Original Article

The Eating Attitudes, Sleep and Personality Characteristics, and Effects of on Acne Severity in Adolescents with Acne Vulgaris

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Abstract

Background: Acne vulgaris (AV) is a very common dermatological problem during adolescence. It is reported that it has a multifactorial etiology and nutritional attitudes, insufficient and poor-quality sleep may cause increased severity of AV. **Aim:** We aimed to investigate the sleep, eating attitudes and personality traits, and their effects on acne severity in adolescents with acne. **Methods:** The study sample was formed of 37 adolescent girls aged 12–18 years who presented at the University Dermatology Clinic and were diagnosed with AV and 37 adolescents without AV-matched age and gender. Eating attitude test, Diagnostic and Statistical Manual of Mental Disorders-5 (DSM-5) Personality Inventory Child Form, and child and parent forms of DSM-5 Level 2 Sleep Disorders were applied to in both groups. The AV severity assessed by using the Global Acne Grading Scale (GAGS). Psychiatric diagnosis was excluded with clinical interview according to the Schedule for Affective Disorders and Schizophrenia for school-aged children: Present and Lifetime Version (K-SADS-PL-DSM-5-T). **Results:** The mean age of adolescents with and without AV was 15.3 (standard deviation [SD] = 1.7), 15.4 (SD = 1.8), respectively. The mean disease duration of adolescents with AV was 20.4 (SD = 15.2) months, and the mean GAGS score was 23.24 (SD = 9.4). It was determined that eating attitudes, sleep, and personality characteristics of adolescents were similar in both groups. Eating attitudes, sleep, and personality characteristics had no direct effect on acne severity. **Conclusion:** Although this study demonstrates that eating attitudes, sleep, and personality characteristics were similar in adolescents with and without AV and these variables had no effect on acne severity, these results may have been obtained because of the severity scores of adolescents with AV were "moderate." There is a need for researches examining these variables in adolescents with "severe" AV.

Keywords: Acne vulgaris, adolescent, child, eating attitudes, personality, sleep

Introduction

Acne vulgaris (AV) that occurs especially in adolescence is a skin disease that has a multifactorial etiology, emerges on the skin in the forms of papules, pustules, comedones, and cysts and can cause chronic, social, and psychological effects.[1] The emergence of acne during adolescence can bring the disease to the focus of anxiety in adolescents, due to the fact that social and physical changes are particularly on their agenda. Thus, it can negatively affect adolescents' interpersonal relationships, self-esteem, and daily performance.[2,3]

Sleep regulation is affected by age and development. While a new-born baby sleeps for 16 h of 24 h, by the age of 18 years, this period decreases to 8 h as night sleep. While the causes of sleep problems are related to the associations with starting to sleep (such as shaking, feeding, and cuddling) in the preschool period (4–6 years), it is due to sadness, distress, and fears in school-age children. In adolescence (13–17 years), depression, anxiety, sadness, and conditioning problems are the main underlying causes for sleep problems.[4] Nutrition is the sufficient intake and the use of nutrients, which are necessary for growth, development, and long-term living as healthy

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and productive. The pursuit for identity, efforts for becoming independent, and being accepted by the community are so intense in the period of adolescence. Excessive dealing with the external appearance substantially also increases in this period. Irregular snacking as an eating pattern, eating outside the home as a habit and fast-food type nutrition seem to be typical features of adolescents' eating habits. These kinds of eating attitudes can often be influenced by many factors that can affect emotional state including family, peers, and mass media.[5]

The most common skin disorder in adolescents and young adults is AV. It is reported that many factors such as genetics, hormonal factors, ultraviolet ray, microorganisms, and stress may play a role in the etiopathogenesis of acne.[6] It is reported that AV may be among the health problems related to nutrition such as obesity, iron-deficiency anemia, Vitamin B12 deficiency anemia, zinc deficiency, retardation in growth development, anorexia nervosa, bulimia nervosa, and dental caries.[7] A wide body of sources about psychiatric concepts related to acne can be found in the literature. It is reported that acne should not only be considered as a dermatological problem since acne can cause psychological problems such as anxiety, depression, anger, suicidal thought, and low self-perception, although not life-threatening.[8,9]

