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Original Article

Living with acne: A patient-centered study on myths, beliefs and perceptions

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Abstract

Introduction There is limited information on the perception and attitudes of patients with acne about their condition. Though not life-threatening, acne vulgaris has adverse effects on an individual's social and psychological status.

Methods A cross-sectional study was carried out among the patients presenting with acne in the OPD of Fatima Memorial Hospital, Shadman. A self-administered survey was employed encompassing socio-demographic elements (age, gender, marital status, and educational level), acne severity (calculated by the Global Acne Grading System), perceived causes, aggravating and relieving factors of acne, preferred modes of treatment, and sources of information. The perceived effect of acne on marriage and pregnancy was also asked. Statistical analyses were performed utilizing SPSS v.26.

Results Out of 100 respondents, 60% were female. According to the GAGs score, 70% experienced mild, 25% experienced moderate, and 5% suffered from severe acne. The three key factors leading to acne as highlighted by study participants were puberty (66%), use of cosmetics (22%), and genetic causes (18%). Major perceived aggravating factors of acne were oily (46%) and spicy food (31%), friction (45%), stress (32%), tea/ coffee (23%), chocolates (19%), and excessive sweating (18%). Most of the patients (56%) believed acne heals itself, followed by increased intake of water (29%) and the use of medication (26%). The majority of these patients were unsure about the effects of marriage (70%) and pregnancy (87%) on acne. 85% of participants believed that acne should be treated by a dermatologist. The principal sources of knowledge about acne were the internet (44%), friends (27%), society (15%), and parents (14%).

Conclusion Misconceptions about acne vulgaris are present in its patients. Accessible and accurate community-based education programs can help increase awareness. Media being the most commonly used source of information can play a vital role. This will improve patient compliance leading to effective treatment of the disease itself and management of psychosocial problems associated with it.

Key words
Acne vulgaris; Perception; Aggravating factors.

Introduction

Acne is a common chronic inflammatory condition affecting the pilosebaceous unit. It is characterized by symptoms such as excessive sebum production (seborrhoea), the presence of comedones, papules, pustules, nodules, and, in certain instances, the formation of scars and keloids. These manifestations can persist throughout an individual's lifetime.[1]

According to recent global disease surveys, acne vulgaris is recognized as the eighth most

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prevalent skin disease worldwide, with an estimated global prevalence of approximately 9.38%.[2] The prevalence of acne among adolescents and adults exhibits variation across different ethnic groups and countries.[1] In Australia, studies have revealed that acne affects approximately 27.7% of students aged 10-12 years and a higher proportion of 93.3% among individuals aged 16-18 years.[3] There is a lack of comprehensive epidemiological data on acne in developing countries, which hampers our understanding of the prevalence and impact of the condition in those regions.

Excessive sebum production, which is believed to be caused by sebaceous gland hyperplasia, is considered a major factor in the development of acne. This excess sebum production, along with subsequent hyperkeratinisation of the hair follicle, hinders the normal shedding of keratinocytes within the follicle. As a result, the follicle becomes obstructed, leading to the formation of microcomedones that are not readily visible.[4] The proliferation of certain bacteria, particularly *Propionibacterium acnes* occurs, which causes damage to the follicles and leads to an inflammatory response.[5] Other factors involved in pathogenesis include excessive stimulation of sebaceous gland by endogenous hormones (sex hormones, insulin, insulin-like growth factors IGFs), hereditary predisposition, and use of certain medications such as androgens, neuropsychotherapeutic drugs, immunomodulators etc.[6] Acne is typically vacillating in its course.

The most common aggravating factors include the use of certain oils and cosmetics, an unhealthy diet, repeated irritation, and friction, excessive sweat, menstruation and hormonal imbalances, pregnancy, stress, sunlight, smoking, and even some therapeutic drugs.[7]

Acne can affect more than just the patient's skin as it has adverse effects on individual's social and psychological status as well. Due to its visibility on the face, acne significantly affects body image and social interactions, exacerbating these concerns for individuals experiencing the condition. Therefore, it is possible for patients to experience substantial psychosocial disability.[10]

The primary goals of treatment for acne vulgaris should be to diminish the severity and frequency of skin lesions while also enhancing the overall appearance of the affected individuals.

