e-ISSN: 0975-9506, p-ISSN: 2961-6093

Available online on www.ijpqa.com doi: 10.25258/ijpqa.16.7.73

International Journal of Pharmaceutical Quality Assurance 2025; 16(7); 460-467

Original Research Article

# Lifestyle Determinants of Acne Vulgaris Severity Among Young Adults: A Cross-Sectional Study

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**Received: 08-05-2025 / Revised: 10-06-2025 / Accepted: 30-07-2025**

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**Conflict of interest: Nil**

**Abstract:**

**Background:** Acne vulgaris is one of the most common dermatological conditions affecting adolescents and young adults worldwide, contributing substantially to psychosocial distress and reduced quality of life. Although genetic and hormonal influences are well recognized, growing evidence suggests that modifiable lifestyle factors may significantly influence acne severity.

**Aim:** To evaluate the association between lifestyle determinants and the severity of acne vulgaris among young adults attending a tertiary care hospital.

**Methodology:** A hospital-based cross-sectional observational study was conducted in the Department of Skin and VD at Darbhanga Medical College and Hospital. A total of 153 young adults aged 18–30 years with clinically diagnosed acne vulgaris were enrolled. Data were collected using a structured questionnaire assessing sociodemographic characteristics, clinical variables, and lifestyle factors. Acne severity was graded using the Global Acne Evaluation (GEA) scale. Statistical analysis was performed using SPSS version 25.0, applying Chi-square test, t-test, ANOVA, and multivariate logistic regression. A p-value ≤0.05 was considered statistically significant.

**Results:** The overall mean GEA score was 2.84 ± 0.91. Higher acne severity was significantly associated with younger age (18–20 years), female gender, student status, elevated BMI (>23 kg/m²), smoking, and positive family history. Lifestyle factors independently associated with moderate-to-severe acne included daily fast food intake, low fruit and vegetable consumption, physical inactivity, sleep duration <5 hours/day, and recent psychological stress.

**Conclusion:** Acne severity among young adults is strongly influenced by modifiable lifestyle and behavioral factors alongside demographic and genetic determinants. Integrating lifestyle modification strategies with conventional dermatological management may improve clinical outcomes and reduce disease burden.

**Keywords:** Acne vulgaris; lifestyle determinants; acne severity; young adults; diet; smoking; stress; physical activity.



## Introduction

Acne vulgaris is a skin disease or dermatological disorder that is highly prevalent all over the world and is found in significant proportions in the adolescents and young adults. Adolescents are one of the most affected groups with the global estimates indicating the disease to take place in about 35-90 percent of adolescents [1]. Even though acne normally progresses at adolescence stage, many people still have acne either persistently or late in their adulthood [2] the reason being that the age of onset is at adolescence stage. The Global Burden of Disease Study has estimated acne to be the eighth-most common disease in the world in 2010, highlighting the strong reasons why acne is important to the health of the general population [3]. In addition to its obvious cutaneous symptoms, acnes are linked to significant psychosocial morbidity such as low self-esteem, social isolation, anxiety, depression, and poor quality of life. The psychological stress of acne might be especially great among young adults who are usually in the process of higher education, on the beginning of their career, and formation of social relations.

The pathogenesis of acne vulgaris is multidetermined and has a complex interplay of

biological processes. It is considered to involve four processes that include increased sebum production under androgenic stimulation, abnormal desquamation of the follicular epithelium that results in the formation of comedones, colonization and growth of Cutibacterium acnes, and eventual inflammatory reactions in the pilosebaceous unit. Genetic predisposition, hormonal changes, immune responses and environmental exposures are some factors that influence these processes [4]. Although the genetic and endocrine factors are mostly non-modifiable, more attention has been given to environmental and lifestyle determinants that can moderate the onset as well as the severity of acne.

