



Healthcare Professionals' Insights and Perspectives on Diet and Acne Vulgaris": A Cross-Sectional Study in A Tertiary Care Institute

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Abstract

Introduction: Acne vulgaris is a chronic inflammatory disorder of the pilosebaceous unit, presenting with comedones, papules, pustules, nodules, and cysts, primarily affecting the face, back, and chest. It is most prevalent during adolescence, affecting up to 85% of individuals aged 12 to 25 years. The pathogenesis involves increased sebum production, abnormal

follicular keratinization, microbial colonization, and inflammation mediated by the adaptive immune system. Recent studies suggest a potential role of diet in acne development. High glycaemic load diets can cause hyperinsulinemia, stimulate androgen production, and activate mTORC1, promoting acne. Dairy intake is associated with elevated IGF-1 and contains androgenic hormones such as DHEA and 5 α -DHT, further

contributing to acne. Additionally, milk-derived iodine and omega-3 fatty acid deficiency may exacerbate acne symptoms.

Aims and objectives

1. To determine healthcare professionals' perceptions of the role of diet in acne vulgaris.
2. To analyze the severity, distribution, and type of acne lesions in relation to dietary factors.
3. To determine the need for further education and training on dietary interventions in acne management.

Materials & Methods: A hospital based cross-sectional study was conducted among the healthcare professionals of A J Institute of Medical Sciences, Mangalore, aged 18–35 years clinically diagnosed with acne vulgaris and graded using Pillsbury acne grading scale and were provided with a digital questionnaire. Ethical committee clearance was obtained prior to the study.

Results: A total of 120 healthcare professionals participated, predominantly females (75%). Most were doctors (47.5%), followed by medical and nursing students. About 93.3% perceived diet to influence acne, with 25% reporting a significant impact. Fried foods, dairy, and sugary items were commonly associated with severe acne grades (III and IV). Acne negatively affected quality of life, primarily self-confidence (56.7%), interpersonal relationships (56.7%), and daily activities (25.2%), with 7.7% reporting impairment in all three domains.

Conclusion: This study emphasizes that a significant proportion of healthcare professionals recognize the influence of diet in the onset and aggravation of acne. High-glycemic foods, dairy products, and oily diets were frequently identified as contributing factors, particularly in more severe forms of acne. The psychosocial impact

of acne was also apparent, affecting self-esteem, daily activities, and interpersonal relationships. These findings highlight the importance of integrating dietary evaluation and counseling into standard acne management approaches. Moreover, the results point to the necessity of improving awareness and education among healthcare providers regarding the role of nutrition in dermatological conditions such as acne vulgaris.

Keywords: Acne vulgaris, Health professionals, Diet, Perception, Perspectives

Introduction

Acne vulgaris is one of the most common dermatologic conditions globally ^{1, 2}. It is a chronic inflammatory condition involving the pilosebaceous unit, presenting with non-inflammatory lesions such as open and closed comedones, and inflammatory lesions including papules, pustules, nodules, and cysts, with varying degrees of severity and depth. It most commonly affects the face, back, and chest. Potential complications include inflammatory macules, post-inflammatory hyperpigmentation or hypopigmentation, permanent scarring, and psychological impact. The peak prevalence of acne is observed during adolescence, with an estimated 85% of individuals aged 12 to 25 years being affected.

The classical understanding of acne pathogenesis involves a multifactorial process, including increased sebaceous gland activity leading to seborrhoea, abnormal follicular differentiation with excessive keratinisation, microbial hypercolonization of the follicular canal, and heightened inflammation, predominantly mediated by activation of the adaptive immune response. A significant proportion of acne patients perceive that diet plays a role in modulating their skin condition,

particularly implicating unhealthy dietary choices in the worsening of acne. While the heritable nature of acne and the influence of hormones in its development are well established, the impact of environmental factors, such as diet, remains uncertain ^{3,4,5}.

Certain commonly consumed foods such as chocolates, fat-rich meals, and ice cream have long been suspected of worsening acne, although this belief has traditionally been dismissed by dermatologists. However, recent research indicates that dietary habits may indeed influence the pathogenesis of acne. Diets high in glycemic load can lead to elevated insulin levels (hyperinsulinemia), which in turn stimulates androgen production, mimicking the hormonal profile seen in polycystic ovarian syndrome (PCOS). In a similar vein, individuals who consume milk and dairy products show elevated IGF-1 levels, which have been positively associated with the incidence of acne. Cow's milk is composed of approximately 80% casein and 20% whey protein. Milk not only contains exogenous IGF-1, but it also stimulates the body's own IGF-1 production. Whey proteins are primarily responsible for milk's insulin-stimulating (insulinotropic) effects, while casein has a stronger effect on increasing IGF-1 levels ⁶. Hyperinsulinemia—such as that triggered by the insulinotropic properties of whey protein—can also elevate IGF-1 levels. This may help explain why individuals who consume whey supplements, a common practice in fitness centers and among those involved in weight-based athletic activities, often experience the onset or worsening of acne ^{7,8}. Moreover, milk contains androgenic compounds, including dehydroepiandrosterone (DHEA) and 5 α -dihydrotestosterone (5 α -DHT), both of which are implicated in acne development. Additionally, the iodine

