PSYCHOLOGICAL STATUS AND QUALITY OF LIFE IN ACNE PATIENTS TREATED WITH ORAL ISOTRETINOIN

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SUMMARY

Introduction: *The acne patients are at higher risk of acquiring depresion and anxiety, which can lead to reduced quality of life. Effective treatment of acne can reduce symptoms of anxiety and depression and significantly improve other physiological parameters and quality of life of these patients. The aim of this study was to determine the psychological status and quality of life of acne patients before, during and after the treatment with oral isotretinoin.*

Subjects and methods: *The prospective study included a total of 127 patients suffering from moderate to severe form of acne. To assess the psychological status and quality of life of studied groups the following standard psychometric questionnaires were performed before, during and after the treatment with oral isotretinoin: Beck Depression Inventory (BDI), Assessments of the Psychological and Social Effects of Acne (APSEA), State Trait Anxiety Inventory (STAI), Measure of Psychological Stress (MPS) and Dermatology Specific Quality of Life (DSQL).*

Results: *Results of the present study indicate that there is no increase in depressive and anxiety symptoms in the patients treated with oral isotretinoin. The psychological status by gender has shown the existence of differences between the genders in all measures of psychological status. Statistically significantly better quality of life was observed after healing than before treatment.*

Conclusion: *The results of our study showed no higher risk of depression and anxiety within the patients with acne treated with oral isotretinoin. Improvement of quality of life after the treatment of acne with oral isotretinoin was confirmed.*

Key words: *acne - psychological status - quality of life*

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INTRODUCTION

Acne is probably one of the most common skin conditions affecting the general population, especially teenagers and young adults (Lupi 2010). Although it is generally a self-limited disease, it can last for years, mainly affecting sites that are difficult to hide, causing disfiguring scars and thus a profound perceived change in appearance. All of these factors usually lead to negative effects on the psychosocial status of the affected individuals (Zaraa 2013). Although acne does not usually compromise general health, consistent studies have demonstrated that it may cause a negative impact on patient's quality of life, with psychological, social well being, and functional abnormalities such as depression, anxiety, anger, low self-esteem, discomfort with self-appearance, embarrassment, self-consciousness, lowered self-concept, social withdrawal, including suicidal ideation, as well as negative influence on school and work performance (Kamamoto 2014). Evaluation of acne using only clinical assessment does not capture the impact of the disease adequately. Assessment of impact on health-related quality of life is needed to fully characterize the overall disease burden and effectiveness of treatment (Saitta 2012). WHO defines Quality of Life as the "individual's perception of their position in the context of culture and value systems in which they live and in relation to their goals, expectations, standards,

and concerns" (WHOQOL 1995). The use of quality of life questionnaires, can help us adequately understand how acne affects the patient on a day-to-day basis and can aid in assessing the efficacy of therapy and design more targeted interventions (Hazarika 2016). Measurement of quality of life is necessary when assessing new therapies in audit for clinical services. Evaluation of the impact on quality of life, risk factorsand preferences for the selection of treatment agents, may help to design more targeted interventions (Tasoula 2012). Studies have shown that effective treatment can reduce symptoms of anxiety and depression and significantly improve other physiological parameters (Rubinow 1987). The main goals in the treatment of acne are: the prevention of physical sequelae (scars); limitation of the number and intensity of lesions; reduction in the duration of the disease; and minimization of its psychosocial impact (Healy 1991). Due to its brilliant anti-acne effect, isotretinoin is the first choice of treatment for severe acne with nodular and cystic formations and resistant acne, not responding to other treatment modalities (King 1982). In addition, isotretinoin has an improving effect on the quality of life of patients with acne (Beattie 1999).

The aim of this study was to investigate the psychological status and the quality of life of patients with acne before, during and after the treatment with oral isotretinoin.

SUBJECTS AND METHODS

The prospective study was conducted at the Department of Dermatology and Venereology of the University Clinical Hospital Mostar and included a total of 127 patients, 57 female and 70 male patients. The participants were outpatients suffering from moderate to severe clinical manifestation of acne, aged from 13 to 25, average age was 17.4. All participants provided written informed consent. Exclusion criteria included allergy to isotretinoin and pregnancy in female participants. All female participants subjected of childbearing potential used 2 forms of birth control. All patients underwent an assessment before, during the treatment and at the end of the 4th week after finished treatment. Consenting participants completed the same psychometric instruments, standardizated with optimal psychometric characteristics. None had any other severe dermatological or psychiatric diseases.

