

Psychological Impact of Acne on Adolescents in Ahmedabad: A Cross-Sectional Study on Social Interactions, Self-Perception, and Lifestyle Changes

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ABSTRACT:

Background: Acne is a prevalent skin condition affecting adolescents, often leading to significant psychological distress. This study aims to explore the psychological effects of acne on adolescents in the Ahmedabad district, focusing on social interactions, self-perception, and lifestyle modifications.

Methods: A cross-sectional electronic survey was conducted from November 25, 2020, to January 25, 2021, utilizing a structured questionnaire distributed via social media platforms. The survey targeted adolescents aged 15 to 25 years residing in Ahmedabad and assessed various psychological factors related to acne. Key areas evaluated included confidence in social interactions, avoidance behaviors, academic performance, and lifestyle choices.

Results: The findings revealed that 71.4% of females and 58.4% of males reported low confidence in social interactions due to acne. Approximately 50% of participants avoided public spaces, reflecting a coping mechanism for managing embarrassment and anxiety. While only 22.6% of females and 22.1% of males indicated that acne negatively impacted their relationships with friends and family, many reported resilience supported by social networks. Notably, beauty filter usage was significantly higher among females (58.3%) compared to males (35.1%), indicating the influence of social media on self-image. Although most participants did not skip school or college due to acne, a small percentage reported negative effects on academic performance (9.6% females; 18.2% males). Clothing restrictions were more common among females (39.3%) than males (15.6%), and dietary changes were reported by 44% of females and 33.8% of males.

Conclusions: This study highlights the multifaceted psychological impact of acne on adolescents, emphasizing the need for targeted interventions that address both physical and emotional aspects of acne management. Healthcare providers should integrate mental health assessments into dermatological care to better support adolescents facing these challenges. Future research should explore longitudinal effects and interventions aimed at improving both skin health and psychological well-being among affected individuals.

Introduction

Acne vulgaris, a common dermatological condition, is characterized by the presence of comedones, papules, pustules, nodules, and cysts, primarily affecting the face, back, and chest. The pathogenesis of acne involves a complex interplay of factors, including increased sebum production, follicular hyperkeratinization, inflammation, and colonization by

Propionibacterium acnes (*P. acnes*) [1]. Androgens, particularly testosterone, play a crucial role in stimulating sebaceous gland activity, leading to increased sebum production. Additionally, the colonization of *P. acnes* within hair follicles contributes to the development of inflammatory lesions [2].

The global prevalence of acne varies significantly; reported rates range from 10.4% in China to as high as 97.9% among female medical students in Saudi Arabia [3, 4]. In India, acne affects approximately 66.6% of the population, reflecting its widespread impact across different regions [5]. Notably, about 85% of adolescents experience acne at some point during their teenage years, making it a significant public health concern that transcends age and ethnicity [6].

The development and severity of acne are influenced by a complex interplay of genetic, environmental, and socioeconomic factors. Genetic predisposition is a primary contributor; individuals with a family history of acne are at a higher risk of developing the condition due to inherited tendencies toward excessive oil production, inflammatory responses, and irregularities in skin cell turnover. [6, 7] This genetic component significantly affects how an individual's skin reacts to various stimuli.

Environmental influences complicate the management of acne. Exposure to high humidity levels results in increased oil production in the skin, which clogs pores and exacerbates acne. [7] Additionally, chemicals such as sodium lauryl sulfate (commonly found in cleansers), isopropyl myristate (used in cosmetics), and industrial pollutants like polycyclic aromatic hydrocarbons irritate the skin, worsening existing acne lesions and making treatment more challenging. [8]

Diet also plays a crucial role in acne development. High glycemic index foods, including sugary snacks, refined carbohydrates, and dairy products like milk and cheese, have been linked to increased acne severity. [9] These foods cause insulin spikes that stimulate androgen hormones, leading to elevated sebum production and worsening acne symptoms.