There is growing epidemiological data showing that lifestyle changes are significant in the pathogenesis and severity of acne. One of the factors that have been studied most is Diet. High glycemic load diets are believed to raise the insulin and insulin-like growth factor-1 (IGF-1) levels that could trigger sebaceous gland activity and keratinocyte growth, thus worsening acne [5]. In a similar manner, regular milk intake and intake of other milk products has been linked to high likelihood of developing acne and this may be as a result of hormonal contents and bioactive molecules found in milk. Dietary habits of the young adults in modern societies are becoming more and more typified by high consumption of refined carbohydrates, fast foods, and sweet drinks, which could be the determinants of severity of acne.

Another lifestyle factor attributed to acne is smoking. Some of the studies have indicated that there is a dose-related correlation between smoking cigarettes and the severity of acnes, which may be mediated by oxidative stress, sebum composition changes, and inflammation [6]. Alcohol intake, which is less intensively researched, can also affect hormonal balance and inflammatory mechanisms. Also, psychological stress, which occurs frequently in young adults because of academic, work, and social pressure, has been reported to increase acne, most likely by means of a hypothalamic-pituitary-adrenal axis activation and consequent secretion of pro-inflammatory mediators [7]. The level of physical activity can also be pertinent since inactive lifestyle can lead to metabolic imbalance and higher body mass index (BMI) that have been linked to the risk of acne.

Past epidemiological data on the populations of Middle East and North Africa have indicated the existence of relationships between acne and demographical variables such as age, gender, family history, BMI and skin type. According to a study done in Saudi Arabia, acne was highly related with stress, irregular menstruation, obesity and positive family history [8]. Nonetheless, the data of the particular national population is rather scarce, and the results of one nation cannot be directly applied to another because of the genetic background, the data of diet, cultural specificities, and a range of environmental exposure. Specifically, the literature has a knowledge gap on the joint effect of several determinants of lifestyle on the severity of acne in young adults, in a regional setting.

Young adulthood is a period of transition in life, with the development of independence in food preferences, exposure to stressors, an attempt to smoke or drink, and inconsistent involvement in physical exercises. All these behavioral patterns might have overall effects on acne severity. Although the question of the presence or absence of acnes has been investigated in many studies, there are limited researches on the determinants of the severity of acnes and this has more clinical and psychosocial implications. Knowledge of the relationship between the modifiable lifestyle factors and the presence of acne, as well as its severity, could give useful information to be used as prevention and adjunctive interventions.

Considering the scarcity of epidemiological data in the situation and the increasing awareness of the lifestyle factors of dermatological health, the current cross-sectional research will assess the lifestyle predictors of the acne vulgaris severity in young adults. In particular, the research aimed at determining the relationship between demographic of the participants (age, gender, family history, BMI) and lifestyle (dietary habits, smoking, alcohol consumption, stress, and physical activity) and the severity of acnes. This study can help to provide evidence-based recommendations unique to young adults, especially by determining modifiable risk factors that contribute to more dire illnesses. Finally, the explanation of the role of lifestyle determinants in the severity of acne can be used to promote the creation of specific educational programs and a comprehensive management strategy that would work with traditional pharmacological treatments and positively affect a dermatological outcome and quality of life.

## Methodology

**Study Design:** This research was conducted as a hospital-based cross-sectional observational study to evaluate the association between lifestyle determinants and the severity of acne vulgaris among young adults. A cross-sectional design was selected because it allows for simultaneous assessment of exposure variables (lifestyle factors) and outcome variables (acne severity) within a defined period. The study aimed to identify modifiable behavioral and environmental factors influencing acne severity in order to generate evidence that could support preventive and therapeutic strategies.

**Study Area:** The study was carried out in the Department of Skin and VD, Darbhanga Medical

College and Hospital, Laheriasarai, Darbhanga, Bihar, India.

**Study Duration:** The duration of the study was one year from March 2023 to February 2024.

**Sample Size:** The total sample size for the study was 153 participants (N = 153). All eligible and consenting young adults diagnosed with acne vulgaris during the study period were included until the predetermined sample size was fulfilled.

