

# The impact of acne vulgaris on quality of life and psychic health in young adolescents in Greece. Results of a population survey \*

O impacto da acne vulgar na qualidade de vida e saúde psíquica em jovens adolescentes na Grécia. Resultados de uma pesquisa populacional

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**Abstract:** BACKGROUND: Acne vulgaris can severely affect social and psychological functioning.

OBJECTIVE: The aim of this study was to investigate the impact of acne vulgaris and its severity on Quality of Life of young adolescents in Greece.

METHODS: We conducted a questionnaire based survey among 1560 adolescent between the ages of 11 and 19 years old and 1531 of these were completed. Adolescents with acne filled all the questions including the Children Dermatology Life Quality Index. Adolescents without acne filled the questions about age, family history of acne, stress and smoking. Data were analyzed with Pearson Chi Square test.

RESULTS: Acne prevalence was 51.2% affecting both sexes equally. Self reported mild acne was present in 71.2% and moderate-severe acne in 28.8% of the study population. The mean age of the study population was 15.77y. The median score of Children Dermatology Life Quality Index was 4.02. The impact of acne on quality of life is associated with the severity of the acne ( $p < 0.0001$ ). Patients with moderate/severe acne experience greater psychosocial and emotional impairment ( $p < 0.0001$ ). Body image is modified proportionally to the severity of acne ( $p < 0.0001$ ). Symptoms and treatment of acne are factors that also influence their quality of life. Girls and boys are equally affected. Stress and heredity are correlated with acne and its severity ( $p < 0.0001$ ). We didn't find any correlation between smoking and acne.

CONCLUSION: Acne affects Quality of Life of young adolescents in Greece. The impact is proportional to the severity of acne. More severe acne is associated with greater effect on quality of life with implications for self esteem, body image and relationships with others.

Keywords: Acne vulgaris; Adolescent; Health of institutionalized adolescents; Quality of life

**RESUMO:** FUNDAMENTOS: Acne vulgar pode afetar seriamente o funcionamento social e psicológico.

OBJETIVO: O objetivo deste estudo foi investigar o impacto da acne vulgar e sua gravidade na Qualidade de Vida de jovens adolescentes na Grécia.

MÉTODOS: Nós conduzimos uma pesquisa baseada em questionário entre 1560 adolescentes com idades entre 11 e 19 anos e 1531 destes foram completados. Adolescentes com acne completaram todas as questões incluindo o Children Dermatology Life Quality Index (CDLQI). Adolescentes sem acne completaram as questões sobre idade, história familiar de acne, estresse e tabagismo. Os dados foram analisados pelo teste de chi-quadrado de Pearson.

RESULTADOS: A prevalência de acne foi de 51.2%, afetando igualmente ambos os sexos. O auto relato de acne leve estava presente em 71.2% e de acne moderada a grave em 28.8% da população. A idade média da população em estudo foi de 15.77 anos. O escore médio do Children Dermatology Life Quality Index foi de 4.02. O impacto da acne na Qualidade de Vida está associado à gravidade da acne ( $p < 0.0001$ ). Pacientes com acne moderada/grave experimentam maior piora psico-social e emocional ( $p < 0.0001$ ). A imagem corporal é modificada proporcionalmente à gravidade da acne ( $p < 0.0001$ ). Sintomas e tratamento da acne são fatores que também influenciam sua qualidade de vida. Meninas e meninos são afetados igualmente. Estresse e hereditariedade estão correlacionados à acne e sua gravidade ( $p < 0.0001$ ). Nós não encontramos nenhuma correlação entre tabagismo e acne.

CONCLUSÃO: Acne afeta a qualidade de vida de jovens adolescentes na Grécia. O impacto é proporcional à gravidade da acne. A acne mais grave está associada a um maior efeito na qualidade de vida com implicações na auto-estima, imagem corporal e relacionamento com outros.