Moreover, socioeconomic factors add another layer of complexity to the issue. Limited access to effective treatments and quality skincare products hinders individuals from managing their acne effectively. [10] Socioeconomic status shapes lifestyle choices that influence overall skin health; individuals from lower socioeconomic backgrounds experience higher stress levels, poorer sleep patterns, and less nutritious diets—all of which adversely affect skin condition. [11]

Globally, acne affects approximately 85% of adolescents at some point during their teenage years, making it a significant public health concern. [12] In India, cultural perceptions of beauty and societal pressures can further intensify the psychological impact of acne on young individuals. Adolescents may face stigma and emotional distress due to visible skin lesions, leading to issues such as low self-esteem and social anxiety. [13]

Current treatment modalities for acne include topical agents like retinoids and benzoyl peroxide, systemic treatments such as antibiotics and hormonal therapies, and emerging therapies like light-based treatments. [14] Despite the availability of these options, gaps in treatment adherence and access remain prevalent. Many adolescents do not seek treatment for acne due to misconceptions about its severity or a belief that it is not worth treating.

The long-term consequences of untreated acne can include scarring and persistent psychological effects. Scarring not only affects physical appearance but can also lead to significant emotional distress and impairment in quality of life (QoL). Studies have shown that adolescents with severe acne are at increased risk for depression and anxiety disorders. [15] The visibility of acne complicates social interactions during a critical developmental period when peer relationships are paramount.

Given these considerations, there is an urgent need for studies that explore the psychological repercussions of acne among adolescents. Understanding the relationship between acne severity and psychological factors such as self-esteem, social anxiety, and overall quality of

life is essential for developing effective interventions. This study aims to investigate these relationships within the adolescent population in Ahmedabad district through a cross-sectional survey design.

Methodology

Study Design

This study employed a cross-sectional electronic survey design to explore the impact of acne on adolescent psychology. This design allows for the collection of data at a single point in time, providing insights into the psychological effects of acne among adolescents in the Ahmedabad district.

Study Area

The research was conducted in the Ahmedabad district, which provides a diverse population of adolescents, making it an appropriate setting for this study.

Study Period

Data collection took place over a two-month period, from November 25, 2020, to January 25, 2021.

Sample Size Calculation

To determine the sample size required for this study, we used the formula for calculating sample size based on a confidence level of 95%, which corresponds to a Z-value of 1.96. Given that the target population consisted of adolescents aged 15 to 25 years in Ahmedabad district, we aimed to recruit 161 participants due to logistical constraints and resource availability.

Inclusion and Exclusion Criteria

The inclusion criteria for this study required participants to be aged between 15 and 25 years and to have experienced acne at any severity level. Additionally, participants needed to be currently residing in the Ahmedabad district and be college students willing to provide informed consent and complete the questionnaire. Conversely, the exclusion criteria eliminated individuals with a history of severe skin conditions other than acne, such as psoriasis or eczema. Participants currently undergoing treatment for acne that could influence psychological outcomes, including isotretinoin, were also excluded. Furthermore, individuals with cognitive impairments that might affect their ability to understand and complete the questionnaire were not eligible for participation. Lastly, those who did not provide informed consent or chose to withdraw from the study at any point were excluded from the research.

Study Tool

Data were collected using a structured electronic questionnaire designed as a Google Form. The questionnaire included various sections aimed at evaluating different aspects of psychological impact related to acne.

Procedure

The link to the electronic questionnaire was disseminated through various social media platforms, including Facebook, Instagram, and WhatsApp, targeting adolescents in the specified age range. Participants were invited to complete the questionnaire voluntarily and were encouraged to share the link with peers to enhance participation.

Questionnaire Content

The questionnaire utilized in this study assessed several psychological factors associated with acne, providing a comprehensive understanding of its impact on adolescents. Participants were asked about their confidence in social interactions, evaluating how acne affects their willingness to engage in public spaces and form relationships with friends and family. The survey also explored the prevalence of beauty filter usage for photo editing, highlighting the influence of social media on self-image. Additionally, it examined whether concerns about acne led to skipping classes and how these worries affected academic performance perceptions. Self-perception while looking in the mirror was another critical aspect assessed, alongside any clothing restrictions imposed due to acne visibility. Finally, the questionnaire investigated dietary restrictions related to acne control preferences, shedding light on how acne influences

lifestyle choices and overall well-being. This multifaceted approach allowed for a thorough exploration of the psychological ramifications of acne among adolescents.

Data Analysis

Data entry and analysis were conducted using Microsoft Excel. Descriptive statistics were employed to summarize demographic characteristics and responses related to psychological impacts.

