

## Assessment of anxiety and depression in adolescents with acne vulgaris related to the severity of clinical features and gender

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**Objective.** To determine anxiety and depression levels in adolescents with acne vulgaris in relation to clinical severity and gender. **Patients and methods.** Using a sectional study, the anxiety and depression level was analyzed of 90 adolescents of both sexes, aged 16 to 21 years, who were suffering from acne vulgaris. The study was conducted between February 1<sup>st</sup> 2008 and January 31<sup>st</sup> 2009 at the Dermatovenerology department of the Cantonal Hospital "Dr. Irfan Ljubijankić", Bihać. According to the type of efflorescence, its localization and severity of clinical features, respondents were classified in three groups: the first group consisted of adolescents with mild forms of acne, the second group had moderate forms of acne and the third had severe forms of acne. Evaluation of anxiety levels in patients with acne vulgaris was made using STAI questionnaire (Spielberger's state and trait Anxiety Inventory) that consists of 20 questions about the essential characteristics of anxiety as the condition, and the level of depression was determined using the BDS-scale (Back Depression Inventory) which consists of 18 items that were used by the respondents to perform self-evaluation of depression level. **Results.** In the study group there were 54 (60%) female respondents and 36 (40%) male, mean age 17.5 years (range 15.6-20.6). Of the total number of patients with acne vulgaris, nine of them or 10% (4 female and 5 male) had a mild form of acne (first group), 72 of them or 80% (46 female and 26 male) a moderate form of acne (second group) and 9 of them or 10% (4 female and 5 male) a severe form of acne (third group) ( $p > 0.95$ ). 1.1% of the respondents had an exceptionally low anxiety level, 13.3% had low level, moderate 76.8% and 8.8% had a high level. 37.8% had distinct signs of depression, the risk group consisted of 44.4%, and a normal value was found in 17.7%. The values of the STAI questionnaire expressed as median (range) in the first, second and third groups were 58.7 (39-70), 57.7 (20-70) and 60.2 (40-70) ( $p = 0.36$ ), while the values of the BDS scale within the same groups were 13.4 (8-16), 15.1 (3-29) and 14.4 (7-24) ( $p = 0.367$ ). **Conclusion.** The level of depression and anxiety in patients with acne vulgaris is not related to severity and patient sex.

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**Key words:** Acne vulgaris, Adolescents, Anxiety and depression, STAI questionnaire.

## Introduction

Acne vulgaris is a dermatosis which is most common during adolescence, when external appearance is very important, so that it can cause serious mental difficulties in young people (1). According to the clinical stage, acne vulgaris are classified into three clinical forms: mild, moderate and severe forms of acne (2).

The very beginning of adolescence is usually characterized by an increased interest in sexuality associated with ideas about how to adapt to new needs and new physical appearance. This is why young people are very sensitive in the beginning of the adolescent period to any changes that occur in the physical sphere. Changes that occur on the physical and physiological level during this period are extremely important for the further development of the person, they affect their emotional state, the formation of identity and achievement of social contacts (3). If the emotional atmosphere is not satisfactory, it creates an unstable or fragmented self-image. As a consequence an obsessive quality concern about skin integrity may arise, or impairment of the somatic perception, leading even to delusions (4). Their skin condition, in which the changes occur predominantly on the face, can have a significant impact on the quality of life (5), and the problems that often occur as a result of these changes are low self-esteem, anger, anxiety and depression.

A study involving 480 patients with various dermatoses found the highest incidence of depression and suicidal ideas in patients with severe forms of acne and severe psoriasis, while patients with mild and moderate forms of acne had the same level of depression and suicidal ideas as those suffering from atopic dermatitis, moderately severe forms of psoriasis and alopecia areata (6). Barankin and DeKoven (7) found that patients with acne have the same level of de-

pression and anxiety as patients suffering from arthritis.

Unlike most other dermatologic diseases that may be limited to areas covered by clothing, acne vulgaris is often visible on the face. Individual and social perception in adolescents will lead to a sense of being tagged, which further may be followed with anxiety, fear and guilt. As direct consequences in young people depression and anxiety may be developed.

The aim of this study was to determine levels of anxiety and depression for adolescents with acne vulgaris in relation to the severity of the clinical features and their gender.