Patients with mild acne can often be effectively treated with topical therapies, which commonly involve the use of antimicrobials like benzoyl peroxide and antibiotics as well as retinoids.[8] However, individuals with moderate to severe acne will likely necessitate systemic therapy for adequate management. Most commonly employed approaches for systemic therapies include use of oral antibiotics, isotretinoin and hormonal therapies.[9] Herbal therapies, such as tea tree oil, as well as topical and oral ayurvedic compounds, have shown good tolerability. However, data regarding effectiveness and safety of this treatment option is insufficient.[8]

Although there is an abundance of facial cleansing regimens available in the market for acne patients, the effectiveness of most of these products remains uncertain.[11] In fact, dermatologists have proposed that frequent washing and resulting irritation may contribute to non-adherence to topical acne treatment, potentially leading to a less favourable clinical outcome.[11] Therefore, given the relationship between acne severity, and its psychosocial impact, misinformation could be behind patients' decisions not to start, or not to persist with, effective medical treatments.

Despite extensive research on this topic, there remains a substantial gap in comprehending the

perspectives of young individuals regarding acne. The existing misapprehensions stem from misinformation regarding the nature and underlying causes of the disease. Myths about this subject persist among individuals of all age groups.

Limited research has been conducted on the perceptions of patients regarding the causes, factors that worsen acne, its management, and the sources of information among individuals referred to healthcare facilities for acne treatment. This study aims to fill this literature gap. It is imperative for patients to have an accurate, community-based education on the natural progression of acne, its pathophysiology, the risks of potential complications, the effectiveness and expected duration of treatment, and the significance of timely seeking medical attention. The findings of our study will be used by healthcare professionals to provide more targeted education in order to improve patient compliance by enhancing their understanding of treatment options.

Methods:

This cross-sectional study was conducted at Fatima Memorial Hospital (FMH), Lahore, Pakistan from February 2021 to March 2021. The study employed a non-probability purposive sampling technique. Patients referred to the dermatology department for management of acne vulgaris were included in the study. The study involved a total of 100 participants.

Patients were interviewed by a dermatologist using a structured pre-tested questionnaire.

Questionnaire was divided into following parts: The first section included a consent form and various demographics (including age, gender, marital status, education level of patient, education level of the patient's father and mother). The second section focused on duration and severity of acne. The third section focused on the self-perceived beliefs of acne patients regarding sources of acne, its exacerbating and alleviating factors, preferred modes of treatment, and effects of marriage and pregnancy. The severity of acne was evaluated by a dermatologist using the Global Acne Grading System (GAGS). GAGS takes into account six areas of the face and chest/upper back, assigning a factor to each area depending on the surface area (forehead = 2, right cheek = 2, left cheek = 2, nose = 1, chin = 1, chest and upper back = 3), as well as the distribution and density of pilosebaceous units. Each area was assigned a score based on the presence of different types of lesions (no lesion = 0, one comedone = 1, papule = 2, one pustule = 3, one nodule = 4), and the scores were multiplied by the corresponding factors (local score = factor × grade from 0 to 4). The sum of the local scores provided the global score (ranging from 0 to 52). The severity of acne was categorized as mild if the score was between 1 and 18, moderate for scores ranging from 19 to 30, severe for scores between 31 and 38, and very severe for scores exceeding 38.

Participation in the study was voluntary, and all participants were provided with information about the study's objectives. They provided their consent before completing the questionnaire. Participants who were under 18 years of age had received approval from the Institutional Review Board (IRB) to provide informed consent independently.

Strict measures were taken to ensure confidentiality and anonymity throughout the study. No personal identifiers such as names or email addresses were requested from the participants. All necessary precautions were taken to address social and ethical concerns, and they were given significant attention and consideration.

The research and ethics review committee granted ethical approval for the study. Printed questionnaires were administered by a dermatologist.

Respondent demographics, duration and severity of acne, self-perceived beliefs of patients regarding sources of acne, its aggravating and relieving factors, preferred modes of treatment, and effects of marriage and pregnancy were described using descriptive statistics, specifically frequency and percentage. The statistical analyses were performed utilizing the Statistical Package for Social Sciences (SPSS v.26).