Palavras-chave: Acne vulgar; Adolescente; Qualidade de vida; Saúde do adolescente institucionalizado

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## INTRODUCTION

Acne vulgaris is a common skin disease affecting up to 80% of adolescents and many adults at some stage. While neither life threatening nor physically debilitating, acne can affect social and psychological functioning. Epidemiological studies can be a helpful tool to identify risk factors in a community, to quantify the burden of acne and other skin diseases and contribute to health care planning. Acne's CDLQI is a specific, practical and useful measure. When compared with the adult DLQI it is substantially the same.<sup>1</sup> It may identify psychologically vulnerable patients. Measurement of quality of life is also necessary when assessing new therapies in audit for clinical services. Evaluation of the impact on quality of life, risk factors and preferences for the selection of treatment agents, may help to design more targeted interventions.

More severe acne has been suggested to be associated with increased anxiety, depression symptoms and impact on patients' lives.<sup>2</sup> However, the relationship between severity of acne and emotional distress, as well as the relationship between the severity of acne and quality of life are poorly understood and rather controversial.<sup>3</sup> The aims of this study were: (i) to determine the overall impact of acne vulgaris on quality of life of adolescents in Greece, (ii) to assess the relationship between quality of life and severity of acne, (iii) to assess psychosocial effects of acne among adolescents with acne, (iv) to study the prevalence of acne and (v) to examine the relationship between acne and risk factors such as heredity, stress and smoking.

## METHODS

### Subjects and study design

This cross sectional study was conducted in 23 high and senior high schools in Athens from February 2007 to September 2009. The selection of schools was made in such a way so as to represent all socioeconomic groups. A qualified dermatologist was present in the class room informing the students about the survey and administering the questionnaires. A lecture about acne and acne photos were initially presented. The students aged (11-19 years old) completed the anonymous questionnaire within 45 minutes. Students completed a questionnaire of 33 items for females and 31 items for males.

This study was approved by the hospital research and ethics review committee. Permission for the students to participate in the study was obtained by their parents.

### Grading acne

Students were asked to assess the severity of their acne (face, back) classifying it in the three following categories: mild, moderate and severe, based on

information given by distributed photos and by numbering the lesions. Objective evaluation by the dermatologist present in the room was impossible within the school time limits.

### Symptoms of acne

In addition, students were asked about the morphology of their lesions- open and closed comedones, pustules, nodules and cysts- (based again on the photos and on the information given to them by the Dermatologist's lecture), symptoms such as itch or pain and also about the possible habit of excoriating lesions. Itch and pain were regarded as purely subjective as there are no objective skin signs.

### Body image / peer pressure

Body image involves perceptions, thoughts and behavior related to one's appearance. Perceived body image is influenced when individuals have a skin disease.<sup>4</sup>

Adolescents body image is modified by several factors, most prominently peer pressure.<sup>5-8</sup> Peer pressure was evaluated by a single question assessing whether acne adolescents felt they were affected by the attitudes of family, friends and teachers towards their body image. The question was:

*"Do you believe that your acne affects negatively the way that others (relationships, parents, friends, teachers, opposite sex e.t.c.) treat you?"* with two responses, yes and no. Those who answered yes were considered impaired, as far as their body image was concerned.

### Other variables

Standard survey questions were included assessing the age, sex, smoking habits, self stress status, sleep disturbances, family history of acne, cosmetic make up use and diet.

### Statistics

Data were analyzed with frequencies and cross tabs with Pearson Chi Square test, used to assess significant differences between groups. Odds ratio was calculated in adjusted logistic regression models. The level of significance was set at P less than 0, 05.

SPSS for windows, version 15 SPSS Inc, was used for statistical analyses.

## RESULTS

The sex distribution of the 1531 respondents in our study was 51.3% female and 48.7% male. Prevalence of self-reported acne in this sample was 51.2% (female 51% and male 49%). The mean age was 15, 77 years old.

Acne affected equally both sexes. Self reported mild acne was 71.2% and moderate –severe acne 28.8%.

