

Myths, Perceptions and Practices in Acne: A Study on Adolescents and Young Adults

AHU YORULMAZ¹, BASAK YALCIN¹

¹Ankara Bilkent City Hospital

ABSTRACT: Background and aim: Acne vulgaris is a worldwide disease, affecting 85% of adolescents and young adults. Psychological burden of the disease can be profound and may even exceed its physical impact. Adolescents often seek information from a variety of sources, which contributes misinformation and misconceptions. The aim of the present study was to investigate perspectives and attitudes of adolescents and young adults towards acne. Material and Methods: A total of 318 consecutive patients with acne vulgaris (236 females, 82 males) were prospectively enrolled over a period of 4 months. Following a thorough dermatological examination, patients were graded according to Investigator's Global Assessment scale for disease severity. Patients were asked to respond a 28-item self-administered questionnaire, which consisted of questions on beliefs, perceptions and practices of the patients towards acne. Results: 63.5% of the patients considered acne as a 'must be treated disease' and 96.5% believed that treatment should be given by a dermatologist. 84.6% of the patients presumed that dietary changes may reduce or prevent acne lesions, while 95% regarded some dietary factors as aggravating. Female patients more frequently assumed acne as a hormonal disease. Patients with university education considered high water intake and increased fruit and vegetable consumption as ameliorating factors for acne. Conclusion: The overall knowledge about acne was found to be poor. These data confirm the need for public awareness and education on acne.

KEYWORDS: *Acne vulgaris, myth, perception, attitude, questionnaire.*

Introduction

Acne vulgaris represents a chronic inflammatory disease of the pilosebaceous unit, characterized by comedones, papules, pustules and nodules.

Despite the vast amount of research published in the field, the exact pathogenesis of acne is still unclear.

But the obvious connection between sebum production, altered keratinization, Propionibacterium acnes colonization and inflammation has been proposed to play the central role in the pathogenesis of acne.

Acne is a chronic disease, which may prevail into adulthood [1].

On the other hand, acne predominantly known as a disease of the adolescents. Recently the overall adjusted prevalence of self-reported acne has been recorded to be 57.8% among individuals aged 15-24 years [2].

The aim of the present study was to investigate beliefs, perceptions and attitudes towards acne among youth.

Material and Methods

A total of 318 consecutive patients with acne vulgaris [236 female, 82 male; mean age, 20.7±2.4 years (range: 18-25 years)] were enrolled in the present prospective study over a period of 4 months. The study was conducted according to the principles of the Declaration of Helsinki and was approved by the local medical

ethical committee. Each patient provided a written informed consent prior to being included in the study. A thorough dermatological examination was carried out to assess the severity of acne in each patient. Acne severity was determined by the Investigator's Global Assessment (IGA) scale, which grades acne on a scale of 0 (clear) to 5 (very severe) [3].

Patients with grade 'almost clear', 'mild', 'moderate', 'severe' and 'very severe' were included in the study and requested to complete a self-administered questionnaire.

The questionnaire consisted of 28 questions regarding demographic data, beliefs, knowledge and practices of the patients towards acne vulgaris. Questions were arranged in a stepwise manner to further ask detailed information. For instance, patients were asked whether they knew what 'acne' means ("Do you know what does 'acne' mean?" Possible answers: "Yes, acne means pimples", "No"). Those who answered "Yes" were then asked ("What kind of a disease is acne"). More than one answer was allowed in multi-selection questions. A 100% response rate was obtained with 318 returned surveys. The statistical analysis was performed using SPSS software (version 20; SPSS Inc., Chicago IL, USA). Frequencies were calculated for each question on the survey. Age was described as mean ± standard deviation and range. Chi-square and Mann-Whitney U-test were used to assess differences between variables with a significant threshold of <0.05 for the *p* value.

Results

Detailed sociodemographic data of the patients are shown in Table 1.

89.3% of the patients (n=284) expressed pimples as acne. 87.7% of the patients (n=279) reported that they had knowledge about acne. Perceptions of the patients about the nature of the disease are shown in Table 2.

