

Use of Complementary and Alternative Medicine among Patients with Acne Vulgaris and Factors Perceived to Trigger the Disease: A Multicentre Cross-Sectional Study with 1571 Patients

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Abstract

Background: Acne vulgaris (AV) is among the common skin diseases for which patients refer to complementary and alternative medicine (CAM). **Aims and Objectives:** To investigate the approaches to CAM methods and factors believed to increase the disease in 1,571 AV patients. **Materials and Methods:** The sociodemographic characteristics of the patients and disease severity according to the Food and Drug Administration criteria were recorded. The Cardiff Acne Disability Index (CADI) was used to assess the impact of acne on the patient's life and the history of CAM use was noted. The patients also listed the factors that they thought worsened their disease and reported their gluten-free diet experiences. **Results:** Of all the patients, 74.41% had a history of using CAM methods. CAM use was significantly higher in women, patients with severe AV, those with a higher CADI score and non-smokers. As a CAM method, 66.37% of the patients reported having used lemon juice. The respondents most frequently applied CAM methods before consulting a physician (43.94%), for a duration of 0–2 weeks (38.97%). They learned about CAM methods on the internet (56.24%) and considered CAM methods to be natural (41.86%). The patients thought that food (78.55%) and stress (17.06%) worsened their disease. They considered that the most common type of food that exacerbated their symptoms was junk food (63.84%) and a gluten-free diet did not provide any benefit in relieving AV (50%). **Conclusion:** Physicians need to ask patients about their CAM use in order to be able to guide them appropriately concerning treatments and applications with a high level of evidence.

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KEY WORDS: Acne vulgaris, complementary and alternative medicine, dermatology, gluten, junk food

Background

Acne vulgaris (AV) is a chronic inflammatory disease of the pilosebaceous unit. The frequent incidence of the disease, recurrence despite the treatment, young age-onset and persistence for many years, effect on visible areas such as the face, chest, and shoulders

and scar formation and pigmentation can lead patients to explore and apply techniques outside the scope

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of modern medicine. Complementary and alternative medicine (CAM) has been increasing in popularity in recent years, with the increasing number of patients that do not want to undergo chemical and pharmacological treatments seeking different methods.

CAM is defined as various healthcare systems, applications and products other than standard medical treatments.^[1] CAM is categorized into five main categories, namely alternative medical systems (e.g., acupuncture), mind-body treatments (e.g., meditation), biological treatments (e.g., herbal treatment), manipulative and body-based practices (e.g., massage) and energy-focused therapies (e.g., Reiki).^[2,3]

CAM use in dermatological diseases has been reported at a rate of 28.9%–69%.^[4,5] AV is among the leading dermatological diseases in which CAM is used, like psoriasis vulgaris, contact dermatitis, fungal diseases and verruca.^[6-8]

Objectives

This multi-centre study was conducted with the largest series in the literature to investigate CAM use in AV. The specific aims of the study were to determine whether the patients that presented to dermatology outpatient clinics with AV in Turkey used CAM techniques to relieve their symptoms, the methods they preferred, their reasons for referring to CAM methods, whether they found them beneficial, their recommendations concerning the use of CAM to other patients and views related to the factors that they thought negatively affected AV. In addition, we compared the responses of the participants from seven different regions of Turkey to investigate the effects of different cultural structures on CAM use.

Methods

Patients

Patients aged 12–50 years who were diagnosed with AV and followed up in dermatology outpatient clinics located in different regions of Turkey between March 1, 2020 and September 1, 2020 were included in the study.

Procedure

Approval was obtained from the ethics committee of the university for the study (19.02.2020/0124). The study protocol was registered at <https://www.clinicaltrials.gov> with the number NCT04538729. The survey questions were prepared by the researchers but not validated. The patients completed the survey on their own without any time limitations and directed any questions they had to their physician during the process. The Cardiff Acne Disability Index (CADI) questionnaire was also administered to the patients, and the physicians recorded information concerning the clinical manifestation of the

disease and disease severity according to the Food and Drug Administration criteria.^[9,10]

Statistical analysis

The data of the study were analyzed using the statistical package for social science (SPSS) IBM v. 25.0 software package. The tests were conducted at a 95% confidence level. Demographic data and other variables were expressed using descriptive statistics, including frequencies, mean $\pm$ standard deviation, and percentage calculations. For non-normally-distributed continuous variables, such as age, CADI score, disease duration, smoking amount, and the number of days menstruating were analyzed with the Mann-Whitney U test, a non-parametric method, whereas the CAM group comparisons of the remaining variables were performed using the Chi-square test. For categorical variables, descriptive statistics were given as the frequency and percentage. A *P* value of 0.05 or less was considered to be of statistical significance.