We observed increased prevalence of acne as age increased, especially in ages 14.1-16 years old. Females tended to have higher prevalence of acne (59.8%) in the 11-14 year old group than males (46.2%), while males tended to have a higher prevalence (59%) than females (51.2%) in the 14.1-16 year old age group.

Prevalence of facial acne was 89.1% and that of acne in the back 41.3%. Lesion type distribution included closed comedones in 65.82% of the population, open comedones in 55.22%, pustules in 23.7% cysts and nodules in 9.82%.

The habit of excoriating acne lesions was self accounted in 59.7% of the subjects. The likelihood of excoriation was similar between males and females, 50.3% and 49.7% respectively ( $p>0.05$ ). Excoriation wasn't associated to stress ( $p>0.05$ ).

The mean score of CDLQI in our survey was 4.02 considering only acne adolescents who answered all the questions in DLQI. The mean score of each question of CDLQI is presented in table 1.

There is an influence on their daily life at least in the 4 following fields: feelings of self esteem, disturbance from symptoms of acne, feelings of unworthiness in their relationships and unpleasant treatment.

The mean score of CDLQI for mild acne was 2.94 for moderate acne 5.40 and 12.05 for severe acne ( $p<0.0001$ ) (Graph 1). Comparison between sexes showed no statistical significant difference. CDLQI

score was 4.00 for boys and 4.04 for girls. Age distribution showed a greater impact on students with acne older than 14.1 years (Graph 2).

Questions regarding feelings of self-esteem, symptoms, feelings of unworthiness and treatment, had higher impact on CDLQI (mean scores= 0.69, 0.68, 0.46 and 0.33 respectively) and questions regarding loss of sleep and sport activities scored the lowest (Table 2).

Overall, embarrassment and decreased self-esteem due to acne was noticed in 46.8%.

Embarrassment and decreased self esteem due to facial acne was noticed in 39.8% in pupils with mild acne, in 64.6% with moderate acne and 89.3% in severe acne. ( $p<0.0001$ ). We had similar results for acne in the back (42.6% for mild acne, 56.9% for moderate and 92.9% for severe acne) ( $p<0.0001$ ).

Embarrassment and decreased self esteem was noticed in 46.8% of pupils with acne and open comedones, in 51.5% with closed comedones, in 54.8% with pustules and in 75% with cysts and nodules.

Feelings of unworthiness and teasing due to acne were noticed in 31.4% of acne adolescents and modifications to dressing style were noticed in 21.3%.

Twenty one point four percent (21.4%) of the acne adolescents were affected in their school work and personal activities due to acne, while 19.4% were affected in their hobbies due to acne. Nineteen point two percent (19.2%) of the students were affected in their personal and social lives, especially in their relationship building because of their acne on the face. Fourteen percent (14%) avoided swimming and other sports due to embarrassment; the same results were noticed in pupils with acne on their backs.

Sleeping disorders in the whole sample were 16.5% and 20.3% among pupils with acne ( $p>0.05$ ). When recalling symptoms of the past week, sleep disorders due to acne were reported by 16.6% of pupils.

Recalling past week's symptoms, more than half of acne adolescents (51.6%) reported that their skin was itchy and painful. Itchy and painful skin was reported in 49.7% of pupils with closed comedones, 53.8% with open comedones, 58.8% with pustules and 84.9% with nodules and cysts.

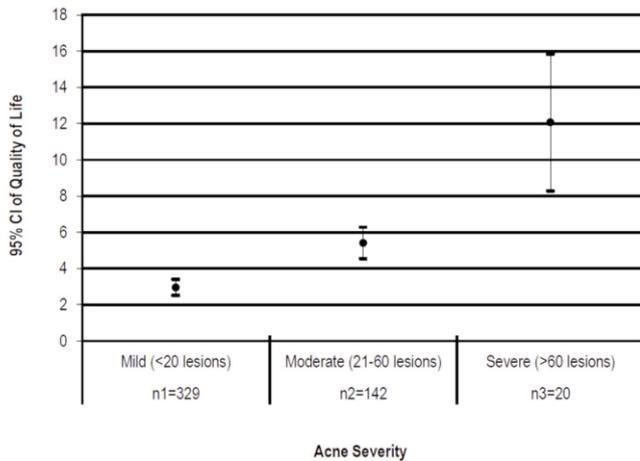
Itch was observed in 22.8% for facial acne and 31.5% when acne was found on the back ( $p<0.0001$ ).