63.5% of the patients (n=202) considered acne as a ‘must be treated disease’ and 96.5% (n=307) believed that treatment should be given by a dermatologist (Table 2).

314 of 318 patients (98.7%) noted that they had received information about acne.

315 of 318 patients (99.1%) regarded skin care as essential. Sources of information received by the patients about acne and skin care are shown in Table 2.

Table 1. Sociodemographic characteristics and the clinical profile of the study population.

	<i>n (%)</i>
Sex	
<i>Female</i>	236 (74.2)
<i>Male</i>	82 (25.8)
Highest level of education	
<i>Primary school</i>	1 (0.3)
<i>Secondary school</i>	18 (5.7)
<i>High school</i>	92 (28.9)
<i>University</i>	207 (65.1)
Disease activity	
<i>Grade 1</i>	94 (29.6)
<i>Grade 2</i>	123 (38.7)
<i>Grade 3</i>	49 (15.4)
<i>Grade 4</i>	41 (12.9)
<i>Grade 5</i>	11 (3.5)

Table 2. Knowledge about acne among the study population.

	<i>n (%)</i>
Perceptions about acne	
<i>Acne is a skin disease</i>	228 (71.1)
<i>Acne is a hormonal disease</i>	41 (12.9)
<i>Acne is a disease of liver</i>	29 (9.1)
<i>Acne is an infectious disease</i>	19 (6.0)
<i>Acne is an any disease of internal organs</i>	10 (3.1)
Acne must be treated	
<i>By the dermatologist</i>	307 (96.5)
<i>I can treat acne by myself</i>	10 (3.1)
<i>By the family doctor</i>	6 (1.9)
<i>By the esthetician</i>	4 (1.3)
Perceptions about treatment requirement of acne	
<i>Acne is a ‘must be treated’ disease</i>	202 (63.5)
<i>Acne has exacerbations, treatment is needed only in exacerbations</i>	112 (35.2)
<i>Acne is a temporal condition, no treatment is required</i>	4 (1.3)
Untreated acne will lasts	
<i>Permanently. Acne will not resolve on its own, if it is untreated</i>	128 (40.3)
<i>Years</i>	126 (39.6)
<i>Months</i>	64 (20.1)
Sources of information on acne	
<i>Dermatologist</i>	206 (64.8)
<i>Internet and social media</i>	125 (39.3)
<i>Friends</i>	65 (20.4)
<i>Family member</i>	44 (13.8)
<i>Pharmacists</i>	38 (11.9)
<i>School</i>	29 (9.1)
<i>Traditional mass media (TV, radio, newspapers, magazines, etc.)</i>	29 (9.1)
<i>Family doctor</i>	24 (7.5)
<i>Cosmetics sales representative</i>	24 (7.5)
<i>Herbalist</i>	5 (1.6)
Sources of information on facial skin care	
<i>Dermatologist</i>	296 (93.1)
<i>Pharmacists</i>	24 (7.5)
<i>Internet and social media</i>	14 (4.4)
<i>Family doctor</i>	12 (3.8)
<i>Persons with acne</i>	10 (3.1)
<i>Cosmetics sales representative</i>	7 (2.2)
<i>Esthetician</i>	7 (2.2)
<i>Traditional mass media</i>	6 (1.9)
<i>Herbalist</i>	-

97.8% of the patients (n=311) believed that there were aggravating factors, 92.5% (n=294) believed there were ameliorating factors for acne.

95% (n=302) believed in aggravating dietary factors, while 84.6% (n=269) believed in ameliorating dietary factors for acne (Table 3).

76.7% of the patients (n=244) confirmed applying products before consulting to the doctor (Table 4).

45.3% of the patients (n=144) accepted cosmetics as applicable.

60.7% of the patients (n=193) supposed that there were items to reduce acne scars.

Attitudes and perceptions about acne among the study group are shown in Table 4.