Ethical Considerations

Informed consent was obtained from all participants prior to data collection, ensuring that they understood the purpose of the study and their right to withdraw at any time without consequence. Confidentiality was maintained throughout the study by anonymizing responses and securely storing data.

Results:

A total of 161 participants completed the questionnaire during the study period. The sample consisted of adolescents aged between 15 to 25 years, with 84 (52.2%) identifying as female and 77 (47.8%) as male. All participants were college students, ensuring that the sample reflected individuals likely experiencing the psychological impacts of acne during a formative period in their lives.

Q-1 Confidence in interaction with peers:

According to Table 1, a substantial proportion of both female and male patients reported feeling low in confidence in their daily lives due to acne, particularly when interacting with peers. Among the female patients, 59 out of 84 (71.4%) experienced low confidence at varying levels of frequency ("sometimes" or more). Specifically, 43 females (52.4%) felt this way "sometimes," 13 (15.4%) reported feeling low in confidence "frequently," and 3 (3.6%) felt this way "always." In contrast, among the male patients, 45 out of 77 (58.4%) expressed similar confidence issues. This group included 34 males (44.2%) who felt low confidence "sometimes," 4 (5.2%) who experienced it "frequently," and 7 (9.0%) who always felt a lack of confidence when interacting with peers. In both groups, a smaller portion reported rarely experiencing this lack of confidence 24 females (28.6%) and 32 males (41.6%).

Table 1: Confidence in interaction with peers due to acne

	Female N (%)	Male N (%)
Rarely	24 (28.6)	32 (41.6)
Sometimes	43 (52.4)	34 (44.2)
Frequently	13 (15.4)	4 (5.2)
Always	3 (3.6)	7 (9.0)
Total	84 (100)	77 (100)

Q-2 Appearance in Public Space

According to Table 2, half of the female population (42 out of 84, or 50%) and just over half of the male population (41 out of 77, or 53.2%) report feeling the urge to avoid public spaces due to their acne. Among the female respondents, 42 (50%) rarely feel this urge, while 30 (35.7%) experience it "sometimes," 9 (10.7%) "frequently," and 3 (3.6%) "always." In the male group, a similar trend is observed, with 36 respondents (46.8%) indicating they rarely feel the need to avoid public spaces. A further 25 males (32.5%) report experiencing this urge "sometimes," 10 (13%) "frequently," and 6 (7.8%) "always." These data suggest that both genders experience a comparable tendency to avoid public spaces due to acne-related self-consciousness, though a slightly higher proportion of males report feeling this urge more frequently.

Table 2: Appearance of patients in Public space

	Female N (%)	Male N (%)
Rarely	42 (50)	36 (46.8)
Sometimes	30 (35.7)	25 (32.5)
Frequently	9 (10.7)	10 (13)
Always	3 (3.6)	6 (7.8)
Total	84 (100)	77 (100)

Q-3 Relationship with Friends and Family

As shown in Table 3, a similar proportion of both female and male patients reported experiencing a negative impact of acne on their interpersonal relationships with friends and family. Specifically, 19 out of 84 female patients (22.6%) indicated that acne adversely affected their relationships, while 65 (77.4%) reported no such impact. Among male patients, 17 out of 77 (22.1%) reported a negative effect on relationships due to acne, with the remaining 60 (77.9%) indicating no impact.

Table 3: Relationship with friends and family

	Female N (%)	Male N (%)
Yes	19 (22.6)	17 (22.1)
No	65 (77.4)	60 (77.9)
Total	84 (100)	77 (100)

Q-4 Use of beauty filters/photo editing apps before uploading pictures on social media

Table 4 reveals a notable difference in the use of beauty filters or photo editing apps between female and male patients before uploading pictures on social media. Among the female population, 49 out of 84 (58.3%) reported using such apps, whereas 35 (41.7%) indicated they did not. In contrast, 27 out of 77 male patients (35.1%) reported using filters or editing apps, with a majority 50 (64.9%) indicating they did not engage in this practice.