To our knowledge, studies investigating the effect of sleep and eating patterns on acne severity are limited. In the literature, there is no study evaluating the association among sleep, eating patterns and personality characteristics, and acne in adolescents, and no study investigating the effects of these characteristics on acne severity. Hence, the aim of this study is to investigate the personality traits, sleep and eating patterns of adolescents with acne, and to examine the effects of these variables on acne severity.

Methods

Thirty-seven adolescents, aged 12–18 years, who applied to dermatology outpatient clinic of university (March 2019–September 2019) with the complaints of AV were included in the case sample group. Thirty-seven adolescents who were matched to the case sample group in terms of age and gender and did not have any psychological and medical disorders including AV were determined as the control group (the Power analysis for the case and control groups revealed that each group should include minimum 33 participants when *d* [effect size] and α measures were determined as 80% *d* [effect size] = 0,70 and α = 0.05.) The study initiated after obtaining ethical approval from University Ethics Committee (January 30, 2019; approval code: 20.478.486). To exclude all psychiatric disorders, all the participants were interviewed in the schedule for affective disorders and schizophrenia for school-aged children, Present and Lifetime version (K–SADS–PL) based on Diagnostic and Statistical Manual of Mental Disorders of the American Psychiatric Association, Fifth Edition (DSM–5). The sociodemographic data form, DSM-5 Level 2 Sleep Disorders Scale (DSM-5 SDS), eating attitude test (EAT), and DSM-5 Personality Inventory – Child version (DSM-5 PI) were applied to adolescents in both groups. Adolescents' mothers completed DSM-5 Level 2 Sleep Disorders Scale – Parent Version. Global Acne Grading Scale (GAGS) was also used in adolescents with AV to determine the severity of acne. Written informed consent was obtained from the adolescents and their parents.

Evaluation materials

The sociodemographic data form

The form was created by the authors to determine the sociodemographic characteristics of adolescents in the study. Some of the questions are Likert type, the answers of some questions are only "yes/no" and some are open-ended. In the form, participants were asked to evaluate their socioeconomic status and school achievements in 3-point Likert type as "good," "medium," and "bad." Whether any family member has a psychiatric disorder was asked with "yes/no" options. Existing familial psychopathologies were questioned with the expression "if yes, what is the diagnosis?".

Global Acne Grading Scale

It is a scale that evaluates acne severity developed by Doshi *et al*. Acne severity of a patient is rated as "No acne (0 points), mild (1–18 points), moderate (19–30 points), severe (31–38 points), and very severe (>39 points)."[10]

Eating attitude test

EAT is a self-report scale to evaluate possible disorders in eating behavior of both patients with eating disorders and individuals without eating disorders. EAT is considered to be a good screening tool for eating behavior. It was developed by Garner and Garfinkel in 1979.[11] EAT can identify individuals who can be considered "sick" at the clinical level, or it can be an indicator of how susceptible an individual is to this disorder. It was reported that scores above 30 in EAT show disordered eating behavior. The validity and reliability study in Turkish was conducted by Erol and Savaşır in 1989.[12]

Diagnostic and Statistical Manual of Mental Disorders-5 Personality Inventory – Child Version

It is a 25-item self-report scale used to evaluate personality traits in children and adolescents aged 11–17. The scale evaluates five personality areas such as negative affect, distantness, opposition/cussedness, disinhibition, and psychoticism. The high score indicates that personality dysfunction is higher.[13] Turkish validity and reliability study of this scale was made by Yalın Sapmaz *et al*.[14]

Diagnostic and Statistical Manual of Mental Disorders-5 Level 2 Sleep Disorders Scale – Child, Adolescent, and Parent Versions