**Study Population:** The study population consisted of young adults aged 18–30 years who were clinically diagnosed with acne vulgaris by a dermatologist at the outpatient department. Both male and female patients from diverse socioeconomic, educational, and residential backgrounds were included to ensure representativeness within the hospital setting.

**Data Collection:** Data were collected through face-to-face interviews using a pre-structured and pretested questionnaire. The questionnaire comprised three sections: sociodemographic details, lifestyle determinants, and clinical assessment of acne. Lifestyle-related variables included dietary habits (intake of fast food, dairy products, oily and spicy foods, sugary beverages, and chocolate), sleep duration and quality, stress levels, physical activity, screen time, smoking, alcohol consumption, cosmetic usage, and personal hygiene practices. Acne severity was assessed clinically using the Global Acne Severity (GEA) Scale, which categorizes acne into mild, moderate, severe, and very severe based on lesion type and distribution. Clinical grading was performed by a dermatologist to ensure consistency and reliability.

**Inclusion Criteria**

- Young adults aged 18–30 years.
- Clinically diagnosed cases of acne vulgaris.
- Patients willing to participate in the study.
- Participants providing written informed consent.

**Exclusion Criteria**

- Patients currently on systemic retinoids or hormonal therapy for acne.
- Individuals with other dermatological conditions affecting the face that could interfere with acne assessment.
- Patients with known endocrine disorders such as polycystic ovarian syndrome (PCOS) or Cushing's syndrome.
- Pregnant or lactating women.
- Individuals unwilling to provide consent.

**Procedure:** Patients attending the dermatology outpatient department were screened for eligibility during routine clinical consultations. After obtaining informed consent, participants were interviewed using the structured questionnaire. A detailed clinical examination was subsequently performed to grade acne severity using the Global Acne Severity (GEA) Scale. All collected data were recorded systematically and entered into a secured database for analysis.

**Statistical Analysis:** Data were entered into Microsoft Excel and analyzed using the Statistical Package for the Social Sciences (SPSS) version 25.0. Descriptive statistics were used to summarize the data, with continuous variables presented as mean ± standard deviation and categorical variables expressed as frequencies and percentages. Inferential statistical tests, including the Chi-square test, independent samples t-test, and one-way ANOVA, were applied to determine associations between lifestyle factors and acne severity. Logistic regression analysis was performed to identify independent predictors of moderate-to-severe acne. A p-value of $\leq 0.05$ was considered statistically significant."

**Result**

Table 1 presents the sociodemographic characteristics of the study participants (N = 153) and their association with mean GEA scores. The overall mean GEA score was 2.84 ± 0.91. Age showed a statistically significant association with acne severity ($p < 0.001$), with participants aged 18–20 years demonstrating the highest mean GEA score (3.12), followed by 21–25 years (2.76), while those aged 26–30 years had the lowest mean score (2.21), indicating decreasing severity with increasing age. Gender was also significantly associated ($p < 0.001$), as females had a higher mean GEA score (3.17) compared to males (2.31). Although urban participants showed a slightly higher mean score (2.91) than rural participants (2.72), the association was not statistically significant ($p = 0.084$). Occupation demonstrated a significant relationship with acne severity ($p = 0.002$), with students exhibiting the highest mean GEA score (3.05), compared to employed (2.43) and unemployed participants (2.58). Overall, younger age, female gender, and student status were significantly associated with higher acne severity, while residence did not show a significant association.