Twenty four point six percent (24.6%) of the pupils under treatment reported that treatment was unpleasant. The majority of our study population (71.6%) was under topical treatment. Antibiotics had been prescribed in 13.65%, contraceptives in 1.6% and isotretinoin in 1.6%.

More than half (55.3%) answered that they had never sought medical help from a dermatologist.

TABLE 1: Median score of each CDLQI questions

Questions of CDLQI	Mean score
Symptoms (itch, painful skin)	0,68
Embarrassment and decreased self esteem	0,69
Friendship-relationship building	0,27
Dressing	0,33
Hobbies	0,27
Sports	0,20
School work- Holiday time	0,31
Teasing-Feelings of unworthiness	0,46
Sleep disorders	0,22
Discomfort of Treatment	0,33



GRAPH 1: Acne severity and its impact on CDLQI

Among pupils who had never visited a dermatologist, 15% reported having bought products from super markets and 55.8% OTCs from pharmacies.

The majority received advice for treatment from their parents (28.9%) followed by dermatologists (28.2%) and pharmacists (23.5%).

Severity of acne had a significant impact on the decision to visit a dermatologist. Sixty-one percent of pupils who reported having visited a dermatologist had moderate/severe acne while 37,9% with mild acne had a similar counseling ( $p < 0,0001$ ).

Twenty six point eight percent (26.8%) of the adolescents with acne felt they were affected by the attitudes of family, friends and teachers because of their skin disease. Those were calculated with impairment in their body image due to peer pressure. When investigating the association between the severity of acne and body image due to peer pressure, impairment in body image was noticed in 19.9% for mild acne, 40.9% for moderate acne and 60.7% for severe acne ( $p < 0.0001$ ).

Among pupils with acne 26.7% had a family history of acne vs pupils without acne and positive family history in a percentage of 10,5% revealing a correlation ( $p < 0.0001$ ) between acne and heredity. This correlation becomes stronger when investigating the severity of acne: pupils with mild acne had a positive family history in 20.4%, pupils with moderate acne in 39.9% and pupils with severe acne in 61.5% ( $p < 0.0001$ ).

Self-reported stress in pupils with acne was present in 55.4% while in pupils without acne, stress was present in 44.6% revealing a correlation between acne and stress ( $p < 0.0001$ ).

Smoking prevalence was 16.5% in the whole sample and 20.3% among adolescents with acne ( $p = 0.005$ ).

DISCUSSION

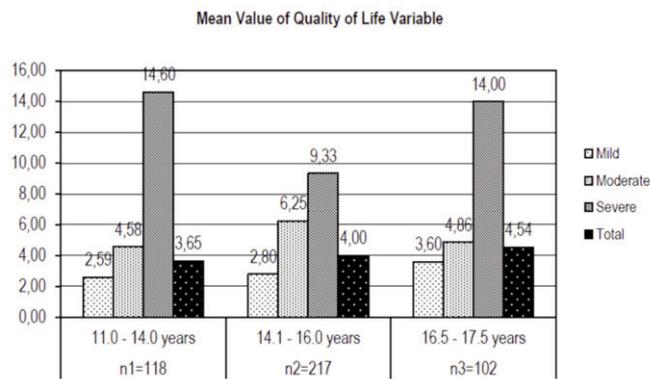
We studied the Quality of Life of acne adolescents in a large sample of high school pupils in Greece. Analysis of the subscales of DLQI showed that acne had significant impact on their emotions (self-embarrassment, self-esteem, feelings of unworthiness), annoyance due to physical symptoms (pain/itch) and daily discomfort due to treatment.

