojedina pitanja i ukupnog skora upitnika procenjivana Spirmanovom korelacionom analizom. **Rezultati.** Devojke su činile većinu ispitivane populacije (84,3%), dok je mladića bilo 15,7%. Prosečan uzrast učenika bio je $16,48 \pm 0,55$ godina. Ukupno 228 učenika (51,8%) izjasnilo se da ima akne, a prevalencija je bila statistički značajno viša u Užicu (73,6%) nego u Beogradu (39,5%). Srednja vrednost CDLQI skora iznosila je 3,55 sa sličnim oštećenjem kvaliteta života kod učenika iz oba grada. Srednja vrednost Kronbahovog alfa bila je 0,83. Statistički značajna pozitivna korelacija između ukupnog CDLQI skora i skorova subskala ovog upitnika bila je u rasponu od 0,401 do 0,841. **Zaključak.** Našom studijom potvrđeno je da su akne udružene sa narušenim kvalitetom života obolelih, što je u skladu sa ranijim studijama u populaciji tinejdžera. CDLQI kod dece je pouzdan i validan upitnik koji se može koristiti kao praktična alatka za merenje uticaja akni na kvalitet života obolelih.

Ključne reči:

akne; kvalitet života; adolescent; upitnici.

Introduction

Acne is a chronic inflammatory, multifactorial skin disorder of the pilosebaceous unit that usually occurs in adolescence affecting nearly all teenagers to some degree¹. The clinical picture can vary significantly from mild comedonal acne to fulminant systemic disease.

It is well recognized that acne adversely affects quality of life (QoL), and that can leave physical and emotional scars that can persist throughout the life of the affected person². Loney et al.³ showed dermatological-related social anxiety of acne patients to be negatively associated with intention to participate in sport/exercise, self-esteem and health related QoL.

As there is not always a correlation between the severity of acne and its impact on QoL, it can be helpful for dermatologists to use either global or specific QoL measures to determine the psychological impact of acne on patients⁴.

Within the last few decades health-related QoL of patients has become an important factor of patient care, and several dermatologic and acne-specific measures have been created to assist in acne research, management, and care⁵.

ment, clothes, hobbies, daily activities at school and leisure time, as well as issues related to sleep, personal relationships and treatment were asked. A total of 199 out of 228 (87.3%) pupils with acne filled the questionnaire properly and were included in the analysis. We used the Serbian version of the CDLQI⁷.

All statistical analysis was performed using the Statistical Package for the Social Sciences, SPSS version 17.0 (SPSS Inc., Chicago, IL, USA). A two-tailed probability value of 0.05 or less was considered significant. The differences between variables were assessed by χ^2 or *t*-test. Internal consistency was assessed using the Cronbach's alpha while item-total score correlations were assessed using Spearman's correlation analysis.

Results

A total of 440 pupils from the two high medical schools in Serbia (one from Belgrade and another from Užice) participated in this study. Demographic characteristics of the pupils are presented in Table 1.

Table 1

Demographic characteristics of adolescents in the study sample, and acne prevalence

Parameter	Participants			<i>P</i>
	Total (<i>n</i> = 440)	Belgrade (<i>n</i> = 281)	Užice (<i>n</i> = 159)	
Males, <i>n</i> (%)	69 (15.7)	39 (13.9)	30 (18.9)	
Females, <i>n</i> (%)	371 (84.3)	242 (86.1)	129 (81.1)	n.s. [†]
Age (year), $\bar{x} \pm SD$	16.48 \pm 0.55	16.37 \pm 0.51	16.66 \pm 0.58	< 0.001 [†]
Acne prevalence, <i>n</i> (%)	228/440 (51.8)	111/281 (39.5)	117/159 (73.6)	< 0.001*
Males, <i>n</i> (%)	41/69 (59.4)	22/39 (56.4)	19/30 (63.3)	n.s.*
Females, <i>n</i> (%)	187/371 (50.4)	89/242 (36.8)	98/129 (76.0)	< 0.001*

* χ^2 test; [†]*t*-test; \bar{x} – mean value; SD – standard deviation; ns – non significant.

The aim of this study was to determine the self-reported prevalence of acne and its main characteristics in high school pupils, and to assess their QoL.