| Table 1: Sociodemographic characteristics of the study participants (N = 153) | | | | |
|---|---|---|---|---|
| **Variable** | **N** | **%** | **Mean GEA score** | **p-value** |
| **Age (years)** | | | 2.84 ± 0.91 | - |
| 18–20 | 62 | 40.50% | 3.12 | <0.001* |
| 21–25 | 68 | 44.40% | 2.76 | |
| 26–30 | 23 | 15.00% | 2.21 | |
| **Gender** | | | | |
| Male | 58 | 37.90% | 2.31 | <0.001* |
| Female | 95 | 62.10% | 3.17 | |
| **Residence** | | | | |
| Urban | 97 | 63.40% | 2.91 | 0.084 |
| Rural | 56 | 36.60% | 2.72 | |
| **Occupation** | | | | |
| Student | 102 | 66.70% | 3.05 | 0.002* |
| Employed | 39 | 25.50% | 2.43 | |
| Unemployed | 12 | 7.80% | 2.58 | |

Table 2 presents the clinical and personal characteristics of the study participants (N = 153) and their association with mean GEA scores. BMI showed a statistically significant association with acne severity (p = 0.001), with participants having BMI >23 kg/m² demonstrating the highest mean GEA score (3.41), compared to those with BMI 18.5–23 (2.59) and <18.5 (2.36), indicating increased severity with higher BMI. Smoking status was also significantly associated (p < 0.001), as smokers had a higher mean GEA score (3.38) compared to non-smokers (2.53). Similarly, participants with a positive family history of acne exhibited significantly greater severity (mean 3.22) than those without such history (2.41) (p = 0.003). However, although mean GEA scores appeared to increase with longer duration of acne (2.63 for ≤6 months, 2.79 for 6–12 months, and 3.01 for >12 months), this association was not statistically significant (p = 0.091). Overall, higher BMI, smoking, and family history were significantly associated with increased acne severity, while duration of acne did not show a significant relationship.

| Table 2: Clinical and personal characteristics of study participants (N = 153) | | | | |
|---|---|---|---|---|
| **Variable** | **N** | **%** | **Mean GEA score** | **p-value** |
| **BMI (kg/m²)** | | | | |
| <18.5 | 28 | 18.30% | 2.36 | 0.001* |
| 18.5–23 | 79 | 51.60% | 2.59 | |
| >23 | 46 | 30.10% | 3.41 | |
| **Smoking Status** | | | | |
| Smoker | 49 | 32.00% | 3.38 | <0.001* |
| Non-smoker | 104 | 68.00% | 2.53 | |
| **Family History of Acne** | | | | |
| Yes | 94 | 61.40% | 3.22 | 0.003* |
| No | 59 | 38.60% | 2.41 | |
| **Duration of Acne** | | | | |
| ≤6 months | 42 | 27.50% | 2.63 | 0.091 |
| 6–12 months | 51 | 33.30% | 2.79 | |
| >12 months | 60 | 39.20% | 3.01 | |

Table 3 shows the distribution of lifestyle factors and their association with mean Global Acne Evaluation (GEA) scores among participants (N = 153). Dairy consumption demonstrated a significant association with acne severity (p < 0.001), with the highest mean GEA score observed among those consuming dairy none/occasionally (3.42), compared to few times/week (2.61) and daily consumers (2.48). Vegetable and fruit intake was also significantly associated (p = 0.001), as participants with none/occasional intake had higher mean GEA scores (3.36), while daily consumers had lower scores (2.33). In contrast, increasing fast food/fatty food intake showed a direct relationship with acne severity (p < 0.001), with daily consumers exhibiting the highest mean GEA score (3.37) compared to few times/weeks (2.79) and none/occasional intake (2.11). Similarly, higher sweets/chocolate intake was associated with greater acne severity (p = 0.002), with daily consumers showing a mean score of 3.26. Physical inactivity was significantly linked to higher acne severity (p = 0.001), as those with no/occasional exercise had a mean score of 3.18 versus 2.44 among those

exercising a few times/weeks. Sleep duration <5 hours/day was associated with higher severity (mean 3.33; p = 0.004) compared to 5–8 hours (2.47) and >8 hours (2.61). Lastly, participants reporting significant stress in the past two weeks had higher mean GEA scores (3.21) compared to those without stress (2.36), with a statistically significant association (p = 0.006). Overall, the findings indicate that unhealthy dietary patterns, physical inactivity, inadequate sleep, and stress are significantly associated with increased acne severity.