Following questionnaires were used in the research to assess psychological status of our patients:

- **Beck Depression Inventory (BDI)** is used for detecting symptoms of depression with 21 questions in patients older than 13 years, scale ranging from 0 to 63 (Beck 1972).
- **Assessments of the Psychological and Social Effects of Acne (APSEA)** is used for assessment of psychosocial disorders, scale ranging from 10 to117 (Motley 1992).
- **State Trait Anxiety Inventory (STAI)** is intended for detecting anxiety as personality traits and as the current state, scale ranging from 0 to 80 (Spilberger 1998).
- **Measure of Psychological Stress (MPS)** is a measure of perceived stress, 48 claims included in the scale, ranging from 0 to 240 (Cohen 1983).
- **Dermatology Specific Quality of Life (DSQL)** is measured on a simple visual analogue scale, ranging fom 1 to 10 (Anderson 1998).

Statistical analysis

Results were analyzed using the statistical program SPSS version 12.0 for Windows software. The following statistical procedures were applied: descriptive statistics (mean, standard deviation - SD), t-test for independent samples (comparison of the results before and after the treatment with oral isotretinoin). The statistically significant difference amounted to p<0.05.

RESULTS

Patients

A total of 127 patients were enroled in the study. Overall 55.1% (n=70) were male and 44.9% (n=57) were female, a significantly higher percentage of males. Patients were 13 to 25 years old, with the average age being 17.4.

Psychological status

The impact of acne on the psychological status of patients the first was examined before started the treatment with oral isotretinin. Investigation of psychological status of patients with moderate to severe form of acne before starting the therapy with oral isotretinoin has shown: BDI mean 7.25 (SD 7.49), MPS mean 43.10 (SD 31.64), STAI (state) mean 37.92 (SD 27.11), STAI (trait) mean 39.35 (SD 11.03) and APSEA mean 44.95 (SD 17.49). The results of psychological tests were within the normal range. The psychological status of patients was examined during the treatment with oral isotretinoin as well, and did not show a statistically significant deviation from normal values: the BDI test mean 4.94 (SD 5.54), MPS mean 37.41 (SD 31.15), STAI (state) mean 36.61, (10.36), STAI (trait) mean 37.94 (SD 9.11) and APSEA mean 41.74 (SD 15.72). The results were improved in comparation with those before the treatment. The same tests were preformed in patients after the treatment with oral isotretinoin and results showed: BDI mean 4.90 (SD 6.25), MPS mean 36.98 (SD 32.73), STAI (state) mean 35.88 (SD 10.82), STAI (trait) mean 37.50 (SD 11.10) and APSEA mean 40.60 (SD 12.16), which showed an improvement in comparison with those made before and during the treatment, but also had no statistically significant deviation from normal values and did not indicate the existence of depression and anxiety in patients with acne after the treatment with oral isotretinoin (Figure 1).

The psychological status of patients by age, up to 18 years (1) and over 19 years (2), before, during and after the treatment was performed to determine whether the differences between younger and older age exists. Before starting the therapy the results were as follows: BDI (1) mean 7.67 (SD 7.90), BDI (2) mean 12.6 (SD 23.6), MPS (1) mean 41.86 (SD 29.93), MPS (2) mean 46.61, (SD 36.30) STAI (state) 1 mean 37.86 (SD 10.95), STAI (state) 2 mean 38.09 (SD 12.24), STAI (trait) 1 mean 38.65 (SD 11.09), STAI (trait) 2 mean 41.24 (SD 10.80), APSEA (1) mean 45.10, (SD 16.63), APSEA 2 mean 44.56, (SD 19.92). The psychological tests did not show any significant differences between younger and older age before starting the treatment with oral isotretinoin. The results obtained during the treatment were as follows: BDI (1) mean 5.09 (SD 5.78), BDI (2) mean 4.53 (SD 4.90), MPS (1) mean 36.59 (SD 31.75), MPS (2) mean 39.73 (SD 29.72), STAI (state) 1 mean 36.92 (SD 10.77), STAI (state) 2 mean 35.76 (SD 9.26), STAI (trait) 1 mean 37.66 (SD 11.65), STAI (trait) 2 mean 38.68 (SD 9.56), APSEA (1) mean 41.54 (SD 15.91), APSEA 2 mean 42.32, (SD 15.41). Tests performed during the treatment with oral isotretinoin showed no significant differences in psychological status of patients. After completion of treatment the results were as follows: BDI (1) mean 5.12 (SD 6.63), BDI (2) Mean 4.29 (SD 5.096), MPS (1) mean 37.15 (SD 33.49), MPS (2) mean 36.50 (SD 31.05) STAI (state) 1 mean 36.14 (SD 11.20), STAI