In many studies DLQI and CDLQI were also used to compare acne with other dermatologic diseases.<sup>6-7</sup> In the studies by Lewis-Jones et al and Finlay et al the mean score for acne burden was 4.3 and 5.7 confirming that patients with chronic skin diseases such as atopic eczema, psoriasis and acne, experience a greater impairment in their quality of life than patients with other skin diseases.<sup>1,9</sup>

The median score of questions of quality of life in our study was 4.02 similar to Findlay’s study and higher than the 1.7 score reported by Walker.<sup>9,10</sup> Even though this score implies that overall the pupils were psychologically affected it is still a moderate burden,

TABLE 2: Correlation between CDLQI questions and severity of acne (Pearson chi square test)

CDLQI Questions	Median score (0-3)			Sig
	Mild acne	Moderate acne	Severe acne	
Embarrassment and decreased self-esteem	0,54	0,94	1,97	$p < 0,0001$
Symptoms (Itch, painful skin)	0,53	0,98	1,46	$p < 0,0001$
Teasing-Feelings of unworthiness	0,32	0,67	1,46	$p < 0,0001$
Dressing	0,22	0,49	1,29	$p < 0,0001$
Discomfort of treatment	0,25	0,43	1,00	$p < 0,0001$
Friendship-Relationship Building	0,16	0,44	0,96	$p < 0,0001$
School work-Holiday time	0,23	0,41	1,11	$p < 0,0001$
Hobbies	0,19	0,41	1,00	$p < 0,0001$
Sports	0,13	0,29	0,93	$p < 0,0001$
Sleep disorders	0,12	0,40	0,86	$p < 0,0001$



**GRAPH 2:** Acne had a greater impact on CDLQI in students older than 14.1 years. Severe acne had a more significant impact on CDLQI in all age groups

probably due to the high prevalence of mild acne among the adolescents studied.

Our study showed that the impact of acne on quality of life was proportional to acne severity. Patients with moderate/ severe acne reported more burden on their Quality of Life than patients with mild acne or the impact of acne on quality of life was influenced by the severity of acne as perceived by the patient. These results are in agreement with similar studies where both acne and severity are self reported.<sup>10-16</sup>

There is some debate about how Quality of Life correlates with the clinical severity of acne. The results of previous studies on the relationship between QoL and severity of acne are variable and inconsistent.

According to some investigators, no association between acne severity and Quality of Life has been reported.<sup>16-21</sup> The difference could be attributed to the lack of acne specific measures, the limited range of scales used, lack of a consistent acne grading system, self-evaluation of the severity of acne, different sample sizes, wide age ranges and that some studies use instruments whose questions are independent of skin disease severity or contain questions which strictly refer to symptoms of skin disease rather than Quality of Life. In the population studied the impact of acne was proportional to its severity as perceived by the patient, however studies where acne evaluation and severity were evaluated by a qualified dermatologist report similar results.<sup>14,15</sup>

The subscales of DLQI more affected by acne were self esteem, self-embarrassment and physical symptoms such as pain and itch, followed by feelings of unworthiness in personal relationships. Unpleasant treatment and appearance (dressing –clothes style) are affected in a lesser degree.

Itch in acne usually isn't reported or is omitted. Itch in our study was present in facial acne in almost 25% of pupils and in 33.3% of pupils with acne in the back revealing a connection of localization of acne

and itch ( $p < 0.0001$ ). In the study by Reich et al about half of the study population (50%) reported itch accompanying acne lesions, concluding that itch is a relatively common concomitant symptom of acne lesions.<sup>22</sup> In our study, there was no stringent definition for itch. This complaint is regarded as purely subjective as there is no objective skin sign. In Reich's study there was an agreement for itch, of 77% between the repeatability of adolescent's answers and agreement between investigators.