content in milk and a deficiency of omega-3 fatty acids commonly seen in high-glycemic diets have also been linked to acne flare-ups. Ketogenic diets, characterized by a significant reduction in carbohydrates and increased intake of fats and proteins, shift the body's energy source from glucose to ketones, a state known as ketosis. These diets have been shown to lower inflammatory markers and reduce IGF-1 levels ^{9,10,11}.

Aims and Objectives

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Materials and Methods

A hospital based cross-sectional study was conducted among the healthcare professionals of A J Institute of Medical Sciences, Mangalore, aged 18–35 years clinically diagnosed with acne vulgaris and graded using Pillsbury acne grading scale and were provided with a digital questionnaire. On the basis of the study conducted by Rajani khatta et al., it was observed that 91.8 % of the healthcare professionals believed that diet can affect acne. Taking this as reference, at 5 % level of significance, absolute precision of 5 %, the estimated sample size is 115 and was rounded off to 120.

Inclusion Criteria

1. Healthcare professionals diagnosed with acne vulgaris at AJ Institute of Medical Sciences, Mangalore
2. Healthcare professionals with age between 18 - 35 years.

3. Healthcare professionals willing to participate in the study

Exclusion Criteria

1. Healthcare professionals with age <18 years >35 years
2. Healthcare professionals who are not willing to participate in the study
3. Subjects on oral contraceptives, hormonal therapies, anti-androgens, oral retinoids, corticosteroids, anabolic steroids, other drugs like lithium, phenytoin, isoniazid etc.
4. Pregnant and lactating females.

Results

The study included 120 healthcare professionals with acne vulgaris.

A. Demographic characteristics among healthcare professionals

A total of 120 healthcare professionals participated in the study, of which 90 (75%) were female and 30 (25%) were male. The participants were stratified into three age groups: 18–22 years (n=41), 23–27 years (n=41), and 28–35 years (n=38). Most participants were doctors (47.5%), followed by medical students (20.8%), nursing students (14.2%), dentists (9.2%), and nurses (8.3%).

Table 1: Demographic characteristics among Acne vulgaris Participants

Gender (Percentage)		
Male	30 (25 %)	
Female	90 (75 %)	
Age (yrs)		
	Male	Female
18-22	11	30
23-27	8	33
28-35	11	27
Profession (Percentage)		
Doctor	57 (47.5 %)	
Dentist	11 (9.2 %)	
Nurse	10 (8.3 %)	
Medical students	25 (20.8 %)	
Nursing students	17 14.2 %)	

B. Perception of diet on acne among healthcare professionals

25% of participants perceived diet to significantly influence their acne, 35% moderately, 33.3% mildly, and 6.7% not at all. This highlights a predominant awareness of dietary influence on acne among healthcare professionals.

Table 2: Perception of diet on acne among healthcare professionals

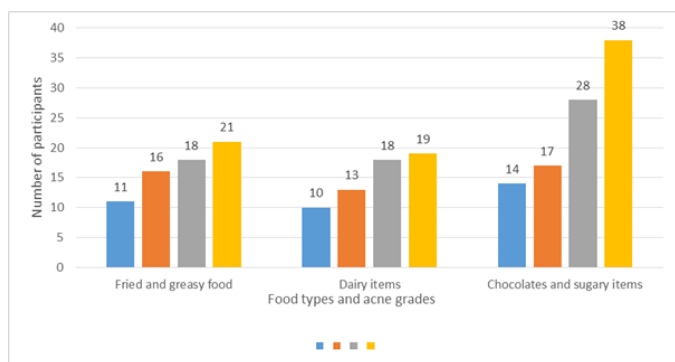
Perception	Significantly	Moderately	Mildly	Not at all	Total (Percentage)
Number of participants (percentage)	30 (25 %)	42 (35 %)	40 (33.3 %)	8 (6.7 %)	120

C. Dietary factors and acne severity

Fried and greasy foods were associated with increasing acne severity, with Grade IV acne reported in 21 participants.