Results

CAM use for AV according to demographic characteristics and disease involvement of the patients

A total of 1,571 patients, 1,141 women (72.60%) and 430 men (27.40%), were included in the study. Of the patients, 1,169 (74.41%) reported that they had used CAM for AV. The use of CAM in different groups are summarized in Table 1. The CAM use was statistically significantly higher in patients with the cheek (present 75.70%, absent 24.30%, *P* = 0.033) and chest involvement (present 79.80%, absent 20.20%, *P* = 0.015).

As medical therapy options, 65.12% of the patients had previously used topical treatments, 35.33% oral antibiotics, 18.27% systemic isotretinoin, and 37.62% cosmetics, whereas 6.11% had not received any medical therapy. Of the female participants, 7.01% used birth control pills. The use of CAM was statistically significantly higher among patients using topical treatments (77.03% vs. 22.97%, *P* = 0.001) and those using cosmetics to conceal their acne (82.23% vs. 17.77%; *P* = 0.000).

CAM methods used for AV, the duration of use, from whom they learned and their recommendations to other patients

The CAM methods preferred by the patients are summarized in Table 2. The patients most frequently used lemon juice (66.37%). They mostly applied these methods before consulting a doctor (43.94%) [Figure 1]. The duration of CAM use was 0–2 weeks (38.97%), 2–4 weeks (28.66%), 1–6 months (19.17%), and longer than 6 months (10.13%). The patients often heard about

Table 1: CAM use according to demographic characteristics and disease involvement

	History of CAM use				Overall		<i>P</i>
	Present		Absent		<i>n</i>	<i>%</i>	
	<i>n</i>	<i>%</i>	<i>n</i>	<i>%</i>			
Age							
Mean	21.42±7.56		21.50±5.6		21.44±7.12		0.771
Gender							
Female	898	78.70	243	21.30	1141	72.60	0.000
Male	271	63.00	159	37.00	430	27.40	
Marital status							
Married	85	67.50	41	32.50	126	8.00	0.064
Single	1082	75.00	361	25.00	1443	92.00	
Education level							
None, literate, primary school, middle school	89	70.10	38	29.90	127	8.10	0.475
High school, college	470	74.50	161	25.50	631	40.40	
Undergraduate, postgraduate	605	75.20	200	24.80	805	51.50	
Income level*							
300\$ and below	174	74.00	61	26.00	235	15.30	0.102
300-650\$	533	76.70	162	23.30	695	45.20	
650-1,300\$	332	72.80	124	27.20	456	29.70	
above 1,300\$	102	67.50	49	32.50	151	9.80	
Acne severity classification according to FDA							
Group 1	140	64.80	76	35.20	216	13.90	0.003
Group 2	422	73.80	150	26.20	572	36.70	
Group 3	404	77.50	117	22.50	521	33.40	
Group 4	193	77.20	57	22.80	250	16.00	
CADI score							
Mean	7.65±3.8		6.66±4.12		7.39±4.05		0.000
Disease duration (months)							
Mean	53.7±39.7		53.91±48.45		53.75±42.07		0.058
Smoking status							
Non-smoker	903	76.00	285	24.00	1188	83.60	0.035
Smoker	172	73.80	61	26.20	233	16.40	
Smoking pack years	1.64±11.17		1.2±2.98		1.51±9.95		0.035
Alcohol consumption							
None	954	75.20	315	24.80	1269	80.90	0.013
Regular	10	47.60	11	52.40	21	1.30	
Social	203	72.80	76	27.20	279	17.80	
Family history of AV							
Absent	593	75.50	192	24.50	785	50.00	0.305
Present	576	73.30	210	26.70	786	50.00	
Present	47	71.20	19	28.80	66	4.20	

CADI, Cardiff Acne Disability Index. FDA, Food and Drug Administration CAM, Complementary and Alternative Medicine. *Income level was calculated based on the exchange rate at the time of the study

CAM methods on the internet via search engines such as Google (56.24%), from friends (34.36%) and on social media such as Instagram, Facebook or Twitter (32.55%). The respondents often applied CAM when their AV lesions were mild (41.59%), worsened (35.62%) or recurred (28.93%), and 18.90% when the treatments they used no longer relieved their symptoms. Of all the patients with a CAM history, 95.21% had applied it to

the facial area. Almost a quarter of patients with a CAM use history (22.06%) stated that CAM practitioners to whom they had referred had no healthcare training, and 17.63% were not aware of the profession of the practitioner. When asked whether they would recommend CAM to other patients, 41.95% of the patients stated that they would not, whereas 8.77% would, and the remaining patients were indecisive.