## Patients and methods

The study was conducted at the Dermatovenerology Department of the "Dr. Irfan Ljubijankić" Cantonal Hospital, Bihac. Using a sectional study, the anxiety and depression level was analyzed of 90 adolescents of both sexes, aged 16 to 21 years, who visited the dermatological dispensary in the period from February 1<sup>st</sup> 2008 to January 31<sup>st</sup> 2009. Respondents used local therapy for acne. Adolescents were excluded from the study population who in addition to acne vulgaris had other chronic dermatoses and other diseases of organic systems that can lead to symptoms of depression and anxiety in patients. Dermatologic examination based on the clinical characteristics of the disease produced a diagnosis of acne vulgaris, while the patients were divided into three groups according to the type of efflorescence, their location and severity of the clinical features. The first group consisted of adolescents with a mild form of acne, the second group had a moderate form of acne and the third had the severe form of acne (Table 1).

After dermatological examination was completed, all respondents voluntarily completed the questionnaire "Spielberger's state

Table 1 Acne vulgaris clinical features in relation with analyzed groups

Group	Severity of clinical features, type of efflorescence, localization
First (n = 9)	Mild form of acne. The mildest form of the disease. Comedos prevail, infrequent small papulae and papulopustulae. Facially localized alterations.
Second (n = 72)	Moderate form of acne. Moderately severe form of disease. Comedos and red painful papulae prevail. As well as on the face, alterations can be observed on the back and sternal region also.
Third (n = 9)	Severe form of acne. The most severe form of disease. Prevalence of comedos, papulae, pustulae, crusts, stiffed and painful nodes of furunculous appearance, atrophic and hypertrophic scars. As well as on the face, also frequently affected are regions of torso and upper back, neck, upper arm and gluteus regions.

and trait Anxiety Inventory” (STAI) (8) to assess levels of anxiety, and to assess levels of depression using the Birleson scale of depression BDS-scale (Back Depression Inventory) (9).

The STAI-questionnaire for measuring anxiety as a state was composed of questions about the essential characteristics of anxiety, such as fidgeting, tension, nervousness and worrying. This questionnaire is used to evaluate how somebody feels at the moment of filling in the questionnaire. It consists of 20 questions which patients respond to by circling one of the answers on a four-level scale: not at all, slightly, moderately, and always so. Responses to each statement were scored from 1 to 4 points. The response that stated “not at all” was scored by 1 point, “slightly” by 2 points, “moderately” by 3 points, and “always so” by 4 points. All responses were not scored in the same way, so that in a certain number of responses a value of 4 points indicates the presence of high levels of anxiety, while in some other statements it points to the absence of anxiety. The total score is obtained by adding the score points for all 20 answers. The minimum score is 20, and the maximum is 80. After that, according to the appropriate tables taking age into account, we transformed the resulting score into standardized T values, and then we classified each patient into one of the following 6 related groups, based on the same

tables and obtained results: 1<sup>st</sup> group (20-30 points) - extremely low level of anxiety, 2<sup>nd</sup> group - low level of anxiety (31-40 points), 3<sup>rd</sup> and 4<sup>th</sup> group – moderate level of anxiety (3<sup>rd</sup> group 41-50 points, and 4<sup>th</sup> group 51-60 points), 5<sup>th</sup> group – high level of anxiety (61-70 points), 6<sup>th</sup> group – extremely high level of anxiety (71-80 points) (8).

The BDS-Birleson Depression Scale was used to evaluate depressive symptoms in adolescents. It consists of 18 items that were used by the participants to perform self-evaluation of their depression level. The items consist of sentences that describe how the person felt during the last 7 days. Subjects self-evaluated their depression level by circling one of three options offered for each item: never, sometimes or often. Responses were scored by 0, 1 or 2 points. We obtained the total score by adding together the points for all 18 items. The minimum score is 0 and maximum is 36. Based on the total points obtained, the respondents were divided into three groups, with regard to the expression of depressive symptoms (the degree of depression). The first group comprises those with 0-10 points which is considered as the normal value, the second group are those with 11-16 points as a risk group, and the third group consists of respondents with 17 or more points who expressed signs of depression (9). The age of the subjects was calculated using a decimal calendar based on

the date of birth and date of examination, and it is expressed by decimal numbers (10).

### Statistical analysis

The results are presented as median and range. To test the differences between the variables the Kruskal-Wallis test was used. The difference was considered significant if  $p < 0.05$ . For data processing we used the statistical program MedCalc software (version 8.1.0.0 for Windows, MedCalc).

## Results

In the study group there were 54 (60%) female respondents and 36 (40%) male, mean age 17.5 years (range 15.6-20.6). Of the total number of patients with acne vulgaris, nine of them or 10% (4 female and 5 male) had a mild form of acne (first group), 72 of them or 80% (46 female and 26 male) had a moderate form of acne (second group) and 9 of them or 10% (4 female and 5 male) had a severe form of acne (third group) ( $p > 0.95$ ).