Dairy items showed a similar trend, with Grade III and IV acne observed in 18 and 19 participants, respectively. Notably, chocolates and sugary items had the highest correlation with severe acne, as Grade IV acne was reported in 38 participants, followed by Grade III (28 participants). 100 % of the participants reported facial involvement. Back involvement was seen in 15 participants (12.5%), chest in 10 (8.3%), and neck in 5 (4.2%).

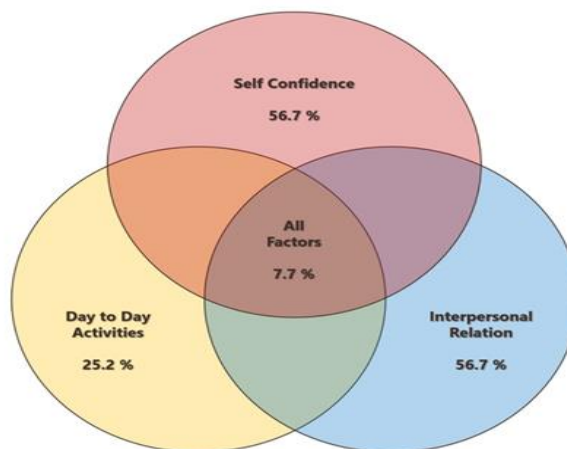
Figure 1. Distribution of acne grades in relation to common dietary factors among healthcare professionals



D. Psychosocial impact of acne among healthcare professionals

56.7% reported a negative effect on self-confidence, 25.2% on day-to-day activities, and 56.7% on interpersonal relations. Importantly, 7.7% of participants experienced impairment in all three domains, indicating a substantial effect on overall quality of life.

Figure 2 : Venn diagram showing the quality of life among healthcare professionals with acne vulgaris



Discussion

This study was undertaken to evaluate healthcare professionals' insights into the relationship between diet and acne vulgaris, with a particular focus on their perceptions, clinical observations, and awareness of dietary influences on acne severity and lesion distribution. By examining both the perceived and observed impact of dietary factors, the study aimed to identify gaps in knowledge and assess the need for further education and training regarding diet-based interventions in acne management.

Demographic Characteristics among healthcare professionals

The study population comprised predominantly female participants (75%), which mirrors the gender distribution seen in many healthcare fields. The age distribution was balanced across three groups, with a slight majority in the 18–27 years range, indicating responses largely from early-career professionals and students. Doctors formed the largest occupational group (47.5%), followed by

medical and nursing students, dentists, and nurses. This mix provided a well-rounded perspective from both experienced clinicians and future healthcare providers. The diverse professional backgrounds underscore the growing interest and relevance of dietary factors in acne management across various healthcare disciplines.

Perception of Diet on acne among healthcare professionals

The perception of diet as a contributing factor to acne vulgaris was notably prevalent among healthcare professionals in this study. A combined 60% of participants perceived diet to significantly (25%) or moderately (35%) influence the development or exacerbation of acne. This suggests that a majority of respondents acknowledge a considerable dietary impact on acne pathophysiology, potentially reflecting their clinical experiences, academic training, or exposure to emerging research on the subject. Furthermore, 33.3% of respondents believed diet had a mild influence on acne, indicating a recognition of its relevance, albeit to a lesser extent. Only a small minority (6.7%) perceived no association between diet and acne, demonstrating that dietary factors are widely accepted within this professional group as being at least partially contributory. These findings corroborate earlier studies that highlight an evolving awareness among healthcare professionals about diet–acne connections, particularly in the context of high glycemic index foods, dairy, and processed sugars.

In a 2007 study, Rigopoulos et al ¹². assessed the beliefs about acne among 13–18-year-old Greek students with and without acne. Self-reported acne was present among 59% of students. Among 316 students with and without acne, 62% cited diet as a causal factor, and 66% believed chocolate was an exacerbating factor

Dietary factors and acne severity

The analysis of dietary habits revealed a clear association between certain food types and higher acne grades. Chocolates and sugary items demonstrated the strongest correlation with severe acne: 38 participants reported Grade IV acne, while 28 experienced Grade III acne in association with such foods. High GI foods like chocolates and refined sugars are known to elevate serum insulin and insulin-like growth factor-1 (IGF-1), thereby activating the mTORC1 signalling pathway, which in turn promotes sebocyte proliferation, lipid production, and inflammation—central to acne pathogenesis.