Satisfaction with CAM, the reasons for referring to CAM, and informing the physician about use

Of the patients, 79.84% stated that their lesions did not resolve with CAM, whereas 6.33% reported that they had worsened the lesions. Of those considering CAM to be beneficial, 25.77% reported such benefits for acne lesions, 14.56% for oily skin, 7.05% for scars and 6.96% for pigmentation. The responses of the patients concerning their reasons for referring to CAM are summarized in Table 3. Of the patients with a history of CAM, 44.76% mentioned that at the time they started to use CAM, they either had not yet started medical therapy or stopped their ongoing therapy without consulting their physician. In addition, 35.44% used the treatment prescribed by the physician regularly, whereas 12.66% only used it occasionally. The

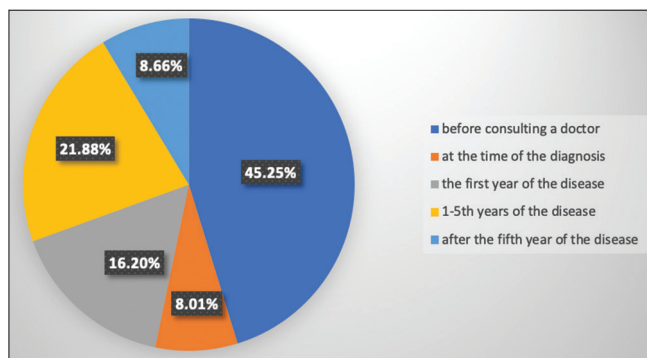


Figure 1: When did the patients use complementary and alternative medicine methods?

Table 2: CAM methods preferred by the patients

	n	%
Lemon juice	734	66.37
Vinegar	408	36.89
Homemade creams	330	29.84
Food supplements	157	14.20
Herbal supplements	130	11.75
Herbal creams	383	34.63
Thermal springs	105	9.49
Wet cupping	27	2.44
Leech therapy	12	1.08
Special diet	74	6.69
Massage	25	2.26
Acupuncture	10	0.90
Homeopathy	6	0.54
Bioresonance	2	0.18
Cupping	7	0.63
Ozone therapy	12	1.08
Hypnosis	2	0.18
Meditation	25	2.26
Other	78	7.05

CAM, Complementary and Alternative Medicine. Total percentage exceeds 100% as more than one response was allowed

patients mostly reported that their physicians did not ask about their CAM use (62.93%), and nearly half the patients did not spontaneously inform their physicians about their use (51.54%). Among the patients sharing this information with their physicians, there were those stating that their physicians recommended stopping CAM (21.55%), did not interfere with their CAM use (13.31%), told them they could continue using CAM (17.75%) and did not care or were unresponsive (47.39%).

The point of view of the patients who did not use CAM

The patients without a history of CAM use were also asked to present their views on CAM, and 63.16% stated that they did not find it reliable or safe, 41.60% considered it nonsensical and useless, 39.85% thought it had no medical basis, and 29.57% said that they were concerned about the side effects. When asked whether they would use CAM in future, 49.37% stated that they would not, 28.32% stated that they would if not harmful, 20.80% thought they might use it, and 6.52% were planning to try it.

Factors believed to trigger the disease

The patients considered that various foods (78.55%), stress (17.06%), and habits such as smoking (8.91%) and alcohol (6.14%) worsened their illness [Table 4], whereas 11.45% did not think any food or habit exacerbated their disease.

Of the patients, 7.38% had previously tried a gluten-free diet, and 50% of these patients considered that this diet did not help relieve their AV, 41.6% thought that it reduced the lesions and 25.83% reported reduced seborrhea symptoms.

Discussion

Studies commenting on the relationship between CAM use and AV are generally those investigating CAM use

Table 3: Patients' responses concerning their reasons for using CAM

	n	%
Seen no benefit from modern drugs	169	15.28
Thought it would prevent disease recurrence	254	22.97
Became tired of recurrence and decided to seek an alternative method	310	28.03
Natural and safe without side effects	463	41.86
Cheap	86	7.78
More reliable than modern medicine	38	3.44
Easier to reach	283	25.59
Don't know	136	12.30
Other	31	2.80