**Table 3: Lifestyle factors among study participants (N = 153)**

| Variable | N | % | Mean GEA score | p-value |
|---|---|---|---|---|
| **Consumption of Dairy Products** | | | | |
| None/Occasionally | 39 | 25.50% | 3.42 | <0.001* |
| Few times/week | 76 | 49.70% | 2.61 | |
| Daily | 38 | 24.80% | 2.48 | |
| **Vegetables/Fruits Intake** | | | | |
| None/Occasionally | 27 | 17.60% | 3.36 | 0.001* |
| Few times/week | 83 | 54.20% | 2.88 | |
| Daily | 43 | 28.10% | 2.33 | |
| **Fast Food/Fatty Food** | | | | |
| None/Occasionally | 41 | 26.80% | 2.11 | <0.001* |
| Few times/week | 74 | 48.40% | 2.79 | |
| Daily | 38 | 24.80% | 3.37 | |
| **Sweets/Chocolate Intake** | | | | |
| None/Occasionally | 52 | 34.00% | 2.18 | 0.002* |
| Few times/week | 71 | 46.40% | 2.83 | |
| Daily | 30 | 19.60% | 3.26 | |
| **Physical Exercise** | | | | |
| None/Occasionally | 99 | 64.70% | 3.18 | 0.001* |
| Few times/week | 54 | 35.30% | 2.44 | |
| **Sleep Duration (hours/day)** | | | | |
| <5 hours | 44 | 28.80% | 3.33 | 0.004* |
| 5–8 hours | 82 | 53.60% | 2.47 | |
| >8 hours | 27 | 17.60% | 2.61 | |
| **Significant Stress (Past 2 Weeks)** | | | | |
| Yes | 88 | 57.50% | 3.21 | 0.006* |
| No | 65 | 42.50% | 2.36 | |

Table 4 presents the multivariate logistic regression analysis identifying independent predictors of moderate-to-severe acne among participants (N = 153). Female gender was significantly associated with higher odds of moderate-to-severe acne (Adjusted OR = 2.41; 95% CI: 1.32–4.38; p = 0.003), indicating that females had more than twice the risk compared to males. Participants aged 18–20 years also showed increased risk (AOR = 1.78; 95% CI: 1.09–3.12; p = 0.021). Overweight status (BMI >23 kg/m²) was a significant predictor (AOR = 1.94; 95% CI: 1.11–3.41; p = 0.018). Lifestyle factors such as smoking (AOR = 2.27; 95% CI: 1.25–4.12; p = 0.006), daily fast food intake (AOR = 1.88; 95% CI: 1.07–3.29; p = 0.027), low vegetable/fruit intake (AOR = 1.73; 95% CI: 1.02–2.95; p = 0.039), physical inactivity (AOR = 1.69; 95% CI: 1.01–2.82; p = 0.044), and sleep duration <5 hours/day (AOR = 1.82; 95% CI: 1.05–3.16; p = 0.031) were all independently associated with higher odds of moderate-to-severe acne. Additionally, a positive family history of acne (AOR = 2.09; 95% CI: 1.16–3.78; p = 0.014) and significant stress (AOR = 1.95; 95% CI: 1.13–3.36; p = 0.016) were strong predictors. All variables demonstrated statistically significant associations (p < 0.05), indicating that both demographic and modifiable lifestyle factors independently contribute to acne severity.