Results

40% of the respondents of this study were male and 60% were female. Sociodemographic factors have been minimized in **Table 1**. Perceptions about causes, aggravating, and relieving factors are indicated in **Figures 1-3** respectively. Additional perceived causes include gastric problems (3%). Additional perceived relieving factors include sleep (1%), winters (1%), and repeated washing (1%).

The majority were unaware about the effect of marriage (70%) on acne. Others believed it relieves (16%), aggravates (5%), or has no effect (9%) on acne. 87% were unaware about the effect of pregnancy (87%) on acne. Others believed it relieves (3%), aggravates (5%), or has no effect (5%) on acne. The internet (44%) was recognized as the commonest source of myths about acne. Friends (27%), society (15%), and parents (14%) were among the other modes of information/misconceptions about acne. The treatment modes indicated by our study population were dermatologists (85%), hakeems (9%), beauticians (2%), chemists (1%), and general physicians (1%). 2% of the respondents believed treatment was not necessary.

Table 1 Sociodemographic Factors

Age	
< 16 years	5
16-21 years	63
≥ 22 years	32
Gender	
Male	40
Female	60
Marital status	
Unmarried	88
Married	12
Education level of the patient	
Less than matric	7
Matric	33
Intermediate	22
Graduation	34
Post-graduation	2
Illiterate	2
Education level of the patient's father	
Less than matric	13
Matric	26
Intermediate	15
Graduation	27
Post-graduation	9
Illiterate	10
Education level of the patient's mother	
Less than matric	11
Matric	22
Intermediate	14
Graduation	18
Post-graduation	5
Illiterate	30
Duration of acne	
< 1 year	12
1-2 years	23
2-3 years	20
3-5 years	25
> 5 years	20
GAGs score	
Mild (1-18)	70
Moderate (19-30)	25
Severe (30-38)	5

Discussion

Acne vulgaris, a common chronic skin condition, affects the pilosebaceous units and results in the formation of both inflammatory and non-inflammatory lesions,[1] affecting up to 80% of adolescents.[12] The psychosocial problems associated with this disease significantly impact the sufferers' quality of life, self-confidence, and social life.[10] Early detection and treatment require a better understanding of the patient's perception and knowledge of acne.

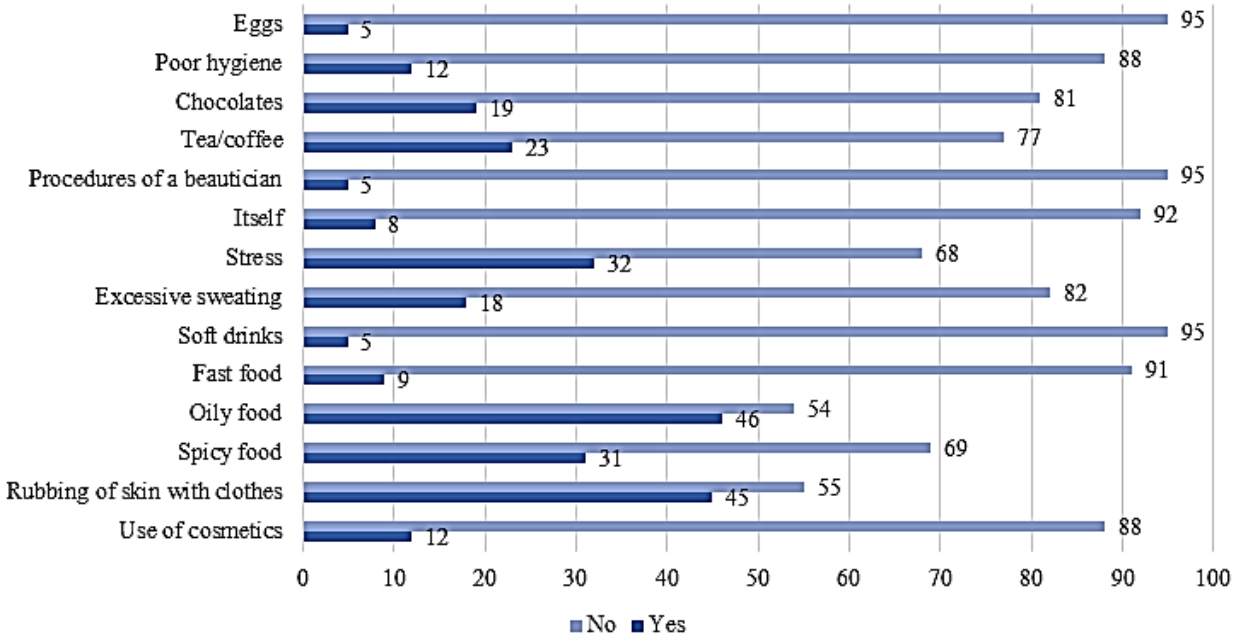

Figure 1 Perception about aggravating factors of acne.