The scale consists of a total of eight items. There is a parent form completed by parents of children and adolescents aged 6–17 years and a self-report form filled by adolescents aged 11–17 years. For each item, the child is asked to score the

severity of the symptoms associated with his/her sleep in the past 7 days. The total score ranges from 8 to 40, and higher scores indicate that the symptoms associated with a sleep disorder are more severe.[13] Turkish validity and reliability study of the scale was conducted by Erkuran *et al*.[15]

Schedule for Affective Disorders and Schizophrenia for School-Aged Children, Present and Lifetime Version Diagnostic and Statistical Manual of Mental Disorders -5 November 2016 – Turkish Version

The Turkish version of this semi-structured interview schedule, which Kaufman *et al*. updated according to DSM-5 diagnostic criteria,[16] was made by the researchers. K-SADS-PL-DSM-5-T took its final form by being reviewed the trial interviews with parents and children in terms of the differences between the translation and back-translation texts and the functioning of the interview schedule. The validity and reliability study was performed by Ünal *et al*. in 2018.[17]

Statistical analysis

20th version of SPSS/IBM (Statistical Package for the Social Sciences, Chicago, IL, USA) program was used for the statistical analysis. Descriptive statistics of the data were calculated as the values of mean, standard deviation (SD), minimum, maximum, and percentage. To compare the categorical variables, the Chi-square test was performed. Independent *t*-test was conducted in the groups that fulfilled the parametric assumption for the continuous variables, and Mann–Whitney *U*-test analysis in the groups that could not fulfill parametric assumptions for the continuous variables. Considering the distribution of variables, the correlation among quantitative measures was evaluated with the Spearman test. The statistical significance level was set as $P < 0.05$.

Results

The mean ages of the adolescents with AV and the control group were 15.3 (SD = 1.7) and 15.4 (SD = 1.8), respectively. Of the cases, 20 (54.1%) were male and 17 (45.9%) were female. The mean duration of disease of the adolescents with AV was 20.4 months (SD = 15.2). The mean GAGS score was 23.24 (SD = 9.4). Although the adolescents in the control group were mostly secondary school graduate, it was detected that the adolescents with and without AV had similar levels of academic achievement perception. The demographic characteristics of adolescents with AV and the control group are summarized in Table 1.

When the adolescents with acne and the healthy controls were compared in terms of DSM-5-PI scores, we determined that the adolescents with acne had a higher negative affect, opposition and disinhibition scores than the controls had, whereas the controls had higher distantness, psychoticism scores, and higher total scores than the adolescents with acne had. However, these differences were not statistically significant. Although EAT scores were higher in adolescents with acne than in the controls, the score difference between the two groups was not statistically significant ($P = 0.207$). When DSM-5-SDS scores were reviewed, the adolescents with acne reported themselves as having higher scores than the healthy controls. Conversely, the parent-rated scores of the controls were detected as higher than parent-rated scores of the patients with acne ($P = 0.461$). However, the difference was not found to be statistically significant [Table 2].

Although we found positive correlations between DSM-5-PI total scores and duration of AV and the severity of AV, these associations were not statistically significant. Regarding the subscale scores of DSM-5-PI; positive correlates among the duration of AV and the scores of negative affect, distantness, and opposition/cussedness subscales and negative correlates among duration of AV and the scores of disinhibition and psychoticism were established. However, these associations were not significant. Although we detected positive correlates among the severity of AV and the scores of distantness and disinhibition and negative correlates among the severity of

Table 1: The sociodemographic variables of the adolescents with acne vulgaris and the control group

	Cases with AV (*n*=37), *n* (%)	Control (*n*=37), *n* (%)	*P*
Education			
Primary school graduate	3 (8.1)	3 (8.1)	0.021
Secondary school graduate	23 (62.2)	32 (86.5)	
High school graduate	11 (29.7)	2 (5.4)	
Social assurance			
None	33 (89.2)	35 (94.6)	0.337
Yes	4 (10.8)	2 (5.4)	
School success			
Good	16 (43.2)	19 (51.4)	0.231
Moderate	21 (56.8)	16 (43.2)	
Bad	-	2 (5.4)	
Socioeconomic level perception			
Low SEL	1 (2.7)	-	0.330
Moderate SEL	23 (62.2)	28 (75.7)	
High SEL	13 (35.1)	9 (24.3)	