Total percentage exceeds 100% as more than one response was allowed

Table 4: Patients' thoughts on food and habits exacerbating acne vulgaris

	<i>n</i>	%
Sunflower seeds	958	60.98
Nuts	474	30.17
Hot-tasting food	251	15.98
Spicy food	330	21.01
Milk/dairy products	253	16.10
Junk food, such as crisps	1003	63.84
Fried food	671	42.71
Offal	56	3.56
Beverages with coloring, such as coke	469	29.85
Refined sugar, chocolate	747	47.55
Fatty food	741	47.17
Chicken	99	6.30
Red meat	59	3.76
Fish/fish oil	38	2.42
Hormone-injected vegetables/fruit	114	7.26
Alcohol	97	6.17
Wheat and wheat products	33	2.10
Eggplant	36	2.29
Tomato	117	7.45
Ketchup/mayonnaise	356	22.66
Paste/sauces	147	9.36
Gluten	108	6.87
Smoking	140	8.91
Stress	268	17.06
Lack of sleep	125	7.96
Various food products	1234	78.55
Nothing	180	11.45
Other	36	2.29

Total percentage exceeds 100% as more than one response was allowed

in dermatological diseases as a general category. When the frequency of CAM use among general dermatological diseases is examined, AV is observed to be among the top three diseases.^[6,7,11,12] Compared to other dermatological diseases, the frequency of CAM use in patients with AV is 2.5–3 times greater.^[11] In these studies, the rate of CAM use in patients with AV is reported in a very wide range from 14.8% to 71.3%.^[8,13] To our knowledge, there is only one study in the literature investigating CAM use specifically in patients with AV.^[14] In that study, of the 657 patients with AV, 77% were reported to have a history of CAM use, which is similar to our finding [74.41%].

In our study, the rate of CAM use was statistically significantly higher in women and those with higher AV severity and CADI scores. In the literature, some publications reported a high rate of CAM use in women, whereas others did not find a relationship between CAM use and gender.^[6,13–15] In a study conducted in Korea, 90% of the AV patients referred to CAM when their

lesions increased and their disease worsened.^[16] This is similar to our results concerning the higher use of CAM among the patients with more severe acne and those with higher CADI scores. In addition, consistent with our findings, many previous researchers did not determine a relationship between CAM use and the duration of the disease involvement, patient age, and education level.^[6,13,14]

The majority of our patients (66.37%) stated that they used lemon juice as a CAM method. This was followed by other methods such as vinegar, herbal cream, and creams and masks prepared by the patients themselves. Bioresonance and hypnosis methods, which are rarely used in Turkey, were applied for AV treatment only at a rate of –0.18%. These responses show that AV patients usually try products that are easily found in their homes. In previous studies conducted with general dermatology patients in Turkey, lemon juice was found to be the most common CAM method used by patients with AV (rate reported as –% in one study and not specified in another).^[6,8] In a study conducted in Iran, honey was most frequently used as the CAM method at a rate of 53.4%, whereas lemon juice ranked fourth at 29.7%. As in our study, the frequent use of lemon juice in studies conducted in Turkey can be due to the effect of geographical differences on CAM method choices. Whereas the use of vinegar was the second most common method in our study, it was reported in previous studies at a rate of 5.9% among the commonly used non-herbal treatments or as apple cider vinegar.^[13,14] In other studies, it was found that herbal topical treatments were frequently used in AV patients at a rate of 62%–100%.^[13,15] In the current study, although this rate was not as high as in previous studies, it was still very high at 34.63%. This shows that patients mostly rely on treatments derived from plants.

In a study in which patients with AV and psoriasis were evaluated together, it was reported that CAM was most frequently used before starting medical therapy (69.9%).^[13] Our patients also used CAM methods most frequently before consulting a physician (43.94%) and for a short duration; i.e., 0–2 weeks (38.97%). This shows that patients think that they can resolve their problem on their own without consulting a physician, or that they do not take the disease as serious enough to visit a hospital and consider it a disease that can be cured by simple methods. However, the short-term use of CAM can be interpreted as that patients often get bored with CAM quickly and quit these methods because they do not see any benefit.

Our patients mostly heard about CAM methods on the internet (56.24%), (34. through social media (32.55%) and from friends (34.36%). In previous studies, unlike our sample, patients mostly stated that they heard about

this method from their friends.^[13-15] AV is a common disease in the young population. As internet literacy is better in this age group, it is expected that they would learn about CAM methods on the internet. Similarly, as information acquired from friends is valuable for this age group, it is also not surprising to determine friends as the second source in the current study.