Table 3. Perceptions of the patients about exacerbating and alleviative factors of acne.

	n (%)
Factors believed by the patients to aggravate acne	
<i>Stress</i>	210 (66.0)
<i>Hormones</i>	189 (59.4)
<i>Diet</i>	187 (58.8)
<i>Poor facial hygiene</i>	143 (45.0)
<i>Makeup</i>	121 (38.1)
<i>Poor sleep</i>	90 (28.3)
<i>Smoking</i>	69 (21.7)
<i>Alcohol consumption</i>	64 (20.1)
<i>Hot weather</i>	55 (17.3)
<i>Accompanying infection</i>	50 (15.7)
Dietary factors believed by the patients to aggravate acne	
<i>Fatty/fried foods</i>	272 (85.5)
<i>Chocolate</i>	165 (51.9)
<i>Spicy foods</i>	115 (36.2)
<i>Nuts</i>	114 (35.8)
<i>High sugar foods</i>	95 (29.9)
<i>Carbonated beverages</i>	89 (28.0)
<i>Alcoholic drinks</i>	62 (19.5)
<i>Dairy products</i>	41 (12.9)
<i>Caffeine</i>	23 (7.2)
<i>Sour foods</i>	11 (3.5)
<i>Onion/garlic family</i>	10 (3.1)
<i>Red meat</i>	5 (1.6)
Factors believed by the patients to alleviate acne	
<i>High water intake</i>	198 (62.3)
<i>Professional salon skin care</i>	196 (61.6)
<i>Increased fruit and vegetable consumption</i>	127 (39.9)
<i>Regular exercise</i>	74 (23.3)
<i>Spa</i>	13 (4.1)
<i>Sunbathing</i>	9 (2.8)
<i>Luxury cosmetics</i>	8 (2.5)
Dietary factors believed by the patients to alleviate acne	
<i>Vegetables</i>	202 (63.5)
<i>Probiotic foods</i>	120 (37.7)
<i>Mineral water</i>	59 (18.6)
<i>Dairy products</i>	38 (11.9)

Table 4. Attitudes and perceptions about acne among the study population.

	n (%)
Makeup	
Worsens acne	267 (84)
Has no effect on acne	47 (14.8)
Alleviates acne	4 (1.3)
Frequent face washing	
Alleviates acne	189 (59.4)
Has no effect on acne	84 (26.4)
Worsens acne	45 (14.2)
If the face is not thoroughly cleaned	
Acne worsens	300 (94.3)
Face washing do not have any effect on acne	18 (5.7)
Applicable products during acne	
Oil-free products	75 (23.6)
Organic products	62 (19.5)
Products sold in a pharmacy	47 (14.8)
Homemade preparations containing lemon, cucumber juice, chamomile, rose water, etc.	25 (7.9)
Sulfur-containing products	19 (6.0)
Clay-containing products	16 (5.0)
Before coming to doctor, I used	
Facial cleanser	171 (53.8)
Homemade preparations containing lemon, cucumber juice, chamomile, rose water, etc.	115 (36.2)
Face mask	114 (35.8)
The treatment I bought from the pharmacy	41 (12.9)
Homemade preparations which contain lemon, apple, cucumber juice, chamomile, rose water, etc.	
Are not needed in acne because they are not effective	
Are effective and should be used in acne in combination with medications	92 (28.9)
Squeezing lesions	
Worsens acne	279 (87.7)
Has no effect on acne	29 (9.1)
Alleviates acne	10 (3.1)
Perceptions on acne scars	
Only hormonal acne leaves a scar	116 (36.5)
There will be no scar, if the treatment is sufficient	96 (30.2)
Every acne lesion leaves a scar	79 (24.8)
There will be no scar, only if I squeeze the pimples	39 (12.3)
Items believed by the patients to reduce acne scars	
Anti-scar creams	124 (39)
Lemon juice	60 (18.9)
Mineral water	43 (13.5)
Honey	21 (6.6)
Toothpaste	19 (6.0)
Onion/garlic juice	10 (3.1)
Foundation makeup	4 (1.3)