| Table 4: Multivariate logistic regression analysis for predictors of moderate-to-severe acne (N = 153) | | |
|---|---|---|
| **Variable** | **Adjusted OR (95% CI)** | **p-value** |
| Female gender | 2.41 (1.32–4.38) | 0.003* |
| Age 18–20 years | 1.78 (1.09–3.12) | 0.021* |
| BMI >23 kg/m² | 1.94 (1.11–3.41) | 0.018* |
| Smoking | 2.27 (1.25–4.12) | 0.006* |
| Family history of acne | 2.09 (1.16–3.78) | 0.014* |
| Daily fast food intake | 1.88 (1.07–3.29) | 0.027* |
| Low vegetable/fruit intake | 1.73 (1.02–2.95) | 0.039* |
| Physical inactivity | 1.69 (1.01–2.82) | 0.044* |
| Sleep <5 hours/day | 1.82 (1.05–3.16) | 0.031* |
| Significant stress | 1.95 (1.13–3.36) | 0.016* |

## Discussion

The current research showed that the severity of acne in young adults was mainly mild-to-moderate with the mean of the disease (GEA) being 2.84 ± 0.91, but a large percentage had moderate-severe disease. This total load can be compared to world epidemiological trends reported by Perkins et al. (2012) and Lynn et al. (2016) where high prevalence rates were noted in adolescents and young women, especially in late adolescence and early adulthood [1,2]. On the same note, studies conducted at the population level have highlighted acne as an effective and prevalent dermatologic condition among members of this age group (Silverberg & Silverberg, 2014) [9]. The fact that severity decreases with age, with the highest rate of 3.12 in 1820 years, and the lowest rate of 2.21 in 2630 years is in line with the existing epidemiologic curves that depict the highest levels of activity in late adolescence and gradual remission (Heng and Chew, 2020) [10]."

Gender-Female became a significant independent determinant (moderate to severe acne AOR 2.41) and females had higher means in GEA scores (3.17-2.31). This is consistent with results by Perkins et al. (2012) [1], who reported consistent and more inflammatory patterns in acne among women, and with the multinational European survey by Wolkenstein et al. (2018) [11] that reported more severe cases among female adolescents and young adults. This tendency is also supported by regional data; as Al Hussein et al. (2016) [12] found out, female sex and hormone factors increased severity. The results of this study hence support the hypothesis that changes in hormones, cosmetic behavior, and psychosocial stressors could over-represent their effect on the severity of acne in women.

Strong genetic susceptibility was supported by a positive family history which was found to significantly relate to more severity (mean 3.22; AOR 2.09). Bataille et al. (2002) [13] demonstrated that aggregation of acne is a highly hereditary trait with twin and familial studies, and Xu et al. (2007) [14], and Ballanger et al. (2006) [15] confirmed that familial clustering is a predictive factor of increased severity of the disease. These observations are consistent with our data, which highlights the fact that inherited predisposition is a strong modulator of clinical expression.

The body mass index was significantly positively related to the severity and overweight students (BMI >23 kg/m 2) exhibited the highest mean GEA score of 3.41 (AOR 1.94). This result aligns with Di Landro et al. (2012) [16], who found high BMI to be a risk factor of moderate-to-severe acne and Karciauskiene et al., who discovered that overweight adolescents had higher odds of acne (2014). The same was found by Anaba et al. (2019) [18], who noted that BMI correlates positively with the severity of acne. Nonetheless, our findings are opposite to Skroza et al. (2012) [19] and Koku Aksu et al. (2012) [20] that did not find significant association between BMI and acne. Such differences can be due to ethnic, dietary or metabolic variation of populations.

Another independent predictor was smoking (AOR 2.27), and smokers had significantly more severity (3.38 vs. 2.53). These results agree with Wolkenstein et al. (2015) [11], who actually found that smoking was highly correlated with moderate-severe acnes among French adolescents and young adults. Smoking was also previously identified as a risk factor by epidemiological evidence provided by Schaefer et al. (2001) [6] in general population. Mechanistic mechanisms suggested by Capitanio et al. (2009) [21] included oxidative stress and changes in sebum content, which could be the cause of increased inflammatory load in the smokers in our cohort.