Methods

The cross-sectional study conducted in May 2011 comprised 440 pupils from Serbia (281 from Belgrade and 159 from Užice). We used convenience sampling. Participation in the study was voluntary and anonymous. The informative consent in the written form was obtained from pupils' parents. The response rate was 74.7% (281/376) in Belgrade and 75.7% (159/210) in Užice. Two questionnaires were administered – a short questionnaire including questions about demographic and disease characteristics, and Children's Dermatology Life Quality Index (CDLQI).

CDLQI is a skin disease specific questionnaire that was used to assess acne-related QoL in pupils⁶. It is a one-page questionnaire comprising 10 questions covering all aspects of quality of life. The questions are graded from 0–3, with a possible maximum score of 30 with higher scores representing worse QoL. According to the instructions for use if two or more questions are left unanswered the questionnaire is not scored. Questions about symptoms, feelings, embarrass-

The majority of the study population (84.3%) were girls, and 15.7% were boys. The total mean age of the pupils was 16.48 \pm 0.55 years, with significantly older pupils from Užice (*p* < 0.001). A total of 228 (51.8%) pupils self-reported acne with significantly higher prevalence in Užice than in Belgrade for the entire sample and for the females.

Disease characteristics of the high school pupils who reported acne and answered questions are presented in Table 2.

The difference between two cities was observed in acne duration and problems related to skin appearance. Acne duration less than 1 year had 51.4% of adolescents and 1 year more 48.6% with significantly longer duration among pupils from Belgrade compared to those from Užice. The most of adolescents had problems caused by skin appearance with significantly higher levels of concern among those from Belgrade than those from Užice.

The mean overall CDLQI score in acne self-reported pupils was 3.55 \pm 4.14 with the similar quality of life impairment in adolescents from the two cities.

There was a statistically significant positive correlation between the mean overall CDLQI score and CDLQI subscale scores that ranged from 0.401 to 0.841 (Table 3).

The highest correlation with the mean overall CDLQI score was observed for subscales "symptoms and feelings"

Table 2
Disease characteristics of adolescents with acne in Belgrade and Užice

Characteristics	Participants			p
	Total (n = 228)	Belgrade (n = 111)	Užice (n = 117)	
Family history of acne, n (%)				
yes	101 (44.7)	53 (48.6)	48 (41.0)	n.s*
no	125 (55.3)	56 (51.4)	69 (59.0)	
Duration of acne, n (%)				
< 1 year	112 (51.4)	46 (43.8)	66 (58.4)	< 0.05*
≥ 1 year	106 (48.6)	59 (56.2)	47 (41.6)	
Problems related to skin appearance, n (%)				
yes	197 (93.8)	95 (99.0)	102 (89.5)	< 0.01*
no	13 (6.2)	1 (1.0)	12 (10.5)	
Therapy for acne, n (%)				
yes	157 (70.1)	80 (74.8)	77 (65.8)	n.s.*
no	67 (29.9)	27 (25.2)	40 (34.2)	
Presence of other skin disease, n (%)				
yes	22 (9.8)	11 (10.3)	11 (9.4)	n.s.*
no	202 (90.2)	96 (89.7)	106 (90.6)	
CDLQI score, $\bar{x} \pm SD$	3.55 \pm 4.14	4.00 \pm 4.36	3.18 \pm 3.94	n.s. [†]

CDLQI – Children's Dermatology Life Quality Index; * χ^2 test; [†]t-test;
 \bar{x} – mean value; SD – standard deviation; ns – non significant.

Table 3
Children's Dermatology Life Quality Index (CDLQI) subscale and overall scores

Subscale	$\bar{x} \pm SD$	Min/Max Possible	Min/Max	Subscale total correlation*
Symptoms and feelings (items 1 and 2)	1.35 \pm 1.22	0/6	0/6	0.841
Leisure (items 4, 5 and 6)	0.80 \pm 1.40	0/9	0/7	0.746
School or holidays (item 7)	0.41 \pm 0.77	0/3	0/3	0.616
Personal relationships (items 3 and 8)	0.31 \pm 0.78	0/6	0/5	0.548
Sleep (item 9)	0.17 \pm 0.53	0/3	0/3	0.401
Treatment (item 10)	0.47 \pm 0.73	0/3	0/3	0.673
Overall score (n = 199)	0.36 \pm 4.14	0/30	0/24	1.00

*Spearman's rho; \bar{x} – mean value; SD – standard deviation.