SEL: Socioeconomic level, AV: Acne vulgaris

AV and the scores of negative affect, opposition/cussedness, and psychoticism, these associations were not found to be significant, too. In the adolescents with acne, there were negative correlates between EAT scores and duration of AV and between EAT scores and GAGS scores. There were also positive correlates between duration of AV and adolescent-rated DSM-5-SDS and between the duration of AV and parent-rated DSM-5-SDS. However, the severity of AV was negatively associated with both adolescent-rated and parent-rated DSM-5-SDS. However, these associations remained statistically insignificant [Table 3].

Discussion

The findings obtained in our study show that adolescents with AV have similar eating attitudes, sleep patterns, and personality characteristics with adolescents without acne, and these variables have no effect on acne severity. To the best of our knowledge, our study is the first to compare all these variables between the adolescents with and without AV and to examine the effects of eating, sleep, and personality-related features on acne severity.

It is noteworthy that there are a limited number of studies investigating the relationship between sleep problems and acne. The frequency of sleep disorders in adolescents with acne is reported to be 6%–16.5%.[18,19] In a study conducted among adolescents and young adults in France, it was found that the duration and quality of sleep did not differ in adolescents with and without acne, but it was more common in the group that had acne to fall asleep and get tired from sleep in the morning.[20] Psychiatric diseases were excluded in adolescents in both groups included in our study. For this reason, a diagnosis of sleep disorder was not detected. However, it was noticeable that both our study and Misery *et al*.[20] found similar results indicating that the symptoms associated with sleep problems in adolescents with and without acne did not differ. In our study, the similarity of sleep-related symptoms in adolescents with and without acne might has resulted since there were no participants with concomitant psychopathology in both groups.

As adolescents turn to the habit of eating independently from the family, their food preferences change. Therefore, adolescence is a risky period regarding behaviors of eating attitudes. It is reported that especially fat-and calorie-rich nutrition, increase in fast-food nutrition, decrease in physical activity, obesity, eating disorders, and AV may be encountered during adolescence as one of the health problems that may be related to inappropriate nutrition.[7,21] There are many studies concerning the etiopathogenesis of AV, showing

Table 2: The comparison of scale scores between the adolescents with and without acne vulgaris

	Cases with AV		Control		*P*
	Mean	SD	Mean	SD	
DSM-5 personality inventory total score	49.91	10.75	51	12.51	0.691
Negative affect	12	3.81	11.89	4.04	0.906
Distantness	9.43	2.88	11.10	3.28	0.555
Opposition/cussedness	8.81	2.68	8.24	2.56	0.356
Disinhibition	10.56	2.99	10.05	3.06	0.468
Psychoticism*	9.10	2.71	9.70	3.62	0.655
EAT total score*	18.78	8.95	16.64	9.56	0.207
DSM-5 Sleep Disorders Scale - adolescent	15.78	5.68	15.43	5.66	0.775
DSM-5 Sleep Disorders Scale - parent	15.89	6.28	17.02	6.87	0.461

*Mann-Whitney *U* test was performed, *t*-test was performed. AV: Acne vulgaris, SD: Standard deviation, DSM-5: Diagnostic and Statistical Manual of Mental Disorders, EAT: Eating attitude test

Table 3: The associations among scale scores of the adolescents with acne vulgaris and duration of disease and Global Acne Grading Scale scores