(state) 2 mean 35.18 (SD 9.87), STAI (trait) 1 mean 37.56 (SD 11.70), STAI (trait) 2 mean 37.35 (SD 9.46), APSEA (1) mean 40.08, (SD 15.96), APSEA 2 mean 42.00 (SD 16.69). There were no statistically significant differences between younger patients (up to 18 years) and elderly (over 19 years) in the psychological status before, during and after the treatment with oral isotretinoin (Figure 2).
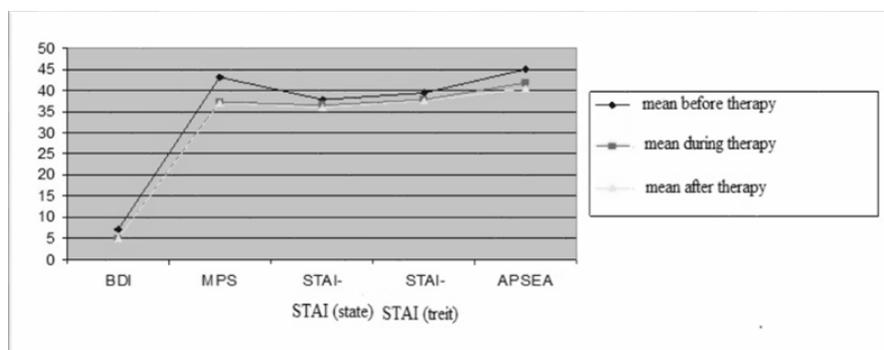
The psychological status by gender, male (m) and female (f), were as follows: BDI (m) mean 5.27 (SD 6.35) BDI (f) mean 9.68 (SD 8.10), MPS (m) mean 35.07 (SD 28.80), MPS (f) mean 53.14 (SD 32.40), STAI (m) (state) mean 34.10 (SD 10.08) STAI (f) (state) mean 42.63 (SD 10.95), STAI (m) (treit) mean 35.78 (SD 10.23), STAI (f) (treit) mean 43.67 (SD 10.49), APSEA (m) mean 42.57 (SD 16.41), APSEA (f) mean 47.88, (SD 18.45) (Figure 3). There was a statistically significant difference between the genders in all measures of psychological status before, during and after the treatment (changes are apparent for female patients) except in a test of psychosocial functioning (APSEA p>0.05).

Quality of life

Quality of life is assessed before and after the therapy with oral isotretinoin, on the basis of a questionnaire DSQL.