Female patients more frequently expressed pimples as acne (76.8%, n=218 vs. 23.2%, n=66, p=0.004). Female patients more likely than male patients to assume acne as a hormonal disease

(87.8%, n=36 vs. 12.2%, n=5, $p=0.023$); to report pharmacist (86.8%, n=33 vs. 13.2%, n=5, $p=0.044$) and school (89.7%, n=26 vs. 10.3%, n=3, $p=0.030$) as the source of information; to confirm applying facial cleanser (78.9%, n=135 vs. 21.1%, n=36, $p=0.038$) and homemade preparations (81.7%, n=94 vs. 18.3%, n=21, $p=0.019$) before consulting to the doctor; to consider squeezing lesions (90.7%, n=214 vs. 79.3%, n=65, $p=0.010$) and makeup (87.3%, n=206 vs. 74.4%, n=61, $p=0.008$) as exacerbating factors for acne.

Patients with university education reported that they had received information from a dermatologist (70%, n=145, $p=0.004$); supposed hormonal factors (67.1%, n=139, $p < 0.001$) and poor facial hygiene (52.2%, n=108, $p < 0.001$) as aggravating factors; while considered high water intake (68.1%, n=141, $p=0.003$) and increased fruit and vegetable consumption (68.6%, n=142, $p=0.011$) as ameliorating factors; confirmed applying facial cleanser (60.4%, n=125, $p=0.001$) before consulting to the doctor.

Patients with high school education considered acne as a 'must be treated' disease (54.3%, n=50, $p=0.031$) that should be treated by the dermatologist (92.4%, n=85, $p=0.016$); regarded skin care as crucial (96.7%, n=89, $p=0.024$) that should be instructed by the dermatologist (55.4%, n=51, $p=0.027$); supposed stress (56.5%, n=52, $p=0.024$) and makeup (76.1%, n=70, $p=0.018$) as aggravating factors, while high water intake (51.1%, n=47, $p=0.009$) as an ameliorating factor.

Patients with mild acne more frequently considered acne as a skin disease than those without mild acne (78%, n=96, $p=0.044$). Patients with almost clear (53.2%, n=50, $p=0.006$), mild (93.1%, n=296, $p=0.031$) and moderate (79.6%, n=39, $p < 0.001$) acne regarded doctors as the instructors for skin care. Patients with moderate acne more often supposed high water intake (77.6%, n=38, $p=0.013$) as an ameliorating factor for acne than those without it.

Patients who had received information about acne from a dermatologist regarded acne as a skin disease (77.2%, n=159, $p=0.004$); and a 'must be treated disease' (70.9%, n=146, $p < 0.001$); considered diet (63.6%, n=131, $p=0.019$) and stress (70.9%, n=146, $p=0.014$) as aggravating factors, while considered high water intake (66.5%, n=137, $p=0.035$) as an ameliorating factor.

Discussion

This study has demonstrated that the overall knowledge about causes and natural course of the disease among adolescents and young adults is poor.

As far as we know, our study is one of the rare studies, in which the vast majority of the patients have lay perceptions and myths about acne.

Most striking findings were related with lifestyle and dietary factors.

According to results of our study, 97.8% of the patients speculated about causal or exacerbating factors in acne, which include poor sleep, smoking, alcohol consumption, even accompanying infection.

Moreover, 95% of the patients thought that some foods and drinks increase acne exacerbations.

Fatty/fried foods were implicated by 85.5%, chocolate was implicated by 51.9% of the study participants.

Although recent studies have affirmed the relationship between chocolate and acne [4,5], also fatty/fried foods and acne [6], foods that have no reported effect on acne pathogenesis, such as onion/garlic family, have been suspected by the participants. In addition, it is known that onion/garlic family has been described as a topical treatment option for acne [7,8].

Ironically, 3.1% of the study population specified onion/garlic as an exacerbating factor, while another 3.1% regarded onion/garlic juice as an anti-scar remedy. 37.7% of the patients thought that probiotic foods might improve acne lesions.

