

Quality of Life of Parents of Adolescents with Acne: A Cross-Sectional Study

Akneli Ergenlerin Ebeveynlerinin Yaşam Kalitesi: Kesitsel Bir Çalışma

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ABSTRACT Objective: Skin diseases affect both a patient's life and the lives of their relatives in a plethora of ways. Although there are several studies on the effects of acne on quality of life (QoL), studies on the QoL of parents with adolescents who have acne are scarce. In this study, we aim to assess the effect of acne vulgaris on parents' QoL and determine how this varies according to acne severity scores of their children. **Material and Methods:** Our study included 162 patients at 12-18 years of age with acne vulgaris and their parents. The Acne Quality of Life Scale (AQoL) was used to assess the patient's quality of life. The Dermatological Family Impact Scale (DeFIS) was used to evaluate the caregiver's QoL. Besides DeFIS, a semi-structured questionnaire also administered to the caregiver. **Results:** Of the parents who participated in our study, 62% expressed sorrow and 62% expressed anxiety about their children's acne. The DeFIS scores of the parents were found to be 11.86±8.98 (0-41). There was no correlation between DeFIS scores and acne severity, however a statistically significant correlation was found between AQoL and DeFIS scores. Of the parents, 43% expressed their concern about the side effects of their children's acne treatments and parents' DeFIS scores increased in correlation with their concerns. **Conclusions:** Our findings show that acne may have an impact on a family's QoL, which is an extension of the QoL of acne patients.

Keywords: Acne vulgaris; adolescent; quality of life

ÖZET Amaç: Deri hastalıkları, hem hastanın yaşamını hem de yakınlarının yaşamını pek çok şekilde etkiler. Aknenin yaşam kalitesi üzerindeki etkilerine dair çalışmalar olmasına rağmen akneli ergenlerin ebeveynlerinin yaşam kalitelerine ilişkin çalışmalar azdır. Bu çalışmada, akne vulgarisin, ebeveynlerin yaşam kalitesi üzerindeki etkisini değerlendirmeyi ve bu etkinin akne şiddetine göre nasıl değiştiğini belirlemeyi amaçladık. **Gereç ve Yöntemler:** Çalışmamıza, akne vulgarisli 12-18 yaş arası 162 hasta ve refakatçi ebeveynleri dâhil edildi. Hastanın yaşam kalitesini değerlendirmek için Akne Yaşam Kalitesi Ölçeği (AYKÖ) kullanıldı. Bakım verenin yaşam kalitesini değerlendirmek için Dermatolojik Aile Etki Ölçeği (DAEÖ) kullanıldı. Bakım verene, DAEÖ'nün yanı sıra yarı yapılandırılmış bir anket de uygulanmıştır. **Bulgular:** Çalışmamıza katılan ebeveynlerin %62'si çocuklarının sivilceleri ile ilgili üzüntülerini, %62'si ise endişelerini dile getirdi. Akneli çocuğu olan ebeveynlerin DAEÖ puanları 11,86±8,98 (0-41) bulundu. DAEÖ puanları ile akne şiddeti arasında ilişki bulunmazken, AYKÖ ve DAEÖ puanları arasında istatistiksel olarak anlamlı bir ilişki bulundu. Ebeveynlerin %43'ü çocuklarının akne tedavilerinin yan etkileri konusunda endişelerini dile getirdiler ve ebeveynlerin DAEÖ puanları endişeleriyle orantılı olarak arttı. **Sonuç:** Bulgularımız, aknenin, akne hastalarının yaşam kalitesinin bir uzantısı olarak aile yaşam kalitesi üzerinde etkisi olabileceğini göstermektedir.

Anahtar Kelimeler: Akne vulgaris; adölesan; yaşam kalitesi

Acne vulgaris, which affects 85% of adolescents and young adults, is a multifactorial inflammatory disease of the pilosebaceous unit.¹ Acne vulgaris, while it seems to be a negligible disease, mainly causing cosmetic complaints, can have a large psychosocial effect, with permanent psychological sequelae. Acne may have drastic consequences including so-

cial isolation, body image disturbance, and in some cases, suicidal tendencies. These psychological problems are not always linked to acne severity and the psychosocial effect of acne should be assessed in all patients.² The effect of acne on the quality of life (QoL) has been the subject of many studies using both general and acne-specific tests.³⁻⁵ Although it is

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difficult to compare these studies with different scales, all of these studies have shown that acne negatively affects the QoL.³⁻⁵

Skin diseases also have a significant impact on patients' lives and negatively affect their QoL.⁶ Recent studies have shown, however, that skin diseases affect not only the patient's life, but also the lives of relatives of patients in several ways (mental, physical, social, financial).^{7,8} The QoL of a patient affects the QoL of relatives who share the same environment with the patient or who care for the patient and in some cases, the QoL of the relative will deteriorate much more than that of the patient.⁹

Although there are many studies on the effects of acne on QoL, there are only a few studies regarding the QoL of families of patients with acne.^{10,11} Nevertheless, past research examining the QoL of families of acne patients have not particularly examined the adolescent age group of acne patients. In this study, we planned to evaluate the physical, social and mental problems of family members of adolescents with acne. The objective of this study was to assess the effect of acne vulgaris on parents' QoL and to determine how this varies according to their children's acne severity scores.