Table 4: Use of beauty filters/photo editing apps before uploading pictures on social media

	Female N (%)	Male N (%)
Yes	49 (58.3)	27 (35.1)
No	35 (41.7)	50 (64.9)
Total	84 (100)	77 (100)

Q-5 Avoid Going to school/ college due to worsening acne

Table 5 illustrates the impact of acne on school or college attendance among female and male patients. Among females, 12 out of 84 (14.3%) reported feeling the need to skip school or college due to acne "sometimes," with the majority 51 (60.7%) reporting they "never" felt the need to miss school for this reason. Additionally, 21 (25%) reported "rarely" experiencing this need, and no female patients indicated they "frequently" avoided school. In the male population, 13 out of 77 (16.9%) reported a desire to avoid school due to acne, with 9 (11.7%) feeling this "sometimes" and 4 (5.2%) "frequently." Most male patients, however, did not feel the need to avoid school due to acne, with 52 (67.5%) reporting "never" and 12 (15.6%) reporting "rarely." These findings indicate that although the majority of both female and male patients do not feel compelled to skip school or college due to acne.

Table 5: Avoid Going to school/ college due to worsening acne

	Female N (%)	Male N (%)
Never	51 (60.7)	52 (67.5)
Rarely	21 (25)	12 (15.6)
Sometimes	12 (14.3)	9 (11.7)
Frequently	0	4 (5.2)
Total	84 (100)	77 (100)

Q-6 Negative impact on academic performance due to acne

Table 6 highlights perceptions of the impact of acne on academic performance among female and male patients. Among the female patients, 8 out of 84 (9.6%) expressed that acne negatively affects their academic performance, with 5 (6%) "agreeing" and 3 (3.6%) "strongly agreeing" to this statement. A majority of female respondents, however, did not perceive acne as detrimental to their academic performance, with 35 (41.1%) "strongly disagreeing" and 28 (33.5%) "disagreeing," while 13 (15.5%) remained "neutral." In the male population, a higher proportion 14 out of 77 (18.2%) reported that acne has a negative impact on their academic performance, with 11 (14.3%) "agreeing" and 3 (3.9%) "strongly agreeing." Similar to the female group, a substantial portion of males did not perceive acne as impacting their academic performance, with 36 (46.8%) "strongly disagreeing" and 19 (24.7%) "disagreeing," and 8

(10.4%) remaining "neutral." These results indicate that while the majority in both groups do not associate acne with a decline in academic performance, a higher percentage of male patients perceive a negative impact compared to their female counterparts.

Table 6: Negative impact on academic performance due to acne

	Female N (%)	Male N (%)
Strongly Disagree	35 (41.1)	36 (46.8)
Disagree	28 (33.5)	19 (24.7)
Neutral	13 (15.5)	8 (10.4)
Agree	5 (6)	11 (14.3)
Strongly Agree	3 (3.6)	3 (3.9)
Total	84 (100)	77 (100)

Q-7 Restriction on certain types of clothing items due to acne (e.g. Backless tops, off shoulders) Table 7 shows that a significant proportion of female patients feel compelled to restrict certain types of clothing due to acne, such as backless tops or off-shoulder styles. Among female respondents, 33 out of 84 (39.3%) reported feeling the need to avoid specific clothing items, while 51 (60.7%) did not feel restricted in their clothing choices due to acne. In contrast, only 12 out of 77 male patients (15.6%) reported similar restrictions in clothing, with the majority 65 (84.4%) indicating they did not avoid particular clothing items due to acne.

Table 7: Restriction among patients on certain types of clothing items due to acne (e.g. Backless tops, off shoulders)

	Female N (%)	Male N (%)
Yes	33 (39.3)	12 (15.6)
No	51 (60.7)	65 (84.4)
Total	84 (100)	77 (100)

Q-8 Restriction on food items (e.g. sour, spicy) due to acne

Table 8 presents data on food restrictions among patients due to acne, specifically regarding items perceived to exacerbate symptoms, such as sour or spicy foods. Among female patients, 37 out of 84 (44%) reported restricting certain food items to manage acne, while the remaining 47 (56%) did not feel the need for dietary restrictions. In the male group, 26 out of 77 (33.8%) reported restricting certain foods due to acne, while a majority 51 (66.2%) did not make such dietary changes. These findings suggest that a larger proportion of female patients than male patients believe that avoiding certain foods may help in managing their acne, indicating a possible gender-based difference in dietary management behaviours associated with acne.