(0.841) and “leisure activities” (0.746) and the lowest correlation was observed for “sleep” (0.401).

The value of the Cronbach's alpha for CDLQI was 0.83.

The vast majority (74.4%) of acne affected adolescents had CDLQI score < 5 as presented in Table 4, and even in 93% of pupils quality of life impairment was mild (CDLQI < 10). Only 3.5% of the pupils had CDLQI score > 15 with the maximum reported CDLQI score 24 (of possible 30) in one affected individual.

Table 4
Children's Dermatology Life Quality Index (CDLQI) scores distribution

CDLQI score	Participants	
	n	(%)
< 5	148	74.4
5–9	37	18.6
10–14	7	3.5
> 15	7	3.5
Total	199	100.0

Discussion

Acne vulgaris is a common, chronic, inflammatory skin condition that affects nearly all adolescents to some degree⁸. Although acne is considered as a trivial skin disorder, it has great impact on psychologically fragile period of adolescence. The interaction of acne and psychosocial issues is complex and can elicit negative emotional reactions including depression, anxiety, helplessness and frustration that can lead to impaired functional status and decreased quality of life².

The prevalence of acne in teenagers differs from study to study and ranges from 41.7% to 93.3%^{9–14}. It could be explained by methodological differences (such as definition and grading of acne) and population characteristics. In our study 51.8% of the pupils self-reported acne what is in accordance with the findings of Smithard et al.¹¹ and Rigopoulos et al.⁹. The regional difference (Belgrade vs. Užice) in acne prevalence, disease duration and levels of concern caused by skin appearance could perhaps be explained by the cultural differences. The appearance of the skin affects the

patients' overall body image¹⁵, and therefore they are prone to embarrassment and social withdrawal, depression, anxiety, anger, and even suicidal ideation^{16,17}.

Acne has long been recognized to have a significant effect on the QoL of patients. However, no significant correlation between patients' and dermatologists' assessments of acne severity was observed^{18,19}. Acne patients usually see their disease as more troubling than their physicians do. The use of standardized subjective QoL measures in routine clinical practice in conjunction with clinical assessment can provide additional information on QoL impairments. It is of great importance to recognize depressive symptoms in acne patients, which sometimes may be concealed or masked by aggression or disruptive behavior²⁰ and to evaluate the psychological impact of acne and its repercussion on QoL.

We used the CDLQI to evaluate the impact of acne on QoL in adolescents. Ten questions encompass different aspects of a child's life that could be affected by their skin disease, including physical symptoms, such as itching and sleep loss, as well as psychosocial questions regarding friendships, bullying, school performance, sports participation, and enjoyment of vacation. The total mean score of the CDLQI in our study was 3.6 which is somewhat lower in comparison with recently conducted Serbian study¹⁴, but twice higher than in Scottish study¹⁰. Relatively lower scores of CDLQI could possibly be explained by the nature of the population studied (population from the community with a predominantly mild form of acne). In addition, the fact that all the pupils completed questionnaires together in the same classroom with their classmates being able to read their answers, might prevent some of them to express their true emotions.

Although the overall mean score of CDLQI is rather low, our study confirms that acne is associated with impairment in QoL.

Internal consistency reliability (Cronbach's $\alpha = 0.83$) and item-to-total correlation (Spearman's $\rho = 0.400.84$),

were found to be sufficient, indicating that the Serbian version of CDLQI is a reliable questionnaire with good consistency between the items. It provides information about aspects of acne treatment that could be of great assistance to dermatologists to provide effective clinical intervention which could be crucial for maintenance or restoration of psychological well-being of affected individuals.

The strength of our study was a large number of adolescents surveyed from the general population, thus excluding the possibility of referral bias and overestimation of psychometric morbidity with hospital-based data. Cross sectional type of study, however, may introduce biases associated with self-reporting, such as recall bias, and under or over-reporting of information.

Conclusion

The present study confirmed that acne is associated with impairment in QoL that is in accordance with previous studies performed on teenagers. We did not find statistically significant difference in QoL between pupils from Belgrade and Užice.

Our results also demonstrated that the Serbian version of Children's CDLQI is a reliable and valid measure, a practical tool for measuring the impact of acne on patients' QoL.

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