Probiotic foods were the second mostly preferred dietary factor believed to alleviate acne. Potential use of probiotics in the treatment of acne has been established [9].

However, it not clear whether this result is attributable to awareness of the participants or to recent widespread increased popularity of probiotics.

Up to now, there have been several studies investigating myths, beliefs and perceptions towards acne [10-19].

Although these studies reflect particular populations from different geographical regions, similar results have been observed.

Results of these studies point out lack of adequate information and knowledge about acne [10-19].

According to results of our study, 98.7% of the patients confirmed that they had received

information, of whom 64.8% specified dermatologist as the source.

Internet and social media were the second most commonly described sources of information, however although it is an important alternative, family doctor was defined by the 7.5% of the participants as the source of information.

We have not detected any outstanding finding in patients who had received information from a dermatologist.

Patients who had been informed by a dermatologist regarded acne as a skin disease and a 'must be treated disease', considered diet and stress as aggravating factors, while considered high water intake as an ameliorating factor.

One of the remarkable findings of our study was that 62.3% of the study population considered high water intake as an ameliorating factor for acne. However, it is well-known that there is not any scientific proof about this relationship [20].

Our study has demonstrated that 9.1% of the participants considered acne as a disease of liver and 3.1% considered it as a disease of internal organs.

These findings should be taken into account, since there is not any valid evidence about these associations.

Opinions about homemade preparations containing lemon, cucumber, orange juice or chamomile, rose water, etc. have been asked to patients in different questions. 36.2% declared that before consulting to doctor, they had used homemade preparations including them.

Natural products have been used as anti-acne home remedies since ancient times.

However, they are said to gain increased popularity in recent years due to the general assumption that they have better patient tolerance, fewer adverse effects and long history of use.

Although medicinal properties, such as anti-inflammatory and antimicrobial activities of these botanical therapeutics cannot be denied, it appears that some of these chemicals have potential to give rise to unfavorable side effects, such as photosensitivity and toxicity [7,21,22].

Since a number of the participants already thought that homemade preparations should be used in combination with medications, we suggest that the need for public information about these preparations is unquestionable.

Several studies have been conducted regarding youth perspectives and attitudes towards acne [10-19].

On the other hand, our study is among the few studies administered in Turkey [15].

We have detected similar results with most of the studies [10-19].

Yet, despite the vast amount of research dedicated to this subject, there is still significant gap in understanding the mindset of youth about acne.

Current misconceptions result from being misinformed about the nature and causative factors of the disease.

It seems that the ongoing myths and misconceptions surround every age group of the population.

There is an increasing amount of evidence to indicate that lay perceptions result in inappropriate behaviors.

Epidemiologic studies have announced acne as the eighth most prevalent disease worldwide [23].

There should be adequate public education resources to prevent misconceptions and minimize risk of misbehavior about acne.

Conflict of interests

None to declare.

References

1. Williams HC, Dellavalle RP, Garner S. Acne vulgaris. *Lancet*, 2012, 379(9813):361-372.
2. Wolkenstein P, Machovcova A, Szepletowski JC, Tennstedt D, Veraldi S, Delarue A. Acne prevalence and associations with lifestyle: a cross-sectional online survey of adolescents/young adults in 7 European countries. *J Eur Acad Dermatol Venereol*, 2018, 32(2):298-306.
3. Tan JK, Tang J, Fung K, Gupta AK, Thomas DR, Sapra S, Lynde C, Poulin Y, Gulliver W, Sebaldt RJ. Development and validation of a comprehensive acne severity scale. *J Cutan Med Surg*, 2007, 11(6):211-216.
4. Vongraviopap S, Asawanonda P. Dark chocolate exacerbates acne. *Int J Dermatol*, 2016, 55(5):587-591.
5. Delost GR, Delost ME, Lloyd J. The impact of chocolate consumption on acne vulgaris in college students: A randomized crossover study. *J Am Acad Dermatol*, 2016, 75(1):220-222.
6. Melnik BC. Linking diet to acne metabolomics, inflammation, and comedogenesis: an update. *Clin Cosmet Investig Dermatol*, 2015, 8:371-388.
7. Nasri H, Bahmani M, Shahinfard N, Moradi Nafchi A, Saberianpour S, Rafeian Kopaei M. Medicinal Plants for the Treatment of Acne Vulgaris: A Review of Recent Evidences. *Jundishapur J Microbiol*, 2015, 8(11):e25580.