MATERIAL AND METHODS

PARTICIPANTS

Our study included patients between 12-18 years of age with acne vulgaris and their parents over 18 years of age who admitted to the Sanko University Dermatology Outpatient Clinic between May 2019 and July 2020. This study was approved by the Sanko University Institutional Ethics Committee (date: October 3, 2019, decision no: 05 SÜ KA EK) in accordance with the Declaration of Helsinki Ethical Principles for Medical Research involving human subjects.

Patients between the ages of 12-18 with acne vulgaris for more than 1 month living with a healthy biological mother or father and literate in Turkish were included in this study. Patients with neuropsychiatric, autoimmune and other serious systemic and skin diseases were excluded from the study.

Family members over 18 years old, literate in Turkish and in a close relationship (living in the same household and/or primary caregiver of the acne patient) with an acne patient were included. Relatives were excluded if they had any neuropsychiatric illness or any other serious illness affecting their QoL.

Comprehensive history was taken from each acne patient by a qualified dermatologist, and cutaneous examinations were performed for each patient. Severity, onset and location of acne, sex, age, family history of acne, smoking and alcohol habits, medication history, presence of seborrhea, and other accompanying symptoms were recorded.

The classification proposed by Gollnick and Orfonos was used for classification and grading of acne.¹² According to this classification, inflammatory and non-inflammatory lesions on the face and trunk of the patients are counted and the patients are classified into four groups (Table 1).

This study was approved by the Institutional Research and Ethical Committee.

ASSESSMENT TOOLS

The Family Impact Scale of Dermatological Diseases (DeFIS) was administered to the parents of acne patients. DeFIS has been developed by Turan et al., and the validity and reliability of the scale has been established in the Turkish population.¹³ Cronbach's alpha coefficient was established for all items at 0.94. Each question of DeFIS is scored between 0 and 4 and there are 15 questions on the scale. The total scores of the DeFIS range from 0-60. Higher scores indicate that the QoL of family members has deteriorated more. Each item is related to a different aspect of QoL; the first 4 items are subcategorized as emotions. Appendix 1 contains an English translation of the DeFIS.

TABLE 1: Clinical classification of acne lesions.

Grade 1	Less than 10 facial inflammatory lesions
Grade 2	Inflammatory facial lesions: 10-20
Grade 3	Inflammatory truncal lesions
Grade 4	Nodule and scars on the face and/or trunk

APPENDIX 1: Dermatological Family Impact Scale.

Dermatological Family Impact Scale (DeFIS)

Please read the following questions and select only one answer choice for each considering how your relative's skin disease affected you in the last month. If a question is not relevant, please mark "Never" or "Not at all". Thank you very much.

- 1) How often have you felt sad due to your relative's skin disease?
 - a) Almost always/All the time
 - b) Usually/Most of the time
 - c) Every once in a while
 - d) Rarely
 - e) Never
- 2) How often have you experienced feelings of worry, anxiety or fear due to your relative's skin disease?
 - a) Almost always/All the time
 - b) Usually/Most of the time
 - c) Every once in a while
 - d) Rarely
 - e) Never
- 3) How often have you experienced feelings of anger or tension due to your relative's skin disease?
 - a) Almost always/All the time
 - b) Usually/Most of the time
 - c) Every once in a while
 - d) Rarely
 - e) Never
- 4) How often have you experienced feelings of embarrassment, despair or hopelessness due to your relative's skin disease?
 - a) Almost always/All the time
 - b) Usually/Most of the time
 - c) Every once in a while
 - d) Rarely
 - e) Never
- 5) How often have you felt fatigued, worn-out or sick due to your relative's skin disease?
 - a) Almost always/All the time
 - b) Usually/Most of the time
 - c) Every once in a while
 - d) Rarely
 - e) Never
- 6) How often have you had problems with sleep (e.g. unrefreshing sleep, trouble falling asleep, waking up repeatedly at night) due to your relative's skin disease?
 - a) Almost always/All the time
 - b) Usually/Most of the time
 - c) Every once in a while
 - d) Rarely
 - e) Never
- 7) How often have you felt that your social life was affected by your relative's skin disease (e.g. inviting friends over or visiting them, going out, going on vacation)?
 - a) Almost always/All the time
 - b) Usually/Most of the time
 - c) Every once in a while
 - d) Rarely
 - e) Never
- 8) How often have you felt that your daily workload/overall burden was increased because of patient care responsibilities (e.g. applying topicals, reminding medications)?
 - a) Almost always/All the time
 - b) Usually/Most of the time
 - c) Every once in a while
 - d) Rarely
 - e) Never
- 9) To what extent have your expenditures increased due to your relative's skin disease (e.g. hospital or physician costs, medications, special dressings)?
 - a) Significantly
 - b) Notably
 - c) Somewhat
 - d) Very little
 - e) No change/Not at all
- 10) How often have you felt the need to receive support/help for your relative's skin disease?
 - a) Almost always/All the time
 - b) Usually/Most of the time
 - c) Every once in a while
 - d) Rarely
 - e) Never
- 11) How often have you had to cope with other people's negative attitude due to your relative's skin disease (e.g. being exposed to questions or mockery, needing to explain)?
 - a) Almost always/All the time
 - b) Usually/Most of the time
 - c) Every once in a while
 - d) Rarely
 - e) Never