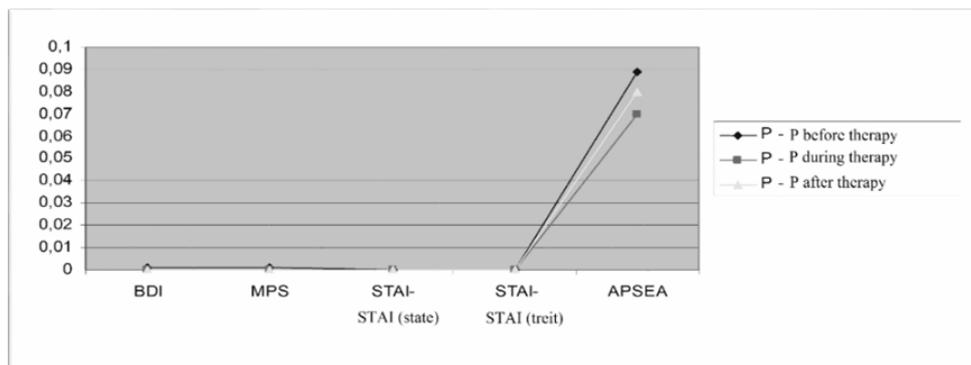The results of the DSQL – skin condition before the treatment with oral isotretinoin showed mean 1.38 (SD 0.83) and after the treatment showed mean 0.99 (SD 0.73). There was a statistically significant difference (p<0.05) of DSQL - skin condition before and after the treatment with oral isotretinoin, statistically there was improvement after the treatment (0.99) (Figure 4). DSQL -personal choices, before the treatment showed mean 0.79 (SD 0.78) and after the treatment mean 0.59 (SD 0.68). There was a statistically significant difference (p<0.05) of DSQL - personal choice, statistical analysis showed improvement after the treatment (0.59) (Figure 5). The results of DSQL - behavior before thetreatment showed mean 0.73 (SD 0.92) and after treatment mean 0.50 (SD 0.74). There was a statistically significant difference (p=0.000) in DSQL - behavior, before and after the treatment. Statistically there has been an improvement in quality of life after the treatment (0.50) in comparison to the results before the treatment (0.73) (Figure 6). The results of DSQL - relations in the close surroundings before the treatment showed mean 0.41 (SD 0.68) and after the treatment showed mean 0.29 (SD 0.53). There are statistically significant differences (p<0.05) in DSQL - relations in the close surroundings before and after the treatment. Statistically there has been an improvement in quality of life after the treatment (0.29) in comparison prior to treatment (Figure 7). The results of DSQL - mental state, before the treatment showed mean 1.15, (SD 1.14) and after the treatment showed mean 0.81 (SD 1.03) Statistically there has been an improvement in (p<0.05) DSQL - mental state after the treatment (0.81) (Figure 8).
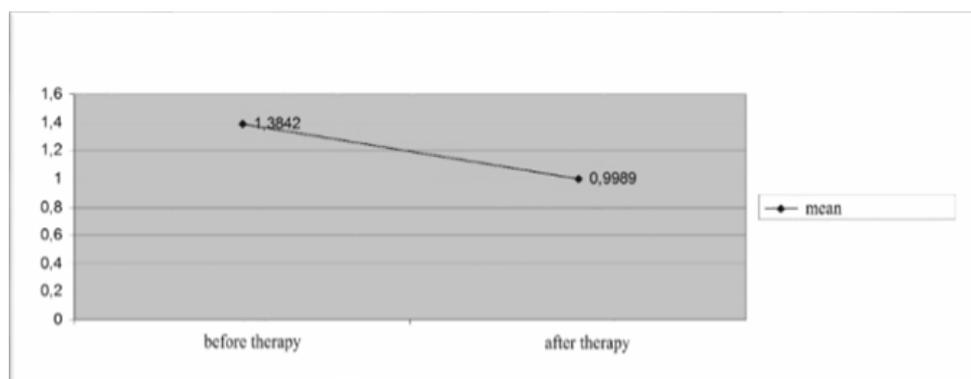