Table 2 Perceived causes of acne.

		Gender n (%)	
		Male	*Female*
Puberty	Yes	33 (83)	33 (55)
	No	7 (17)	27 (45)
Genetic causes	Yes	8 (20)	10 (17)
	No	32 (80)	50 (83)
Use of cosmetics	Yes	7 (17)	15 (25)
	No	33 (83)	45 (75)
Excessive sweating	Yes	10 (25)	5 (8)
	No	30 (75)	55 (92)
Environment	Yes	2 (5)	3 (5)
	No	38 (95)	57 (95)
Poor hygiene	Yes	5 (13)	4 (7)
	No	35 (87)	56 (93)
Food	Yes	1 (3)	1 (2)
	No	39 (97)	59 (98)
Use of steroids oral/ topical	Yes	5 (13)	8 (13)
	No	35 (87)	52 (87)
Contagious	Yes	3 (8)	9 (15)
	No	37 (92)	51 (85)
Medical soaps	Yes	3 (8)	5 (8)
	No	37 (92)	55 (92)
Other medication	Yes	4 (10)	3 (5)
	No	36 (90)	57 (95)
Dust	Yes	7 (17)	5 (8)
	No	33 (83)	55 (92)

In this study, a population was investigated concerning their beliefs about acne; its sources, and its aggravating and relieving factors. Females (60%) were found to be more affected by acne, a finding also observed in some other

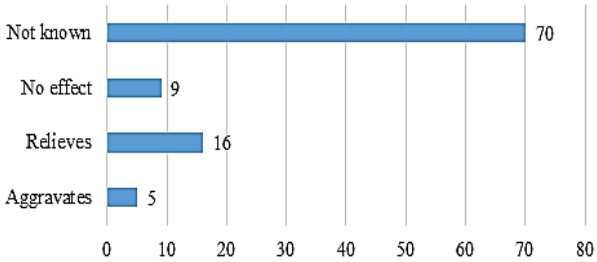

Figure 2 Effect of marriage on acne.

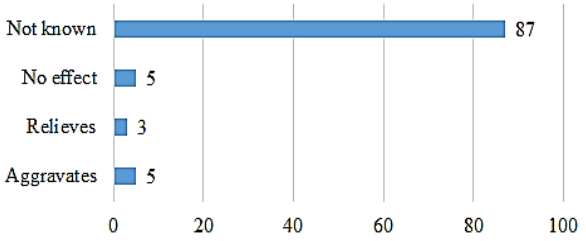

Figure 3 Perceived effect of pregnancy on acne.

studies.[13,14] 63% of the patients belonged to the age group 16-21 years, which is consistent with another study.[14] However, because of methodological differences, our results are not directly comparable. Most of the participants were unmarried (88%), were in the process of getting an education, or had completed graduation. According to the GAGs scoring,[15] mild acne was reported in 70% of our study participants, moderate in 25%, and severe in 5%

of the respondents. Similar results were found in a study conducted in Nigeria.[16]

There are several misconceptions about acne and its causes in general[1] but surprisingly our participants had a better knowledge of the causes of acne as the majority of the respondents (66%) believed puberty and hormonal changes to be the cause of acne. Similar results were found in studies conducted in other regions of the world.[17,18] Various endogenous hormones including progesterone, testosterone, glucocorticoids, insulin, and insulin-like growth factors (IGFs) have been proven to be responsible for the pathogenesis of acne.[19] The severity of acne and level of sex hormones being secreted (which tends to peak at puberty) are positively correlated.[20] Genetics was accurately identified by the respondents of this study as one of the primary factors in the occurrence of acne as it is proven that the predisposition to severe acne may have a hereditary component.[21] Our study participants cited the use of cosmetics as the second major cause of acne. A study conducted in Sri Lanka indicated that improper use of cosmetics has a substantial effect on the incidence and reappearance of acne.[22] The immunological response due to the changes in skin barrier function and skin sebum areas with the inappropriate use of these skin care products (such as the use of too oily substrates, soaps with alkaline pH, makeup products, and over-cleansing) leads to inflammation.[23]