Evaluation (0–60): a = 4; b = 3; c = 2; d = 1; e = 0.

Turan E, Gürel MS, Erdemir AT. Development and preliminary validation of the dermatological family impact scale. *TURKDERM* 2014; 48:74-81.

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APPENDIX 1: Dermatological Family Impact Scale. (continued)

- 12)** To what extent has your relative’s skin disease affected your sexual life?
a) Significantly
b) Notably
c) Somewhat
d) Very little
e) No change/Not at all
- 13)** To what extent has your relative’s skin disease affected your leisure time activities (e.g. hobbies, reading books, going to the movies)?
a) Significantly
b) Notably
c) Somewhat
d) Very little
e) No change/Not at all
- 14)** To what extent has your relative’s skin disease affected your study or work activities (absenteeism, occupational failure, decreased work performance)?
a) Significantly
b) Notably
c) Somewhat
d) Very little
e) No change/Not at all
- 15)** To what extent has your relative’s skin disease affected your daily schedule?
a) Significantly
b) Notably
c) Somewhat
d) Very little
e) No change/Not at all

Moreover, in order to evaluate QoL of parents of acne patients, a semi-structured questionnaire consisting of 18 questions was prepared by the authors of the study and administered to parents. First 3 questions of the questionnaire were focused on sociodemographic characteristics, such as age, degree of consanguinity and education levels. The remaining 15 questions of the questionnaire focus on the parents’ depression, anxiety, embarrassment, disappointment, financial distress, and social isolation as a result of their child’s acne. In addition, in the questionnaire, parents were asked to score on a likert type scale between 1 and 10 for the depression, anxiety, shame, disappointment, financial distress, depression and social isolation they feel. [Appendix 2](#) includes an English version of our questionnaire.

Acne quality of life scale (AQoL) was used to measure the QoL of acne vulgaris patients. There are a total of 9 questions in the AQoL and it is developed by Gupta et al (1998). The answers of the questions are scored as “1” never, “2” a little, “3” medium level, “4” a lot. The total score ranges between 9 and 36. High total score means low quality of life. It may be used to assess the relationship between acne severity and quality of life, particularly

APPENDIX 2: Semi-structured questionnaire prepared by the authors of the study.

- 1. How old are you?**
- 2. Degree of consanguinity?**
a) Mother **b)** Father
- 3. Education level?**
a) Primary school **b)** Secondary school **c)** University
- 4. Has your child's acne made you depressed or miserable over the past month?**
a) YES **b)** NO
- 4.1 If you answered “Yes,” how many points would you give if you had to choose between 1 and 10?
 (Score as low as one and as high as ten.).....
- 5. Have you been worried about your child's acne in the last month?**
a) YES **b)** NO
- 5.1 If you answered “Yes,” how many points would you give if you had to choose between 1 and 10?
 (Score as low as one and as high as ten.).....
- 6. Have you been embarrassed by your child’s acne in the last month?**
a) YES **b)** NO
- 6.1 If you answered “Yes,” how many points would you give if you had to choose between 1 and 10?
 (Score as low as one and as high as ten.).....

continue →

7. Have you been disappointed with your child's acne in the last month?

- a) YES b) NO

7.1 If you answered "Yes," how many points would you give if you had to choose between 1 and 10?

(Score as low as one and as high as ten.).....

8. Have you had any sleep problems as a result of your child's acne in the last month?

- a) NO b) On..... days, I had difficulty sleeping.

9. Have your relationships with others been negatively affected by your child's acne?

- a) YES b) NO

9.1 If you answered "Yes," how many points would you give if you had to choose between 1 and 10?

(Score as low as one and as high as ten.).....