Figure 1. The psychological status of acne patients before, during and after treatment
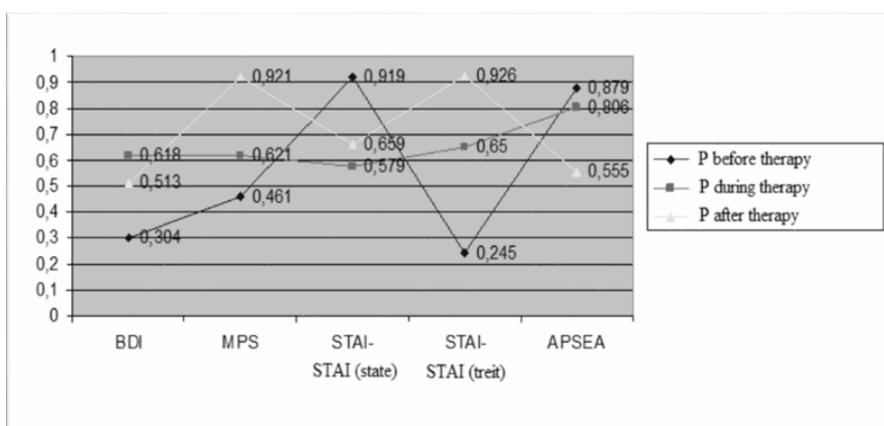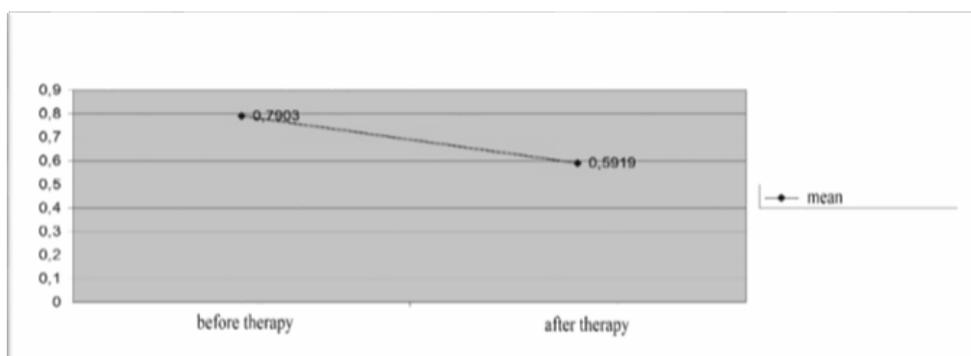

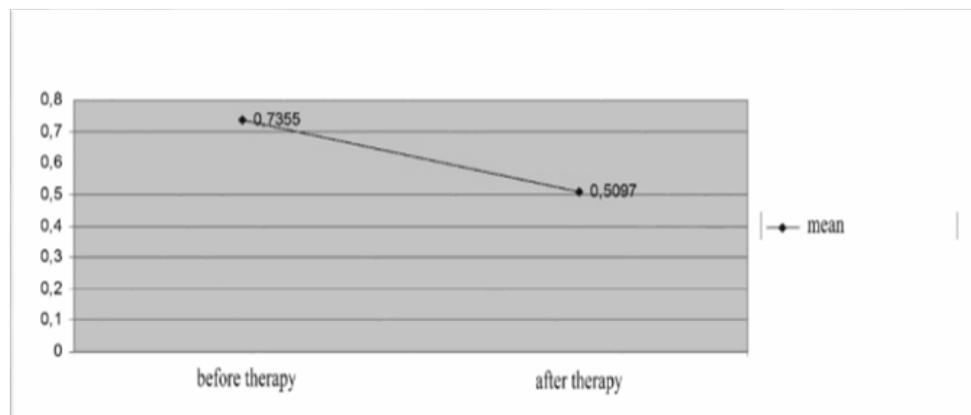**Figure 2.** The psychological status acne patients by age group

Figure 3. The psychological status acne patients by gender

Figure 4. DSQL skin condition before and after treatment

Figure 5. DSQL personal choice, before and after treatment

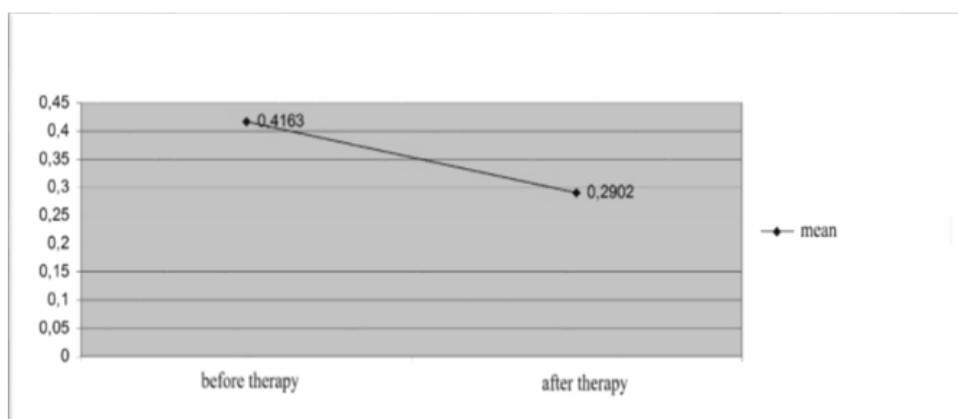**Figure 6.** Test results on DSQL behavior before and after treatment