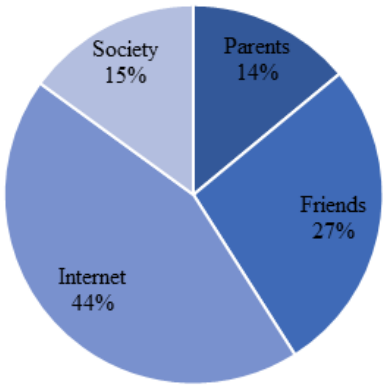

Figure 4 Sources of myths about acne.

Table 3 Perceived aggravating factors of acne.

		Gender n(%)	
		Male	*Female*
Use of cosmetics	Yes	6 (15)	6 (10)
	No	34 (85)	54 (90)
Rubbing of skin with clothes	Yes	17 (43)	28 (47)
	No	23 (57)	32 (53)
Spicy food	Yes	11 (28)	20 (33)
	No	29 (72)	40 (67)
Oily food	Yes	20 (50)	26 (43)
	No	20 (50)	34 (57)
Fast food	Yes	5 (13)	4 (7)
	No	35 (87)	56 (93)
Soft drinks	Yes	3 (8)	2 (3)
	No	37 (92)	58 (97)
Excessive sweating	Yes	11 (28)	7 (12)
	No	29 (72)	53 (88)
Stress	Yes	8 (20)	24 (40)
	No	32 (80)	36 (60)
Itself	Yes	3 (8)	5 (8)
	No	37 (92)	55 (92)
Procedures of beautician	Yes	2 (5)	3 (5)
	No	38 (95)	57 (95)
Tea/ coffee	Yes	9 (23)	14 (23)
	No	31 (77)	46 (77)
Chocolates	Yes	10 (25)	9 (15)
	No	30 (75)	51 (85)
Poor hygiene	Yes	6 (15)	6 (10)
	No	34 (85)	54 (90)
Eggs	Yes	2 (5)	3 (5)
	No	38 (95)	57 (95)

Table 4 Perceived Relieving Factors of Acne:

		Gender n(%)	
		Male	*Female*
Increased intake of water	Yes	15 (38)	14 (23)
	No	25 (62)	46 (77)
Increased intake of juices, fruits	Yes	1 (3)	0 (0)
	No	39 (97)	60 (100)
Medication	Yes	6 (15)	20 (33)
	No	34 (85)	40 (67)
Beautician procedure	Yes	2 (5)	4 (7)
	No	38 (95)	56 (93)
Exercise	Yes	4 (10)	1 (2)
	No	36 (90)	59 (98)
Itself	Yes	27 (68)	29 (48)
	No	13 (32)	31 (52)

Other factors believed to cause acne were excessive sweating, use of steroids, dust, poor hygiene, medical soaps, other medications, food, and the environment.

In our study, diet/ food was less commonly

Table 5 Who should treat acne?

Dermatologist	85
Hakeem	9
Beautician	2
Should not be treated	2
Chemist	1
General physician	1

indicated as the cause of acne. Conversely, other studies found it to be the factor most commonly believed to cause acne.[13,24] The relationship between diet and acne remains controversial. Perception of diet as a cause or aggravating factor for acne is a general belief among the masses[16] but we have limited scientific evidence to support this notion.[25] Recent studies have found a positive correlation between acne and the consumption of high sugar diet and dairy products.[26] The reason for this is that the consumption of hyperglycaemic food and dairy products leads to the increased secretion of insulin-like growth factors-1 (IGF-1) which is responsible for increased androgen and sebum secretion thus causing and aggravating the acne.[6]