The most frequent lesions in our study were comedones. Lesions associated with greater impairment (itch, painful skin) were cysts and nodules. What was surprising was that even those who had comedones reported symptoms (itch, pain) and emotional effects (decrease self esteem, difficulties in relationship building, social activities). These results show that patients don't want any eruptions or even comedones on their face. That is in agreement with a study on Japanese adolescents.<sup>23</sup>

A limitation in our study is the fact that acne is self reported. Literature suggests that under-reporting of serious acne among adolescents is common.<sup>24-26</sup> This should be emphasized as mild acne in our study appears to be more often. However, a separate validation study comparing objective findings and reported acne has been conducted in adolescents showing an overall agreement of 74% between reported and observed acne by dermatologists.<sup>24</sup> Comedones were the most frequent acne lesion in the aforementioned study presenting a validity of 97%. Choi et al report in their study that the mean account of comedones of the entire face was significantly higher in adolescent acne compared with post adolescent acne.<sup>27</sup>

We found that almost half of acne adolescents experience an impact on their self esteem similar to other studies.<sup>23,28</sup> Embarrassment is directly linked to self-esteem. Feelings of embarrassment and self esteem issue lead to self-consciousness and a decrease of self-confidence.<sup>29</sup>

It has been noticed that adolescents with acne feel uncomfortable and avoid eye contact, grow their hair long to cover the face and girls often use make-up to minimize the appearance of acne lesions.<sup>30</sup> These feelings are related to fear of having their faces scrutinized by others.<sup>19</sup> We noticed that the impact was proportional and in direct correlation with the severity of acne similar to a Dutch study by Van der Meeren in which it was also emphasized that patients with severe acne are more neurotic and have a lower self-defensive attitude.<sup>31</sup>

Feelings of unworthiness attributable to negative appraisal by their peers, were present in half of the acne population in our study. The impact was proportional to the severity of acne.

Teasing or taunting and avoidance by others are two important factors in the relationship between acne and embarrassment and self-consciousness. That also creates feeling of unworthiness and also leads to impairment of self-esteem and self image.<sup>29</sup>

Appearance is often appraised through dressing-clothing style.<sup>32</sup> Results in our study show that one out of four acne adolescents faces difficulty in dressing, attributable to acne, whether in Motley's study (18) 29% felt that the presence of acne affected the clothes they wore. The mean score for clothing style in CDLQI, in our study (table1) was 0.33. This question scored highly (4<sup>th</sup> place) in our study, confirming high modification of dressing due to acne. In the study by Mallon et al the mean score evaluating dress modification, was 0.38 for adolescents with skin diseases and 0.02 for healthy adolescents.<sup>11</sup> This indicates a significant impact on dress choices for adolescents with skin diseases when compared to healthy ones.

The social inhibition or phobia which can accompany acne is well documented.<sup>33</sup> In our study it was demonstrated that almost 20% of acne adolescents had problems in relationship building due to their acne lesions. In a study by Jawett and Rayan, acne patients expressed concern about social interactions, particularly in meeting new people, socializing, going out in public or interacting with the opposite sex.<sup>34</sup> This study showed that 14.4% had difficulties in sport activities because of acne. This result is quite similar to a study among teenage Scottish schoolchildren which reported that 10% avoided swimming and other sports because of embarrassment due to their acne.<sup>10</sup>

We saw that the percentage (21.4%) of pupils with acne felt that their acne affected their schoolwork and personal activities in holiday time which was significant higher – doubled- from that in Walker's study.<sup>10</sup> This result is of significant value as most children spent about two thirds of the year at school and the rest of the time on holiday.

One of the questions that had the lowest score was sleep disorders due to acne. Major sleep disruption can be caused by inflammatory skin diseases such as eczema.<sup>35</sup> In our study we didn't detect any such disruption although our percentage of 16.6% is significant higher than the 6% reported in Walker's study.<sup>10</sup>

More than half of untreated pupils with acne had bought OTC products without prior counseling with a dermatologist, at least once. This represents a relatively high rate and could indicate public awareness that acne is a treatable medical condition.