Figure 7. DSQL relating to the environment - before and after treatment
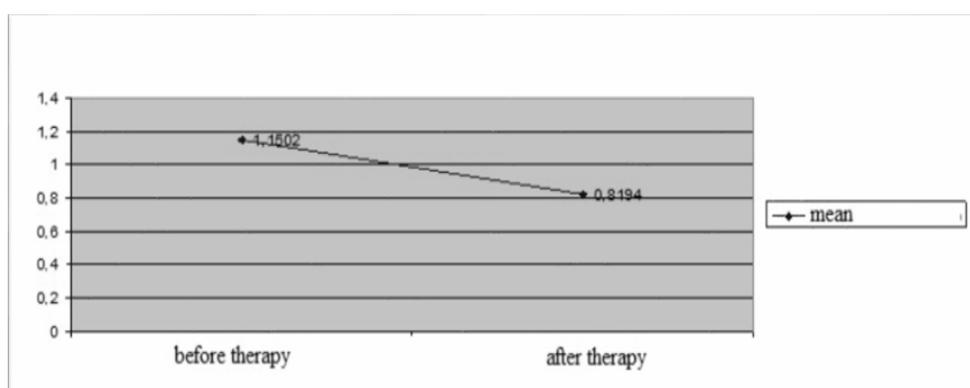

Figure 8. DSQL mental condition - before and after treatment

DISCUSSION

Acne patients can develop emotional and psychological problems as a result of their condition, but clinical assessment of the severity of acne can not be accepted as the basis for quality assessment of the possible psychological effects that accompany the disease. The disease occurs in particularly vulnerable age, when disrupted outer appearance easily leads to deterioration of the emotional state. The impact of acne on the psychological status and quality of life was examined in this study. The questionnaires ratings before the therapy with oral isotretinoin have indicated minimal depressive simptoms in patients with different clinical manifestation of acne. The same tests were performed during and after the therapy with oral isotretinoin, and the results did not differ significantly among the tests for monitoring the depression (BDI), anxiety (STAI), psychological stress (MPS) and the tests of psychological and social impact of acne (APSEA). The result of the BDI test, an internationally accepted instrument for monitoring the weight of depression in patients older than 13 years, and recognizing depressive states have indicated a normal, non-depressed behavior. Test MPS, which is a general measure of the experienced stress regardless to the specific moments that are caused by provides insight into the everyday measure experienced stress-related disease, was regarded as normal. STAI test, a measurement for anxiety as a state, was created as a reaction to a particular situation and anxiety as a trait, that is, long-lasting anxiety that is not related to specific situations, did not show the existence of increased anxiety in the studied groups of patients. Test APSEA, which is used to assess psychosocial problems as a result of acne and which monitors the impact of the disease on the mental status during the treatment, did not show the existence of psychosocial disorders. Results of the present study indicate that there is no increase in depressive and anxiety symptoms in the group of patients treated with oral isotretinoin. Instead, successful treatment of acne seems to improve both, depressive and anxiety symptoms and a quality of life (Kaymak 2009). Similar study by Lasek reported that the psychosocial impact of skin lesions was more important in acne patients than in patients with other dermatologic deseases. Acne, a less symptomatic skin condition, has a greater psychosocial impact in comparison to more symptomatic conditions (Lasek 1998). One in four adolescents with lots of acne have reported mental health problems, and a doubled odds in those with substantial acne is found compared with peers with no/a little acne (Halvorsen 2011). Studies suggest that effective acne treatments correlate with improvement in psychological status inacne patients (Berg 2011).

Acne vulgaris is a common skin condition that affects more than 85% of the adolescent population, but is also common in adults (Yentzer 2010). The psychological status of patients suffering from acne vulgaris was examined by age, and has been divided in two groups, one group of patientsup to 18 years of age and other group of patients over the 19 years, before, during and after the treatment with oral isotretinoin. The existence of significant differences between the two age groups in the psychological status before, during and after the treatment wasn't proved. Adolescence is a time of physical, emotional, and social development (Balkrishnan 2006). Approximately 47% of the Greek adolescents believed that acne was affecting their interpersonal relationships and 64.4% believed that acne was affecting their self-image (Rigopoulos 2007).