The analysis of acne aggravating factors in the present study revealed that 46% of our respondents believed that food, particularly oily food, is the leading triggering factor of acne. Previous studies support this belief of greasy, fatty foods as a source of exacerbating acne.[27,28] This is attributed to the fact that under the action of *Propionibacterium acnes*, triglycerides release fatty acids which are responsible for aggravating the acne.[5] Other types of foods including spicy food, fast food, soft drinks, tea/coffee, chocolates, and eggs were also believed to encourage the progression of acne. The association of dairy foods with acne has been stated earlier. However, it is arguable whether spicy food affects acne. It was recognized as a predisposing factor for acne in a survey conducted in North East China.[29] Rubbing of skin with clothes and stress were among the other leading aggravating factors of acne cited by our study participants. A previous study found a correlation between acne and examination-related stress.[30] Various mechanisms have been suggested that support the notion of stress as an aggravating factor of acne. Human sebocytes have receptors for substances like corticotrophin-releasing hormone, beta-endorphin, neuropeptide Y, melanocortins, calcitonin gene-related peptide, and vasoactive intestinal peptide.[31] These substances, particularly Substance P, released in response to emotional stress trigger lipogenesis of sebaceous glands, proliferating *Propionibacterium acnes*, and inducing mast cell-mediated inflammatory reactions which promote acne.[32] Excessive sweating, use of cosmetics, procedures of a beautician, and acne itself were among the other exacerbating factors mentioned by the respondents of this study. Sweating itself might not be responsible for causing and aggravating acne as indicated by a randomized pilot study that failed to obtain a positive correlation between sweating and truncal acne.[33] However, the conditions in which sweating occurs, such as humidity, loss of integrity of stratum corneum, and use of fabrics that aren't breathable may contribute to the obstruction of pilosebaceous ducts.[34]

The majority of the respondents (56%) believed that acne goes by itself. 29% of the participants believed that an increased intake of water can help relieve acne. Research has proven that drinking water impacts skin health.[35] It helps by promoting skin hydration thus preventing excess oil production.[35] Good hydration supports the immune function which could help protect against certain strains of bacteria (*Cutibacterium acnes)* that contribute to the development of acne.[35] Drinking water helps regulate blood sugar levels and promote natural detoxification thus preventing and relieving acne.[35] 26% of our study participants considered medication to be the relieving factor for acne. While both over-the-counter (OTC) and prescription treatments

are effective in treating acne, preferences for OTC or prescription acne treatments are not well established.[36] A study conducted in the United States concluded that acne patients preferred prescription treatments compared with OTC treatments[36] which is contrary to the results of a survey conducted in Europe.[37] Other relieving factors indicated in our study were beautician procedures, exercises, and increased intake of juices and fruits. 85% of participants believed that acne should be treated by a dermatologist which was a very positive response as acne is a medical condition that requires proper medical attention and treatment like any other disease.

When asked about the effect of marriage on acne, 70% of our respondents replied that they had no knowledge about such a correlation, 9% noted no change, 16% found that marriage helps in relieving acne, and 5% complained of deterioration after matrimony. A survey conducted in Glasgow had similar results in which it was indicated that marriage itself has no significant effect on the prognosis of acne in females, however, various physiological and psychological factors associated with married life can influence the course of acne.[38]

Almost similar results were found for the effect of pregnancy on acne where 87% of respondents were not aware of such an association, 5% noted no change, 5% believed that acne improves during pregnancy, and 3% held the opinion that acne aggravates during the gestation period. Different studies had different results for this very aspect but it is the interplay of various factors (internal and external body conditions) that plays an important role in the prognosis of a medical condition.[38]

In this research, the internet was determined to be the primary conduit of fallacies regarding acne. Other frequently cited sources were friends, society, and parents. This highlights the important role media and the lay public can play in eliminating such misconceptions about acne among the masses and providing accurate and comprehensible information.

Limitations

The primary constraint of this study is the restricted sample size as the data was sourced from one hospital and thus cannot be generalized to the patients from other hospitals/ regions of Pakistan. Additionally, our study has a cross-sectional design, thus factors affecting patients' opinions cannot be studied over time.

Conclusion

Our study participants generally exhibited enhanced comprehension and recognition of acne vulgaris and its related aspects, but some wrong beliefs and misconceptions still need to be dispelled. Accessible and accurate community-based education programs can help increase the awareness about the causes, pathogenesis, complications, and the importance of seeking prompt medical attention for this very disease. Media, being the most commonly used source of information, can play a vital role in this regard. Better understanding of the disease will improve patient compliance, leading to an effective treatment and management of acne-related psychosocial problems.

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