10. Has your child's acne had a negative impact on your social life in the last month?

- a) YES b) NO

10.1 If you answered "Yes," how many points would you give if you had to choose between 1 and 10?

(Score as low as one and as high as ten.).....

11. Has your child's acne interfered with your ability to enjoy yourself in the last month?

- a) YES b) NO

11.1 If you answered "Yes," how many points would you give if you had to choose between 1 and 10?

(Score as low as one and as high as ten.).....

12. Did the acne treatments you should have provided for your children in the previous month cause you any financial difficulties?

- a) YES b) NO

12.1 If you answered "Yes," how many points would you give if you had to choose between 1 and 10?

(Score as low as one and as high as ten.).....

12.2 How much did you spend on acne medications on average in the last month?

12.3 Are you paying for your acne medications yourself?

- a) YES b) NO

13. Has your child's acne had a negative impact on your work life in the last month?

- a) YES b) NO

13.1 If you answered "Yes," how many points would you give if you had to choose between 1 and 10?

(Score as low as one and as high as ten.).....

14. Have you done any research on where you can find information about your child's acne?

- a) YES b) NO

14.1 If you answered "Yes," where did you get your information?

- 1) Internet
- 2) Close friends, neighbors etc..
- 3) Physician
- 4) TV, magazine, newspaper
- 5) Scientific resource
- 6) Other (Please specify

14.2. If you answered "Yes" How many hours did you spend researching? hours

14.3 Did your research yield clear answers to the questions you posed?

- a) YES b) NO

14.4 Did your research meet your expectations?

- a) YES b) NO

15. Did you have to apply acne creams or lotions to your child in the last month?

- a) YES b) NO

15.1 If yes, how long did it take you to administer these medications?

- 1) It captured the majority of my time.
- 2) It took me some time.
- 3) It was not time-consuming.

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*continued***16. Have you had any arguments with your child about the use of these medicines?**

- a) YES b) NO

17. Have you been concerned about these medications' side effects in the last month?

- a) YES b) NO

17.1 If you answered "Yes," how many points would you give your worries on a scale of one to ten?

(The lowest score is one, and the highest score is ten.)

*Please answer question 15, if you have multiple children.***18. How has the condition of your child with acne affected your relationship with your other children in the last month?**

- a) Unaffected in any way.
-
- b) It so happened that I was unable to devote time to the others.
-
- c) I was incapable of caring for my other children.

in patients with mild to moderate acne. The validity and reliability study of the AQoL has been carried by Demirçay et al.¹⁴

STATISTICAL ANALYSIS

We applied the Statistical Package for Social Sciences (SPSS; Win Ver 25.0, 2017; SPSS Inc., Chicago, IL, USA) for data analysis.

The descriptive statistics presented include frequency, percentage, mean and standard deviation or median, and minimum-maximum values. Comparisons between groups were examined using the following: Mann-Whitney U test or independent samples t-test and Kruskal-Wallis test for more than 2 groups; a chi-squared test was performed for comparison of categorical variables in different groups, and Pearson correlation coefficient for assessing the association between 2 continuous variables. A $p \leq 0.05$ was considered statistically significant.

RESULTS

PATIENT CHARACTERISTICS

A total of 162 patients and parents were included in the study after 162 of the 168 parents who were invited agreed to participate. The study included 66 male acne patients and 96 female acne patients, with a mean age of 15.35 ± 1.4 years. The mean age of disease onset was 13.1 ± 1.7 years. According to the disease grading system, 20 (12%) patients were Grade 1, 45 (28%) patients were Grade 2, 48 (30%)

patients were Grade 2 and 3. Mean AQoL score of acne patients was 14.4 ± 5.3 . The clinical characteristics of acne patients are also listed in [Table 2](#). Of the 162 parents who participated in the study, 79% were mothers and 21% were fathers and mean DeFIS scores of parents were 11.86 ± 8.98 .

Parents' Responses to Questionnaire Questions Designed by Us to Investigate the QoL of Parents of Children with Acne

According to the results of our questionnaire, 61.9% of the parents who participated in our study expressed sorrow and 62% expressed anxiety about their children's acne in the previous month. It was found that 71.1% of the parents conducted research on their children's acne. Doctors (43.2%) and the internet (42.6%) were cited as the most common sources of information by parents. Parents were concerned about the side effects of their children's acne treatments, with 42.9% expressing their anxiety. Additionally, 26.7% of parents stated that they had financial difficulties in obtaining acne medications for their children ([Table 3](#)).

Impact of Acne and Patient Related Factors on DeFIS

There was no statistically significant difference between the average DeFIS scores in different acne severity groups when the DeFIS scores were compared according to acne severity ($p:0.94$). Similarly, there was no correlation between the severity of acne and DeFIS scores.