The psychological status by gender, in this study, has shown the existence of differences between the genders in all measures of psychological status before, during and after the treatment with oral isotretinoin. The changes have proven to be more pronounced in women except in psychosocial functioning test, where the number of men in the study the percentage was higher. Acne in adolescents and adults, was shown to be worse in women than in men (Mallon 1999). Acne in female may be more impaired because of differences in perceptions regarding self-appearance and levels of cosmetic concern, as patient perception of acne is more influenced by social and emotional factors than clinical assessments such as acne severity or duration (Zauli 2014). Jankovic et al. found that the Cardiff Acne Disability Indeks - QOL CADI mean score was significantly higher in Serbian adolescent girls with acne than in Serbian adolescent boys with acne (Jankovic 2012). This finding is in line with previous studies suggesting that adolescent girls may be more vulnerable than boys to the negative psychological effects of acne (Kellett 1999).

In determining the quality of life of dermatological patients it is important to reflect on different aspects of the disease. In addition to the physical aspect of the disease, psychological and social aspects must not be neglected and attention should be paid to the impact of the disease on the personal and social life of patients. Ignoring the psychological and social aspects leads to non-cooperation of patients in the treatment and a decrease in therapeutic effect (Aktan 2000). The psychological aspects of the disease refer to the subjective experience of the impact of the disease, the perception of your own body and self-esteem. The social aspect refers to the impact of the disease on relationships with other people, which may result in social isolation and withdrawal. Quality of life was assessed on before starting therapy with isotretinoin and after completion of treatment based on questionnaires DSQL. The questionnaire consists of a series of statements, and using opportunities offered answers estimated impact of skin disease on the existence of a physical disability and symptoms, everyday activities, functioning in society, at work and school, and the self-perception of your own body. Comparison of quality of life in the study was done at the level of five aspects: skin condition, personal choices, behavior, relationships in the environment and psychological state and that before and after treatment. The result of assessment of quality of life test DSQL referring to the condition of the skin, personal choices, behavior, relationship to the environment and psychological state demonstrates statistically significant difference before and after treatment. Statistically significantly better quality of life was observed after healing than before treatment. Quality of life showed a gender difference (female patients scoring worse) but did not correlate to the clinical grading nor to the choice of therapy. At six months the DLQI correlated with clinical outcome. Patients with isotretinoin therapy showed a significantly greater improvement in quality of life (Berg et al. 2011). In DQLS, the highest mean score was attained for disease symptom followed by mental condition, and skin condition has gained the highest mean score. Statistical analysis showed significant difference in quality of life based. The results of Iranian study show clear impact of acne on patients' quality of life, and as it was mentioned acne had affected quality of life of 51.8% of subjects (Safizadeh 2012). However, factors other than severity contribute to the effects of acne on patients' quality of life, including the patient's age. In fact, in a previous study, the psychosocial effects of acne on quality of life were found to be influenced more by patients self-perception of their acne severity than by the objective severity of the disease (Lasek 1998). All quality of life instruments showed substantial deficits for acne patients that correlated with each other but not with clinically assessed acne severity. The acne patients reported levels of social, psychological and emotional problems. Acne is not a trivial disease in comparison with other chronic conditions. This should be recognized in the allocation of health care resources (Mallon 1999). To improve patients quality of life, treatment of comedones should be fully respected. In addition, dermatologists should encourage patients to visit clinics regularly to help them improve the emotional aspects of their quality of life (Hayashi 2004).

CONCLUSION

The research suggest that symptoms of depression and anxiety are not dependent on the clinical manifestation of acne vulgaris, and that patients with acne vulgaris are not prone to depression, but that there are differences between genders and that the psychological status of patients better after the treatment. Treating patients with isotretinoin acne therapy does not lead to depression, and the quality of life is better after the treatment.

Contribution of individual authors:

Dubravka Šimić; Conception of the study, acquisition, analysis and interpretation of data;

Jasna Zeljko Penavić: Design of the study, participated in literature searches;

Dragan Babić: Design of the study, participated in literature searches;

Anita Gunarić: Drafting the article, participated in literature searches;

All authors participated in the final revision of the manuscript.

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