The mean age of subjects was expressed as median and range. In the tested sample it was 17.5 years (15.6 to 20.6 years), in the first group it was 19.3 years (15.7 to 20.3), in the second it was 17.5 years (from 15.6 to 20.6 years) in the third group it was 17.1 years (15.8 to 20.4 years). There was no statistically significant difference in age between the groups that were tested ( $p = 0.717$ ).

Results obtained using the STAI-questionnaire showed that of the sample 1.1% of respondents (1 female and 0 male) had an extremely low level of anxiety, 13.3% (7 females and 5 males) a low level of anxiety, 76.8% (39 female and 30 male) a moderate level of anxiety and 8.8% (7 females and 1 male) a high level of anxiety.

With analysis of levels of depression, the results obtained using the BSD-scale showed that 16 (17.7%) respondents (8 females and 8 males) had normal values, 40 (44.4%) re-

spondents (26 female and 16 male) formed the risk group and 34 (37.8%) respondents (20 female and 14 male) had significantly expressed signs of depression.

Table 2 presents the values of the levels of anxiety measured by the STAI-questionnaire in relation to the analyzed group, and Table 3 shows the values of the level of depression measured by the BSD-scale in relation to the analyzed group.

Table 2 The values of anxiety levels measured by the STAI questionnaire in relation to the analyzed groups.

Grupa	Level of anxiety	
	Median	Range
First (n=9)	58.7	39-70
Second (n=72)	57.7	25-70
Third (n=9)	60.2	40-70

$P = 0.36$

Table 3 The values of depression levels measured by BDS-scale in relation to the analyzed groups.

BDS	Group			P
	First (n=9)	Second (n=72)	Third (n=9)	
Level of depression (Median, Range)	13.4 (8-16)	15.1 (3-29)	14.4 (7-24)	0.367

## Discussion

What our study showed was that most patients had a moderate level of anxiety. The results show that there is approximately the same percentage of male and female respondents in the group with moderate and high levels of anxiety, i.e. there is no gender differences. According to Tadinac and associates (11) in patients with acne vulgaris there was no difference in the level of anxiety and depression by gender. Anxiety levels were higher in severe clinical forms of acne vul-

garis, but the difference was not statistically significant. This means that the severity does not play a significant role when it comes to predicting the level of anxiety in patients with acne vulgaris. Thus, adolescents with a mild clinical form of acne can be just as anxious as those with the severe form of acne vulgaris, that is to say we cannot use the clinical features as a basis to evaluate the psychological status of patients when it comes to anxiety. According to the literature, acne vulgaris is much more involved in psychiatric and psychological processes compared to other dermatological diseases. Around 80% of adolescents with acne vulgaris develop anxiety (12). According to Kellett and Gawkrödger (13) patients with acne showed a higher degree of anxiety and depression compared to other dermatological diseases, even in comparison to patients with cancer.

The results of our study showed that the largest number of respondents, when it comes to the level of depression, belonged to the risk group, and in patients who were in the risk group and the group with signs of depression, there was no gender difference. The level of depression was somewhat higher in the second group of respondents, compared to the first and third, but the difference was not statistically significant. According to studies, depression that occurs with acne is always an important indicator of disease. The general living and working capacity of these patients is reduced, similar to rheumatic, asthma and diabetes patients, and are often the most important problem in the treatment of acne, especially in mild to moderate forms of acne (11). Attitudes found in the literature differ. Buljan and Šitum (14) suggest that, in contrast to psoriasis, the severity of the clinical features of acne does not necessarily correlate with the severity of depression, as acne, regardless of its severity, causes depression, suicidal thoughts and suicide in 5.6% of patients.

Suicide attempts are the central problem of depression. In fact, 50% of people who try to commit suicide are depressed, and 15% of depressed people do commit suicide. However, a study that included patients with various dermatoses showed the highest incidence of depression and suicidal ideas in patients with severe forms of acne and psoriasis, while patients with mild and moderate forms of acne had the same levels of depression and suicidal ideas as those suffering from atopic dermatitis, moderately severe forms of psoriasis and alopecia areata (6).

## Conclusion

The level of depression and anxiety in patients with acne vulgaris is not related to severity and patient sex. When evaluation of the clinical status is performed and while the entire treatment is being planned, the patient's self-assessment of their depression and anxiety levels should be also considered in addition to the physician's evaluation, because for certain patients some relatively mild forms of skin disease can cause a violent emotional reaction, while others can face more serious illness with much greater ease.

**Conflict of interest:** The authors declare that they have no conflict of interest. This study was not sponsored by any external organisation.

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