The sex of acne-affected children had no statistically significant effect on parents' DeFIS scores ($p>0.05$). Likewise, there was no statistically significant difference in DeFIS scores between male (father) and female (mother) parents ($p>0.05$).

There was no statistically significant difference in DeFIS scores based on age of onset of acne, acne location, hyperseborrhea, previous treatment history, smoking, or alcohol history. However, the DeFIS scores of the parents of patients with persistent acne were statistically significantly higher than those of patients with intermittent acne ($p:0.036$).

AQoL SCORES OF ACNE PATIENTS

When the AQoL scores were evaluated according to acne severity, no significant difference was found between the average AQoL scores in different acne severity groups ($p:0.445$). Similarly, there was no correlation between the severity of acne and AQoL scores.

THE RELATIONSHIP BETWEEN QUESTIONNAIRE QUESTIONS AND DEFIS AND AQoL SCORES

In our survey, those who answered yes to question 4 (Has your child's acne made you depressed or miserable in the last month?) had statistically higher average DeFIS and AQoL scores than those who answered no ($p:0.000$ and $p:0.042$, respectively).

Average DeFIS and AQoL scores of those who answered yes to question 5 (Have you been worried about your child's acne in the last month?) were discovered to be statistically significantly higher than those who said no ($p:0.000$ and $p:0.045$, respectively).

While those who answered yes to question 6 (Have you been embarrassed by your child's acne in the last month?) had significantly higher DeFIS scores than those who answered no ($p:0.006$), there was no difference in AQoL scores ($p:0.068$).

CORRELATIONS

While there was no correlation between DeFIS scores and acne severity, a statistically significant correlation was found between AQoL and DeFIS scores (correlation coefficient $[r]=.414$, $p<.001$).

TABLE 2: Demographic data of patients with acne.

Characteristic	Patients [n (%)]
Age, years (mean±SD)	15.35±1.4
BMI (mean±SD)	21.3±3.4
Sex	Male 66 (40.7) Female 96 (59.3)
Age of onset, years (mean±SD)	13.1±1.7 years
Forehead localization	139 (86.9)
Nose localization	85 (53.1)
Perioral localization	100 (62.5)
Cheek localization	129 (80.6)
Neck localization	53 (33.1)
Chest localization	61 (38.1)
Arm localization	49 (30.6)
Back localization	103 (64.4)
Acne grade	Grade 1: 20 (12.4) Grade 2: 45 (28) Grade 3: 48 (29.8) Grade 4: 48 (29.8)
Hyperseborrhea	122 (75.3)
Previous treatment history	94 (59.5)
Family history	85 (53.1)
Smoking	1 (0.6)
Alcohol	1 (0.6)
AQoL	14.4±5.3

SD: Standard deviation; BMI: Body mass index; AQoL: Acne quality of life scale.

A positive correlation was discovered between the severity of the disease and the scores given by those who answered yes to questions 4 and 5 on a Likert type scale ranging from 1 to 10 for their level of sadness and anxiety (p -values of 0.003 and 0.038, and correlation coefficients $[r]$ of .335 and .224 respectively).

It was discovered that as a family's expenditure on acne medications increased, so did the DeFIS scores (correlation coefficient $[r]=.264$, $p:0.025$). The DeFIS scores were found to be higher when the family spent more time administering the child's medications (correlation coefficient $[r]=.302$, $p:0.046$). Additionally, parents' DeFIS scores increased in correlation with their concerns about the side effects of their child's medications (correlation coefficient $[r]=.273$, $p:0.042$).

TABLE 3: Responses of participants to questionnaire questions designed by us to investigate the quality of life of parents of children with acne.

Questions	n	%
Q4. Has your child's acne made you depressed or miserable over the past month?		
Yes	99	61.9
No	61	38.1
Q5. Have you been worried about your child's acne in the last month?		
Yes	98	62
No	60	38
Q6. Have you been embarrassed by your child's acne in the last month?		
Yes	10	6.3
No	149	93.7
Q7. Have you been disappointed with your child's acne in the last month?		
Yes	27	17
No	132	83
Q8. Have you had any sleep problems as a result of your child's acne in the last month?		
Yes	4	2.5
No	155	97.5
Q9. Have your relationships with others been negatively affected by your child's acne?		
Yes	15	9.4
No	144	90.6
Q10. Has your child's acne had a negative impact on your social life in the last month?		
Yes	5	3.1
No	154	96.9
Q11. Has your child's acne interfered with your ability to enjoy yourself in the last month?		
Yes	6	3.8
No	153	96.2
Q12. Did the acne treatments you should have provided for your children in the previous month cause you any financial difficulties?		
Yes	43	26.7
No	118	73.3
Q13. Has your child's acne had a negative impact on your work life in the last month?		
Yes	8	5.1
No	150	94.9
Q14. Have you done any research about your child's acne?		
Yes	113	71.1
No	46	28.9
Q14.1 If you answered "Yes," where did you get your information?		
Internet	69	42.6
Close friends, neighbors etc..	29	17.9
Physician	70	43.2
TV, magazine, newspaper	4	2.5
Scientific resources	10	6.2
Q15. Did you have to apply acne creams or lotions to your child in the last month?		
Yes	43	26.9
No	117	73.1
Q16. Have you had any arguments with your child about the use of these medicines?		
Yes	45	28.3
No	114	71.7
Q17. Have you been concerned about these medications' side effects in the last month?		
Yes	67	42.9
No	89	57.1
Q18. How has the condition of your child with acne affected your relationship with your other children in the last month?		
Unaffected in any way.	144	96.6
Sometimes	1	0.7
I was incapable of caring for my other children.	4	2.7