Table 8: Restriction among patients on food items (e.g. sour, spicy) due to acne

	Female N (%)	Male N (%)
Yes	37 (44)	26 (33.8)
No	47 (56)	51 (66.2)
Total	84 (100)	77 (100)

Q-9 Preference on Acne control advice

Table 9 illustrates the preferences among patients for sources of acne control and management. Among female patients, the majority 60 out of 84 (71.4%) prefer consulting a dermatologist for acne treatment. A smaller proportion of females rely on other sources, with 18 (21.4%) turning to friends and family for advice, 5 (6%) seeking information from social media, and just 1 (1.2%) opting for beauty parlors. Similarly, among male patients, 54 out of 77 (70.1%) prefer consulting a dermatologist, while 19 (24.7%) seek advice from friends and family. A smaller number, 3 (3.9%), turn to social media for acne-related guidance, and 1 (1.3%) visit beauty parlors.

Table 9: Preference among patients on acne Control device

	Female N (%)	Male N (%)
Dermatologist	60 (71.4)	54 (70.1)
Friends & Family	18 (21.4)	19 (24.7)
Social Media	5 (6)	3.9 (3)
Beauty Parlor	1 (1.2)	1.3 (1)
Total	84 (100)	77 (100)

Q-10 Disturbances in routine activity among patients

Table 10 highlights the disturbances in routine activities among patients due to acne, with a total of 161 patients surveyed. The most common disruption was mental anxiety, affecting 37 out of 161 patients (23.19%). Other impacts included lack of interest in surroundings (17 patients, 10.82%), lethargy (9 patients, 5.67%), sleep disturbances (7 patients, 4.64%), and loss of appetite (3 patients, 2.06%). However, the majority of patients 86 out of 161 (53.6%) reported no significant disturbances to their daily routine. These findings suggest that while acne has a considerable impact on mental well-being, particularly anxiety, its effects on physical activities or appetite are less prevalent in most patients.

Table 10: Disturbances in routine activity among patients

	N (%)
Sleep Disturbances	7 (4.64)
Lack of interest in surroundings	17 (10.82)
Lethargy	9 (5.67)
Loss of Appetite	3 (2.06)
Mental anxiety	37 (23.19)
None	86 (53.6)
Total	161 (100)

Discussion

Acne is not merely a physical condition; it profoundly impacts the psychological well-being of adolescents, influencing their self-esteem, social interactions, and overall quality of life. As individuals navigate this critical developmental stage, the presence of visible skin conditions can lead to significant emotional distress and social withdrawal. Understanding these psychological ramifications is essential for developing effective interventions and support systems. This study aimed to explore the psychological effects of acne among adolescents in the Ahmedabad district, revealing several key insights regarding confidence in social interactions, avoidance behaviors, and lifestyle modifications. The findings highlight significant concerns regarding social interactions, self-perception, and lifestyle choices influenced by acne, underscoring its profound impact on mental health.

The psychological impact of acne on adolescents extends far beyond its physical manifestations, often leading to significant emotional distress and social challenges. In this study, a significant proportion of participants reported low confidence in social settings, with 71.4% of females and 58.4% of males expressing feelings of inadequacy. These findings underscore the adverse effects of visible skin conditions on self-esteem and social anxiety during this formative stage of life. Such findings align with existing literature that emphasizes the negative impact of skin conditions on self-image and peer relationships [16, 17]. The lack of confidence may stem from the internalization of societal beauty standards, which often equate clear skin with attractiveness and social acceptance. Adolescents with acne may perceive themselves as less desirable or socially acceptable, leading to heightened self-consciousness and fear of negative evaluation by peers [18]. This perceived inadequacy can hinder adolescents from participating fully in social interactions, potentially leading to isolation.

Acne can significantly impact an individual's psychological well-being, leading to behaviors such as avoiding public spaces. Many adolescents with acne experience feelings of embarrassment and self-consciousness, which can result in withdrawal from social situations.