Food habits showed strong correlations with the severity of acne. High GEA scores were largely associated with high frequency intake of fast or fatty food (mean 3.37; AOR 1.88), which is in line with Wolkenstein et al. (2015) [11] and Spencer et al. (2009) [22] who reported that Western dietary patterns with high-glycemic. Jung et al. (2010) [23] also established dietary habits that are characterized by processed foods as risk factors in Korean adolescents. Higher intake of sweets and chocolate

in our experiment (mean 3.26; p = 0.002) is in line with dietary reviews of Davidovici and Wolf (2010) [24] which found that hyperinsulinemia and IGF-1 pathways play a role in the etiology of acne.

Interestingly, reduced vegetable and fruit intake were independently positively related to severity (AOR 1.73), which indicates a protective effect of antioxidant-rich diets. This observation is in line with Burris et al. (2013) [25] who stressed the importance of medical nutrition therapy and anti-inflammatory diets in the management of acne. Nonetheless, our result on the dairy intake, in which sporadic or no intake was associated with the mean scores, is misaligned with the literature which found a correlation between the consumption of milk and the worsening of acne-related symptoms; Ulvestad et al. (2017) [26] . This difference can be attributed to differences in dietary practices, kind of dairy taken or bias in reporting.

Severity was also an effect of lifestyle behaviors. Moderate-to-severe acnes was independently predicted by physical inactivity (AOR 1.69), which was in line with more general findings that sedentary lifestyles are associated with metabolic and inflammatory abnormalities (Di Landro et al., 2012) [16]. Severity was greatly affected by the short sleep (less than 5 hours/day) conditions (mean 3.33; AOR 1.82), which is biologically reasonable since sleep deprivation influences hormonal balance and immune functions. Even though sleep has not been as extensively studied in the literature of the past, there is indirect evidence provided by stress-related pathways.

The psychological stress was also a strong predictor (AOR 1.95) and the mean severity showed a higher level in stressed people (3.21 vs. 2.36). This is consistent with Chiu et al. (2003) [7], who recorded acne exacerbation in the state of examination stress and with Yosipovitch et al. (2007) [27] who found a correlation between psychological stress and sebum production and inflammatory response. We, thereby, provide support to the neuroendocrine-inflammatory interactions, which are involved in the acne's flares.

Our study did not identify any significant relationship between residence or occupation, and the severity of acne with socioeconomic status, unlike Jaber et al. (2020) [28] who recorded a relationship between the two in Jordan. This distinction can be caused by samples or contextual socioeconomic disparity.

Comprehensively, our results support the evidence available in the literature worldwide and across the regions that the severity of acne is multifactorial and is dependent on demographic, genetic, metabolic, dietary, behavioral, and psychosocial factors. Notably, some of the identified predictors, such as diet, smoking, physical inactivity, sleep deprivation, and stress, can be modified, which highlights the opportunities of full-fledged lifestyle-based interventions coupled with the traditional dermatologic treatment to decrease the morbidity of acne among young adults.

## Conclusion

This cross-sectional study demonstrates that the severity of acne vulgaris among young adults is significantly influenced by a combination of sociodemographic, clinical, and modifiable lifestyle factors. Higher acne severity was more frequently observed among younger participants, females, and students, while urban–rural residence showed no meaningful association. Clinical determinants such as elevated body mass index, smoking, and a positive family history emerged as important contributors to more severe disease. Furthermore, unhealthy dietary patterns, including frequent consumption of fast food, sweets, and inadequate intake of fruits and vegetables, were strongly associated with increased acne severity. Behavioral factors such as physical inactivity, shorter sleep duration, and recent psychological stress also demonstrated independent associations with moderate-to-severe acne on multivariate analysis. Overall, the findings underscore the multifactorial nature of acne vulgaris and highlight the critical role of modifiable lifestyle practices in influencing disease severity, emphasizing the need for comprehensive management strategies that integrate lifestyle modification alongside conventional dermatological treatment.

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