A study of 44 acne cases and 44 controls by Ismail et al noted that the glycemic load, according to 24-hour dietary records, was higher in the acne group than in the control group ¹³. Other studies have also reported an association between a high glycemic load (high carbohydrate consumption) and the presence of acne.^{14,15,16}

Dairy products also showed a notable association, with 19 and 18 participants reporting Grade IV and Grade III acne, respectively. Dairy is believed to exacerbate acne through both hormonal and non-hormonal mechanisms. Milk consumption increases IGF-1 levels and may influence androgenic activity, contributing to follicular hyperkeratinization and sebum overproduction. The whey and casein proteins present in dairy may also promote insulin secretion, further aggravating acne.

For example, Adebamowo et al^{17,18,19} noted that the consumption of milk, particularly skimmed milk, was associated with the presence of acne in women after adjustment for age, age at menarche, BMI, and energy intake. Juhl et al ^{20,21} reported the same results for adolescent boys and all adults.

In the recent prospective cohort NutriNet-Santé study, which included 24,452 participants, a strong association was found between current acne and the consumption of milk chocolate and sugary beverages, with odds ratios of 1.28 and 2.19, respectively ²²

Fried and greasy foods were associated with gradual worsening of acne, with 21 participants reporting Grade IV acne and 18 with Grade III. Interestingly, participants frequently described both slow progression and occasional rapid flare-ups (within 1–3 days), characterized by increased redness or pustule formation following greasy meals. While these foods may not directly alter hormonal levels, they are often calorie-dense and pro-inflammatory, contributing to systemic inflammation and oxidative stress, thereby potentially worsening acne.

These findings reinforce that not only the type but also the frequency and quantity of dietary intake may influence acne severity. Respondents frequently implicated daily consumption of these items in worsening their acne, whereas occasional intake was less frequently linked to flares, suggesting a dose-response relationship

This study observed that regular consumption of sugary foods was associated with sudden acne breakouts occurring within 1–3 days. Daily intake of greasy foods was found to contribute to a gradual worsening of acne, while in some cases, it also triggered immediate flares, such as next-day redness or pustule formation.

All participants (100%) had facial involvement, while acne was noted on the back (12.5%), chest (8.3%), and neck (4.2%). The distribution of acne grades across dietary factors further reinforces this association. These findings are consistent with evidence suggesting that high glycemic load and insulinotropic dairy components

can upregulate IGF-1 and mTORC1 signalling pathways, thereby enhancing sebaceous activity, follicular hyperkeratinization, and inflammation.

Psychosocial impact of acne among healthcare professionals

Furthermore, the quality-of-life assessment revealed that 56.7% of participants reported impaired self-confidence, with a notable proportion experiencing disturbances in interpersonal relationships and daily activities. This underscores the psychosocial burden of acne among healthcare professionals who are not only sufferers but also responsible for managing similar patient concerns, potentially influencing their clinical perspectives.

The implications of these findings are twofold. First, they highlight the need for integrating nutritional counselling into acne management protocols. Second, the apparent variability in perception across professional groups points to a gap in formal education regarding diet-related dermatological counselling, necessitating targeted educational interventions during training.

Magin et al ²³ in their qualitative study on the psychological sequelae of acne stated that acne negatively affected self-image in all patients, at least to some degree.

Implications and Future Directions

These results highlight the need for targeted educational initiatives among healthcare professionals, both as providers and as patients, to improve understanding of dietary factors in acne. Integrating dietary counselling into acne treatment protocols may enhance outcomes and empower patients with modifiable strategies. Furthermore, this study suggests that institutional measures to promote nutritional literacy, especially in medical curricula, may help bridge existing gaps in knowledge and translate into better dermatological care.

Future studies could focus on longitudinal assessments, objective dietary scoring, hormonal profiling, and evaluation of intervention outcomes to build on these findings. Stratifying data based on frequency (daily vs. weekly intake) and evaluating the synergistic effect of multiple dietary factors could further refine understanding and strengthen dietary recommendations for acne management.

Conclusion

This study highlights a notable awareness among healthcare professionals regarding the impact of diet on acne, with a majority perceiving some degree of dietary influence on their skin condition. Specific dietary factors—particularly fried foods, dairy products, and sugary items—were associated with increased acne severity, with chocolates and sugary foods showing the strongest correlation. Acne primarily affected the face, but involvement of the back, chest, and neck was also noted. Beyond the physical manifestations, acne had a considerable psychosocial impact, negatively affecting self-confidence, interpersonal relationships, and daily activities in a significant proportion of participants. These findings underscore the importance of a holistic approach to acne management that considers dietary habits and the psychological well-being of affected individuals, even among healthcare professionals.

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