The results revealed that approximately 50% of participants avoided public spaces due to acne. This behavior reflects a common coping mechanism where individuals withdraw from social environments to mitigate feelings of embarrassment or anxiety. The urge to avoid public spaces can be attributed to the fear of negative evaluation from peers, which is particularly pronounced during adolescence—a critical period for forming peer relationships [19]. Adolescents may internalize societal beauty standards that equate clear skin with attractiveness, leading to heightened self-consciousness and the belief that their appearance will be judged harshly by others [18]. Such avoidance can have detrimental effects on social development, limiting opportunities for interaction and reinforcing feelings of isolation.

Adolescence is a period marked by heightened sensitivity to appearance and peer acceptance, making skin conditions like acne particularly challenging. Interestingly, while a minority reported that acne negatively impacted their relationships with friends and family (22.6% of females and 22.1% of males), the majority indicated no significant effect. This discrepancy may suggest resilience among adolescents or the presence of supportive social networks that help mitigate the negative psychological impacts of acne. Supportive relationships can provide emotional validation and reduce feelings of isolation, allowing adolescents to cope more effectively with the stress associated with their appearance [20]. Furthermore, positive reinforcement from friends and family can enhance self-esteem and promote a more favorable self-image, counteracting potential adverse effects on interpersonal dynamics [21]. This highlights the importance of social support in fostering resilience among adolescents facing challenges related to skin conditions.

In the digital age, where social media platforms shape perceptions of beauty and self-worth, the use of beauty filters has become a pervasive trend among adolescents. The prevalence of beauty filter usage was significantly higher among females (58.3%) compared to males (35.1%). This trend highlights the influence of social media on self-image and suggests that adolescents may feel pressured to conform to unrealistic beauty standards. The reliance on digital alterations can further distort self-perception and contribute to body image issues, particularly in a society where visual representation is increasingly tied to self-worth [22]. This phenomenon can lead to a cycle of negative self-evaluation as adolescents compare their unfiltered appearances with idealized images presented online.

Adolescents often face unique challenges balancing personal struggles with academic responsibilities, and skin conditions like acne can add to these difficulties. While most participants did not report skipping school or college due to acne, a small percentage indicated that their academic performance was negatively affected. This finding suggests that while acne may not universally disrupt educational engagement, it can still pose challenges for some individuals. The psychological distress associated with acne—including anxiety and self-consciousness—can hinder concentration and motivation in academic settings [18].

Personal choices regarding clothing and diet often reflect how adolescents cope with acne's visible effects. The study found that clothing restrictions were more common among females (39.3%) than males (15.6%), indicating gender differences in how acne influences personal expression through attire. This behavior may stem from societal pressures that emphasize appearance, leading females to feel compelled to dress in ways that conceal their skin condition [19]. Additionally, dietary changes were more frequently reported by females (44%) compared to males (33.8%), suggesting that concerns about acne may lead to lifestyle modifications aimed at managing skin health.

The psychological burden of acne extends beyond appearance, impacting emotional and mental well-being. Mental anxiety emerged as the most common disruption reported by participants (23.2%), followed by lack of interest and lethargy. These results highlight the broader mental health implications associated with acne; the stress of dealing with visible skin conditions can lead to significant emotional turmoil [23]. The persistent worry about appearance often contributes to feelings of inadequacy and depression, emphasizing the importance of integrating mental health support into dermatological care for adolescents.

Conclusion

This study offers unique insights into the psychological ramifications of acne among adolescents in the Ahmedabad district, highlighting the interplay between physical appearance and mental health. One of the key contributions of this research is its focus on the diverse psychological effects of acne, including social anxiety, avoidance behaviors, and the influence of social media on self-perception. By employing a cross-sectional electronic survey design, the study effectively captured the experiences and coping mechanisms of adolescents, providing a nuanced understanding of how acne impacts their daily lives. The reliance on self-reported data may introduce biases, as participants might underreport negative feelings or overemphasize their coping strategies. The sample size, while adequate for initial findings, may not fully represent the broader adolescent population in different socio-economic or cultural contexts. Future research should aim to address these limitations by employing longitudinal designs that can track changes in psychological well-being over time and assess the long-term effects of acne treatment. Additionally, exploring interventions that integrate psychological support within dermatological care could enhance outcomes for adolescents struggling with both skin health and mental health issues. By expanding the scope of research to include diverse populations and settings, we can better understand and address the complex challenges faced by adolescents with acne.

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