Although more than half of the pupils with acne had never visited a dermatologist we saw that those who had moderate/severe acne were more emotionally affected by the skin condition and were more likely to visit a dermatologist. This behavior is reasonable and can be

easily explained. They want to improve their affected Quality of Life and this can be achieved through a dermatologist's intervention. There are studies that show that patients with acne who were more emotionally affected were more likely to adhere to treatment. Adherence to treatment has been linked to better outcomes in acne and improvement of Quality of Life.<sup>36</sup>

Treatment seems to be unpleasant for adolescents. Rubinow and Rauch suggest that treatment of acne is probably more time consuming than generally thought, causing discomfort and annoyance to many acne patients.<sup>37</sup> In the population under study we had the same results regardless of the acne area predilection (facial or at the back), although one study shows that patients with facial acne appeared to be less affected in social activities than those with acne of the back.<sup>18</sup> This is presumably so, because people with facial acne have their condition "on show" at all times and become used to it, whereas individual with acne on back do not normally have their condition on public display.

We didn't find a difference between males and females regarding emotional effects and Quality of Life. Male adolescents are aware of their skin problems just like females. These results are similar to the studies by Finlay and Hahn and in contrast with a study from Oslo which reported lower self-attitude and self-esteem among 18year old girls with acne, than 18year-old boys with acne.<sup>38,39,40</sup> In a recent study from Egypt, male patients were more impaired than women.<sup>14</sup> This difference could be attributed to the limited public display of women's faces in Middle Eastern societies.

We saw that middle adolescence and late adolescence suffered a greater negative impact on their Quality of Life. A possible explanation is that in middle adolescence (14-16 years) peer and romantic relationships become more salient. In late adolescence, over 16 years old, adolescents make more important life decisions and move towards young adult roles. In these ages appearance is significant, so acne causes more problems in comparison to early adolescence where the family is still the key and appearance doesn't seem to affect their life. Results from a study by Lasek support that regardless of the severity of acne, older adults are more affected by their acne.<sup>41</sup>

Acne is visible to everybody, affects skin integrity and therefore bodily integrity. Acne changes the appearance, producing disturbance in body image.<sup>42</sup> On the other hand, acne improvement has been shown to be related to an increase in body image.<sup>43</sup> We evaluated body image according to peer pressure regardless of body size and BMI (Body Mass Index). In the study of Dalgard et al the investigators found that adolescents with acne had poor body

satisfaction/body image independent of weight problems/BMI.<sup>40</sup> We considered the attitudes of family, friends and teachers as significant factors influencing the adolescents' body image. Several studies have reported the important roles played by parents and peers in influencing changes in body image among adolescents.<sup>44-48</sup> We used a single item question to evaluate body image as previously reported by other investigators.<sup>4</sup> About 1/3 of the adolescents with acne in our study believed that they had poor body image. This study also revealed that peer pressure affected body image proportionally to the severity of acne. Impairment was noticed in 19.9% in mild acne, 40.9% in moderate and 60.7% in severe acne.

In our study we found a positive correlation between acne and self-reported stress ( $p < 0.0001$ ). Stress is a response to any situation or factor that creates a negative emotional or physical change or both. Acne alone may be a source of stress and anxiety but stress can also trigger or exacerbate acne. Stress results in an increase in glucocorticoids and andro-

gens, which could result in an acne flare. Schulpis et al showed an association between psychological states and sympathoadrenal status in patients with acne.<sup>49</sup>

A study by Chiu et al revealed that changes in acne severity correlate highly with increasing stress, suggesting that emotional stress from external sources may have a significant influence on acne.<sup>50</sup>

## CONCLUSION

Our study has described the impact of acne on Quality of Life and the relationship between the severity of acne and Quality of Life. Acne causes symptoms, creates feelings of unworthiness and diminishes self esteem. Self image, self consciousness, relationship building and appearance are more impaired, proportionally, to the severity of acne.

Dermatologists should be encouraged to add Quality of Life evaluations for adolescents with acne, since these might reveal individual traits and impairments and help intervene with more individual specific interventions. □

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