DISCUSSION

The QoL of both parents and adolescents with acne was evaluated in this cross-sectional study. The questionnaire administered to the parents who participated in our study revealed that 61.9% of parents expressed sorrow over their child's acne, while 62% expressed anxiety, in line with the fact that family members who care for the patient may be exposed to major effects such as physical and mental fatigue.⁹ Moreover, a statistically significant correlation was found between AQoL and DeFIS scores indicating a close relation between family and patient QoL.

The average AQoL score of acne patients in our study was 14.4 ± 5.3 (9-36). In comparison to the mean AQoL score of our study, the results of other Turkish studies using AQoL revealed higher mean AQoL scores in some studies and lower mean AQoL scores in others.^{15,16} The disparity in mean AQoL scores could be explained by different study designs and demographic characteristics of acne patients included in other studies, such as age and gender. In our study, there was no correlation between acne severity and AQoL. Similarly, many previous studies have shown that the severity of acne may not be associated with a decline in QoL suggesting that factors other than acne severity may influence the QoL of acne patients.¹⁷⁻¹⁹

We used DeFIS in this study to assess parents' QoL and average DeFIS scores of parents of children with acne were found to be 11.86 ± 8.98 in our study. DeFIS is the only family QoL instrument developed and validated specifically for the Turkish population. DeFIS is comparable to the well-established 10-item Family Dermatology Life Quality Index (FDLQI), though there are significant differences such as the higher number of domains related to the emotional aspect of QoL (4/15 in DeFIS vs 1/10 items in FDLQI) and the higher number of possible answers (5-point scale in DeFIS vs 4-point scale in FDLQI).²⁰ Future researches are needed to determine DeFIS score descriptor categories, which should then be applied to other skin diseases.

Limited number of skin diseases, such as atopic dermatitis, vitiligo, psoriasis, and alopecia areata, has been studied in terms of the effect of disease on the

patients' family QoL, with atopic dermatitis receiving the most attention among the various skin diseases.^{7,21-24} The average DeFIS score in a study assessing family QoL of psoriatic children conducted in Türkiye was 20.8 ± 11.9 .²⁵ Lower average DeFIS scores of parents of children with acne compared with psoriasis found in this study may be explained by the fact that psoriasis is considered a more chronic disease by families, whereas acne is considered a transient physiological state. Previous studies utilizing FDLQI also showed the effect of acne on family of patients.^{10,11} Duman et al, also showed the decrease in FDLQI scores after treatment confirming the effect of acne on family QoL.¹⁰

While there was no correlation between DeFIS scores and acne severity and the average DeFIS scores weren't statistically different among different acne severity groups, a statistically significant correlation was found between AQoL and DeFIS scores and our results are in line with previous studies.^{10,11} A previous study despite not directly evaluating the effect of acne on patients' family QoL aimed at assessing adolescents' and their parents' perceptions of the severity and impact of acne on the adolescent's QoL, revealed parents and adolescents are in relative agreement regarding acne severity and QoL impact.²⁶ Moreover, in other diseases such as vitiligo and atopic dermatitis, a correlation was found between family and patient QoL.^{24,27} Additionally, according to our results DeFIS scores of participating parents in this study were higher among those who expressed sorrow and anxiety and concern over their child's acne as expected.

Our findings indicate that neither the parent's nor the child's gender had an effect on the average DeFIS scores. In contrast, a study evaluating QoL of parents of vitiligo patients revealed that mothers tend to be more affected and more distressed, recording lower scores for QoL compared with fathers.²⁸ Furthermore, there was no statistically significant difference in DeFIS scores based on age of onset, location, hyperseborrhea, previous treatment history, and smoking or alcohol history. However, the DeFIS scores of the parents of patients with persistent acne were statistically significantly higher than those of patients with intermittent acne. Additional research

with a larger sample size is required to elucidate the impact of clinical features of acne on the QoL of families.