8. Tan AU, Schlosser BJ, Paller AS. A review of diagnosis and treatment of acne in adult female patients. *Int J Womens Dermatol*, 2017, 4(2):56-71.
9. Mottin VHM, Suyenaga ES. An approach on the potential use of probiotics in the treatment of skin conditions: acne and atopic dermatitis. *Int J Dermatol*, 2018, 57(12):1425-1432.
10. Al Robaee AA. Prevalence, knowledge, beliefs and psychosocial impact of acne in University students in Central Saudi Arabia. *Saudi Med J*, 2005, 26(12):1958-1961.
11. Kaushik M, Gupta S, Mahendra A. Living with Acne: Belief and Perception in a Sample of Indian Youths. *Indian J Dermatol*, 2017, 62(5):491-497.
12. Magin P, Pond D, Smith W, Watson A. A systematic review of the evidence for 'myths and misconceptions' in acne management: diet, face-washing and sunlight. *Fam Pract*, 2005, 22(1):62-70.
13. Brajac I, Bilić-Zulle L, Tkalcic M, Loncarek K, Gruber F. Acne vulgaris: myths and misconceptions among patients and family physicians. *Patient Educ Couns*, 2004, 54(1):21-25.
14. Green J, Sinclair RD. Perceptions of acne vulgaris in final year medical student written examination answers. *Australas J Dermatol*, 2001, 42(2):98-101.
15. Gokdemir G, Fisek N, Köşlü A, Kutlubay Z. Beliefs, perceptions and sociological impact of patients with acne vulgaris in the Turkish population. *J Dermatol*, 2011, 38(5):504-507.
16. Ali G, Mehtab K, Sheikh ZA, Ali HG, Kader SA, Mansoor H, Altaf S, Qamar S, Khwaja SS. Beliefs and perceptions of acne among a sample of students from Sindh Medical College, Karachi. *J Pak Med Assoc*, 2010, 60(1):51-54.
17. Nguyen QG, Markus R, Katta R. Diet and acne: an exploratory survey study of patient beliefs. *Dermatol Pract Concept*, 2016, 6(2):21-27.
18. Al-Natour SH. Acne vulgaris: Perceptions and beliefs of Saudi adolescent males. *J Family Community Med*, 2017, 24(1):34-43.
19. Karciauskiene J, Valiukeviciene S, Stang A, Gollnick H. Beliefs, perceptions, and treatment modalities of acne among schoolchildren in Lithuania: a cross-sectional study. *Int J Dermatol*, 2015, 54(3):e70-e78.
20. Wolf R, Wolf D, Rudikoff D, Parish LC. Nutrition and water: drinking eight glasses of water a day ensures proper skin hydration-myth or reality? *Clin Dermatol*, 2010, 28(4):380-383.
21. Orchard A, van Vuuren S. Commercial Essential Oils as Potential Antimicrobials to Treat Skin Diseases. *Evid Based Complement Alternat Med*, 2017, 2017:4517971.
22. Zu Y, Yu H, Liang L, Fu Y, Efferth T, Liu X, Wu N. Activities of ten essential oils towards *Propionibacterium acnes* and PC-3, A-549 and MCF-7 cancer cells. *Molecules*, 2010, 15(5):3200-3210.
23. Tan JK, Bhate K. A global perspective on the epidemiology of acne. *Br J Dermatol*, 2015, 172(Suppl 1):3-12.

Corresponding Author: Ahu Yorulmaz, Ankara Bilkent City Hospital, e-mail: ahuyor@gmail.com