In this study, the patients mostly used CAM methods because they considered them to be natural with no side effects (41.86%). Similarly, in another study, 58.9% of the patients used CAM because they thought it was natural.^[13] This suggests that these patients do not think that CAM can harm their bodies, and therefore they should be informed about the possible negative effects of such treatments. During CAM use, 41.95% of the patients did not continue their medical therapy, but 35.44% used the medications prescribed by their physicians along with CAM. Previous research reported a similar rate of patients (28.4%) that used physician-prescribed treatment together with CAM.^[13] In the current study, 41.95% of the patients with a history of CAM use stated that they would not recommend it to other patients, which indicates that they did not trust these methods sufficiently to recommend them to others.

Of our patients with a history of CAM use, 62.93% stated that their physicians did not inquire about their CAM use, and 51.54% of these patients did not spontaneously inform their physicians about their use. Among the patients that shared this information with their physicians, 47.39% noted that their physicians either did not care or were unresponsive. In a previous study, only 1.3% of the physicians were reported to have asked their patients about the use of CAM methods.^[13] Although this rate was higher in our study, we observed that physicians mostly ignored this situation or did not show any interest.

There are various theories about the relationship between acne and diet. Our patients considered that mostly junk foods such as crisps rich in trans-fats and less frequently sugary and fatty foods exacerbated their AV. This situation can be interpreted as the increasing awareness of the public concerning the harmful consequences of diets rich in refined sugar and trans and saturated fat, which are part of the Western diet, in AV lesions. However, only 16.10% of our patients considered that milk and dairy products, which are another component of the Western diet, worsened their AV lesions.

Whether AV lesions cause stress in the patient or stress itself causes AV, it is certain that there is a relationship between the two; exposure to stress decreases anti-inflammatory response through corticotropin-releasing hormone and accelerates

lipogenesis in sebaceous glands by increasing growth hormone and *insulin-like growth factor-1* (IGF-1).^[17,18] In previous studies, 50%–82% of patients stated that their acne lesions increased with exposure to stress.^[19-21] In the current study, stress affected our patients' AV lesions at a much lower rate (17.6%) than in previous studies.

The relationship between a gluten-free diet and AV remains unclear. However, as the number of people following a gluten-free diet has increased in recent years, this diet modification is also seen in AV patients. Of all our patients, 6.87% thought that gluten worsened their AV, and 7.38% had previously tried a gluten-free diet to reduce their symptoms. Half of the respondents stated that they did not benefit from this diet in terms of AV, whereas 41.6% of those that considered it beneficial noted that it decreased their AV lesions. A previous study reported that a gluten-free diet was a habit change seen in AV patients. The authors attributed this to the similar age groups of gluten-free dieters and AV patients (19–44 years) and patients' belief that removing gluten from their diet would reduce their lesions.^[22]

Herbal treatments are the most investigated CAM methods in AV due to their anti-inflammatory and antibacterial effects. Local factors play an important role in the use of herbal treatments, especially in Far Eastern and Chinese medicine, and some studies have obtained a high level of evidence concerning the benefits of such treatments. Herbal treatments that have been previously investigated in terms of antioxidant and antibacterial properties include *Matricaria recutita*, *Calendula officinalis*, tannin, 50% aloe vera gel, 2% green tea lotion, 5% tea tree oil, traditional Nigerian products, *Vitex agnus*, and citrus essential oil.^[23-27]

Other CAM methods used by patients with acne can be listed as mindfulness-based cognitive hypnotherapy, acupuncture, wet cupping, application of food products such as honey, yoghurt and vinegar, dietary restrictions on milk, sugar and chocolate, food supplements such as zinc, nicotinamide, and fish oil, and application of urea to the face due to its content.^[14,28-35] There are significant differences between countries concerning the rate of patients' use of these methods. In our study, lemon juice, a plant that widely grows in Turkey, was found to be the most common. In addition, the use of clay masks, rose water, yoghurt, sulfur soaps, honey, and topical herbal creams is reported in Turkey.^[13,15]

The limitation of the study is that data were obtained from a survey and thus based on the statements of the patients.

Conclusion

Due to its chronic and recurrent nature, AV is one of the diseases for which patients frequently refer to CAM

methods. The use of CAM is more common in women and patients with severe AV. In this study, the patients mostly resorted to CAM as they thought it was natural and safe with no side effects and they were tired of the recurrent nature of the disease. The patients mostly did not share their CAM use with their physicians, and they also did not care whether the practitioner of these methods had any healthcare training or had a health-related profession. The high rate of CAM use among the respondents in the study shows the necessity of dermatologists to ask their patients about CAM use and guide them appropriately. In light of these data, physicians need to question the use of CAM in AV patients, inform them about possible side effects such as irritation that may occur due to the frequent use of CAM, and know pharmacological treatments with a high level of evidence to be able to guide their patients appropriately in this field.

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Conflicts of interest

There are no conflicts of interest.

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