In our research, we discovered that parents sought knowledge about their children's acne mostly from doctors and the internet. Additionally, we discovered that DeFIS scores increased as parents' concern about their children's treatment modality increased.

There were some limitations in the study, the most significant of which were the limited sampling size and the absence of a control group. We did not explore caregiver-related variables such as marital status or educational degree. Finally, it would be beneficial to evaluate several caregivers for each patient. Nonetheless, this is one of the first studies in Turkish population to look at the impact of adolescent acne on family QoL.

CONCLUSION

Our findings show that teenage acne may have an impact on family QoL, which is associated with the QoL of acne patients. DeFIS scores increased in direct proportion to parents' concerns about their children's

care modality. No correlation was found between the severity scores of acne and the DeFIS scores.

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Conflict of Interest

No conflicts of interest between the authors and / or family members of the scientific and medical committee members or members of the potential conflicts of interest, counseling, expertise, working conditions, share holding and similar situations in any firm.

Authorship Contributions

Idea/Concept: Fatma Elif Yıldırım; **Design:** Fatma Elif Yıldırım, Özlem Soran; **Control/Supervision:** Fatma Elif Yıldırım, Özlem Soran; **Data Collection and/or Processing:** Fatma Elif Yıldırım, Elif Sueda Solak, Ahmet Berke Murat; **Analysis and/or Interpretation:** Fatma Elif Yıldırım, Özlem Soran, Elif Sueda Solak; **Literature Review:** Elif Sueda Solak, Fatma Elif Yıldırım; **Writing the Article:** Fatma Elif Yıldırım, Özlem Soran; **Critical Review:** Özlem Soran; **References and Fundings:** Özlem Soran.

REFERENCES

- White GM. Recent findings in the epidemiologic evidence, classification, and subtypes of acne vulgaris. *J Am Acad Dermatol.* 1998;39(2 Pt 3):S34-7. [[Crossref](#)] [[PubMed](#)]
- Fried RG, Wechsler A. Psychological problems in the acne patient. *Dermatol Ther.* 2006;19(4):237-40. [[Crossref](#)] [[PubMed](#)]
- Mallon E, Newton JN, Klassen A, Stewart-Brown SL, Ryan TJ, Finlay AY. The quality of life in acne: a comparison with general medical conditions using generic questionnaires. *Br J Dermatol.* 1999;140(4):672-6. [[Crossref](#)] [[PubMed](#)]
- Salek MS, Khan GK, Finlay AY. Questionnaire techniques in assessing acne handicap: reliability and validity study. *Qual Life Res.* 1996;5(1):131-8. [[Crossref](#)] [[PubMed](#)]
- Öztürkcan S, Aydemir Ö, İnanır I. Akne Vulgarisli hastalarda yaşam kalitesi. *Türkiye Klinikleri J Dermatol.* 2002;12(3):131-4.
- Finlay AY, Ryan TJ. Disability and handicap in dermatology. *Int J Dermatol.* 1996;35(5):305-11. [[Crossref](#)] [[PubMed](#)]
- Carroll CL, Balkrishnan R, Feldman SR, Fleischer AB Jr, Manuel JC. The burden of atopic dermatitis: impact on the patient, family, and society. *Pediatr Dermatol.* 2005;22(3):192-9. [[Crossref](#)] [[PubMed](#)]
- Basra MK, Edmunds O, Salek MS, Finlay AY. Measurement of family impact of skin disease: further validation of the Family Dermatology Life Quality Index (FDLQI). *J Eur Acad Dermatol Venereol.* 2008;22(7):813-21. [[Crossref](#)] [[PubMed](#)]
- Rees J, O'Boyle C, MacDonagh R. Quality of life: impact of chronic illness on the partner. *J R Soc Med.* 2001;94(11):563-6. [[Crossref](#)] [[PubMed](#)] [[PMC](#)]
- Duman H, Topal IO, Kocaturk E, Duman MA. Evaluation of anxiety, depression, and quality of life in patients with acne vulgaris, and quality of life in their families. *Dermatologica Sinica.* 2016;34(1):6-9. [[Crossref](#)]
- Martínez-García E, Arias-Santiago S, Herrera-Acosta E, Affleck A, Herrera-Ceballos E, Buendía-Eisman A. Quality of life of cohabitants of people living with acne. *Acta Derm Venereol.* 2020;100(17):adv00290. [[Crossref](#)] [[PubMed](#)]
- Gollnick H, Orfanos C. Clinical assessment of acne. In: Cunliffe WJ, ed. *Acne.* 1st ed. Stuttgart: Hippokrates; 1993. p.118.
- Turan E, Gürel MS, Erdemir AT, İnan Yüksel E. Dermatolojik hastalıklara özgü aile etki ölçeği geliştirilmesi, geçerlik ve güvenilirlik çalışması [Development and preliminary validation of the dermatological diseases family impact scale]. *Türkderm.* 2014;48(2):74-81. [[Crossref](#)]