	Duration of disease (months)		GAGS	
	r	*P*	*r*	*P*
DSM-5 personality inventory total score	0.049	0.772	0.033	0.848
Negative affect	0.224	0.182	−0.059	0.727
Distantness	0.036	0.835	0.260	0.120
Opposition/cussedness	0.050	0.771	−0.176	0.297
Disinhibition	−0.112	0.510	0.030	0.859
Psychoticism	−0.063	0.711	−0.049	0.773
EAT total score	−0.151	0.373	−0.044	0.797
DSM-5 Sleep Disorders Scale - adolescent	0.205	0.223	−0.056	0.742
DSM-5 Sleep Disorder Scale - parent	0.128	0.449	−0.098	0.564

Spearman test was performed. GAGS: Global Acne Grading Scale, DSM-5: Diagnostic and Statistical Manual of Mental Disorders, EAT: Eating attitude test

that especially high-calorie foods such as dairy products and chocolate have associations with AV, and foods rich in omega-3 and low in glycemic index cause a decrease in acne severity.[22-26] Excessive sebum secretion is also one of the causes of AV. It is assumed that some eating habits are the facilitating ways of sebum production mechanism because diet provides the substrate to serum lipids.[27] On the flip side, it is reported that there is no relationship between acne severity and total calorie intake and food types.[28] Di Landro *et al*. indicated that eating habits rich in chocolate, sweet, or high glycemic index do not pose a risk for acne.[29] In our study, it was determined that the eating attitudes of the adolescents in both groups were similar and that eating attitude did not have a significant impact on acne severity similar to the study of Di Landro *et al*.[29]

Psychosomatic factors are reported to be effective in dermatological diseases such as AV, alopecia areata, eczema, hyperhidrosis, pruritus, psoriasis, trichotillomania, and urticaria.[30,31] Adolescence is one of the most important periods in the personality development. In this period, body appearance may affect self-esteem. The decrease in self-esteem caused by the body appearance can reinforce the negativity of self-perception and leave permanent traces in the personality pattern, as it can resort to inappropriate methods while dealing with the difficulties related to daily life. Although there are researches in the literature stating that neurotic features such as shy personality traits are presented in people with AV, there are also publications stating that personality traits have no effect on the development of acne.[32-34] In a study conducted by Şereflican *et al*.[35] with 61 AV patients between the ages of 16–61, type-D (negative effect and social inhibition) personality traits were significantly more common in the patients with AV than healthy controls. They also reported that depression, anxiety, and social phobia symptoms were found higher in individuals with acne and with this type of personality trait compared to those who had acne but did not show this personality trait.[35] In our study, it was detected that the personality traits of adolescents in both groups had a similar profile. The reason for this may be that our study included only adolescents without concomitant psychopathology, unlike the studies in the literature.

As far as we know, our study is the first study to examine eating attitudes, sleep, and personality characteristics and the effect of these features on acne severity among adolescents with and without AV. Although this study shows that there is no significant difference between adolescents with and without AV in terms of all these variables and these variables do not have direct effects on acne severity, there are limitations that should be considered while evaluating the data. The adolescents and their mothers who applied to the dermatology outpatient clinic for AV were included in our study limiting the creation of the sample. Therefore, the results cannot be generalized. Cross-sectional study design, low sample size, and mostly moderate acne severity scores of the participants are other reasons for low generalizability.

Conclusion

AV, which is a common dermatological problem during adolescence, may show exacerbation from time to time due to many triggering reasons. Whether factors such as nutrition, sleep, psychological factors, hygiene, and sports have an effect on acne, cause curiosity and anxiety in adolescents who apply to the dermatology outpatient clinic due to acne and their parents. Therefore, in order to control acne apart from the treatment of the disease, it is important to determine the trigger factors and to inform the patients about this issue. Since we determined that eating attitudes and sleep patterns had no effect on the disease in a sample of whom mostly consisted of patients with moderate acne severity, it is necessary to investigate the effects of nutrition- and sleep patterns-related daily life factors on the disease in larger sample groups with acne of any severity, to determine the triggers that patients should be careful about and avoid. Finally, in order to better understand the relationship between AV and sleep, eating attitudes, and personality traits in adolescents, it is essential to investigate adolescents with and without AV in a nonreferred community sample.

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Conflicts of interest

There are no conflicts of interest.

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