14. Demirçay Z, Şenol A, Seçkin D, Demir F. Akne vulgarisli hastalarda akne yaşam kalite ölçeğinin Türkçe güvenilirlik çalışması [Reliability of Turkish version of acne quality of life scale in patients with acne vulgaris]. *Türkderm*. 2006;40(3):94-7. [\[Link\]](#)
15. Duru P, Örsal Ö. The effect of acne on quality of life, social appearance anxiety, and use of conventional, complementary, and alternative treatments. *Complement Ther Med*. 2021;56:102614. [\[Crossref\]](#) [\[PubMed\]](#)
16. Kotekoglu D, Parlakdag A, Koramaz FS, Varol G, Aslankoc V, Bozkurt S, et al. Internalized stigma in acne vulgaris and its relationship with quality of life, general health, body perception, and depression. *Niger J Clin Pract*. 2020;23(9):1289-94. [\[Crossref\]](#) [\[PubMed\]](#)
17. Öztekin C, Öztekin A. The association of depression, loneliness and internet addiction levels in patients with acne vulgaris. *Biopsychosoc Med*. 2020;14:17. [\[Crossref\]](#) [\[PubMed\]](#) [\[PMC\]](#)
18. Ilgen E, Derya A. There is no correlation between acne severity and AQOLS/DLQI scores. *J Dermatol*. 2005;32(9):705-10. [\[Crossref\]](#) [\[PubMed\]](#)
19. Aktan S, Ozmen E, Sanli B. Anxiety, depression, and nature of acne vulgaris in adolescents. *Int J Dermatol*. 2000;39(5):354-7. [\[Crossref\]](#) [\[PubMed\]](#)
20. Basra MK, Sue-Ho R, Finlay AY. The Family Dermatology Life Quality Index: measuring the secondary impact of skin disease. *Br J Dermatol*. 2007;156(3):528-38. Erratum in: *Br J Dermatol*. 2007;156(4):791. [\[Crossref\]](#) [\[PubMed\]](#)
21. Elliott BE, Luker K. The experiences of mothers caring for a child with severe atopic eczema. *J Clin Nurs*. 1997;6(3):241-7. [\[Crossref\]](#) [\[PubMed\]](#)
22. Balkrishnan R, Housman TS, Grummer S, Rapp SR, Clarke J, Feldman SR, et al. The family impact of atopic dermatitis in children: the role of the parent caregiver. *Pediatr Dermatol*. 2003;20(1):5-10. [\[Crossref\]](#) [\[PubMed\]](#)
23. Richards HL, Chong SLP, Mason DL, Griffiths CEM. The impact of psoriasis on healthy partners of patients with psoriasis. *Br J Dermatol*. 2002;147(Suppl 62):40.
24. Bin Saif GA, Al-Balbeesi AO, Binshabaib R, Alsaad D, Kwatra SG, Al-zolibani AA, et al. Quality of life in family members of vitiligo patients: a questionnaire study in Saudi Arabia. *Am J Clin Dermatol*. 2013;14(6):489-95. [\[Crossref\]](#) [\[PubMed\]](#)
25. Tekin B, Gurel MS, Topkarci Z, Topaloglu Demir F, Aytekin S, et al. Assessment of quality of life in Turkish children with psoriasis and their caregivers. *Pediatr Dermatol*. 2018;35(5):651-9. [\[Crossref\]](#) [\[PubMed\]](#)
26. Sadowsky LM, Yang CY, Sorrell J, Bayers S, O'Neill LB, Chamlin SL, et al. Comparing clinical acne vulgaris severity to adolescent and parent perceptions of acne severity and impact on quality of life. *Pediatr Dermatol*. 2020;37(4):592-6. [\[Crossref\]](#) [\[PubMed\]](#)
27. Campos ALB, Araújo FM, Santos MALD, Santos AASD, Pires CAA. Impact of atopic dermatitis on the quality of life of pediatric patients and their guardians. *Rev Paul Pediatr*. 2017;35(1):5-10. [\[Crossref\]](#) [\[PubMed\]](#) [\[PMC\]](#)
28. Amer AA, Mchepange UO, Gao XH, Hong Y, Qi R, Wu Y, et al. Hidden victims of childhood vitiligo: impact on parents' mental health and quality of life. *Acta Derm Venereol*. 2015;95(3):322-5. [\[Crossref\]](#) [\[PubMed\]](#)