



A Review on Indian Demographic Acne Problem

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ABSTRACT

Studies have concluded that A leads to significant morbidity, which is linked to psychological disorders including low self-esteem, sadness, and anxiety, all of which have a detrimental effect on quality of life. Studies have been proving for ages that it affects around 9.4 percent of the world's population. Various studies also concluded that "although adult acne is more common in women (5%–12%) than in men (3%), it is nevertheless a significant concern for those affected". Hence, studies concluded that it is "one of the most common chronic skin diseases that needs urgent treatment, and selecting the right anti-acne medicines is crucial for an effective treatment plan". Thus, in our review, we have discussed A in terms of pathogenesis, symptoms, classification, and treatment aspects of Indian population.

Key words: Pathogenesis, symptoms, classification, treatment aspects, Indian Population.

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INTRODUCTION

Numerous studies have found that the "clogging and/or inflammation of pilosebaceous units, which are hair follicles that also contain sebaceous glands, is the primary cause of the common chronic skin disease known as acne vulgaris".[1] In addition, research has concluded that it may manifest as "inflammatory lesions such as papules and pustules, non-inflammatory lesions such as microcomedones, or a combination of the two. It primarily manifests itself in regions of the skin that have a high concentration of sebaceous follicles, such as the face, upper chest, and back".[2] Research has found that AV is a highly prevalent condition, affecting around 85% of individuals throughout their lifetime. It is most commonly experienced during adolescence.[3] In addition, research has found that "acne vulgaris (AV) can continue to affect individuals into adulthood. A study showed that 50.9% of women between the ages of 20 and 29 had acne, compared to 26.3% of women between the ages of 40 and 49".[4] Additionally, research has shown that female patients make the majority of visits to dermatologists for acne. Additionally, a significant portion of these visits are made by women over the age of 25.[5] Experts have also concluded that these people may have painful, nodular acne (A) that may leave permanent scars on their bodies and minds. Other than physical scars, its most significant after-effects are shame and low self-esteem [6, 7], and in severe instances, despair and even suicide. One study found that 7.1% of acne patients also had suicidal thoughts. [8] Eighty to ninety percent of teens, according to some estimates [9,10 ,11], suffer from acne at some point. Rural areas reportedly have far lower rates.[12].Thus, in our review we have discussed about A in Indian Population.

SYMPTOMS [13]

1. Seborrhea (Scaly red skin)
2. Comedone (blackhead & Whitehead)
3. Papule (Pinhole)
4. Nodules (Large Papule)
5. Pimple
6. Scarring
7. Pain
8. Tenderness
9. Erythema

PATHOGENESIS WITH LITERATURE REVIEW [14]

Studies have also concluded that the “formation of acne lesions is caused by four key pathogenic processes. These include an alteration of follicular keratinization that results in comedones, increased and altered sebum production under androgen control, follicular colonization by Propionibacterium acnes, and complex inflammatory mechanisms that involve both innate and acquired immunity. Research into genetics (twin studies) family history of severe acne was studied by Bataille et al. in 2002. Wei et al. (2010), diet (glycemic index), and metabolic syndrome consumption of chocolate (Grant and Anderson, 1965; Magin et al., 2005) and dairy products (Adebamowo et al., 2006; Adebamowo et al., 2008; Di Landro et al., 2012); and environmental variables (smoking) have been shown to increase the risk of developing colorectal cancer (Ismail et al., 2012; Kwon et al., 2012; Smith occlusive cosmetics; Klaz et al. (2006); Schafer et al. (2001); and other studies on occlusive makeup Other factors (such as occupational exposures and Plewig et al., 1970), like these, also play a role in the etiology of acne.[14]Studies have also concluded that the pathophysiology of acne in adult women is extremely complicated, according to studies that have been conducted. Androgens play a major role in androgen levels (Harper, 2008; Lucky et al., 1994; Lucky et al., 1997), as demonstrated by the response of acne in adult women to hormonal treatments, particularly in the context of hyperandrogen disorders like polycystic ovary syndrome (PCOS) and the use of hormone-based therapies like oral contraceptives and anti-androgen medications in women with normal androgen levels. In addition, studies have also shown that the absence of acne in androgen-insensitive women (Imperato-McGinley et al., 1993; Thiboutot, 2004) and the increasing levels of dehydroepiandrosterone sulfate in association with the onset of acne in premenarchal girls and a subset of patients with PCOS also play a major role (Lucky et al., 1994; Chen et al., 2011). Because sebaceous glands include androgen receptors, androgens may promote sebum production in these glands.” [14]

CLASSIFICATION [2,15,16]

Based on Mild, Moderate & Severe

1. **“COMEDONAL ACNE** – Studies have also concluded that this may be characterized by the presence of open (blackheads) and closed (whiteheads) comedones but no evidence of any inflammatory papules or nodules.
2. **MILD ACNE** - Studies have also concluded that it includes the presence of comedones and occasionally inflammatory lesions, according to studies that have been conducted. Open and closed comedones that are mostly limited to the face.
3. **MODERATE ACNE** – Research has also found that it involves the presence of comedones, inflammatory papules, and pustules. The number of inflammatory lesions is higher in cases of moderate to severe inflammatory acne, affecting both the face and the trunk of the body.
4. **SEVERE NODULAR ACNE** -Research has also found that it can be described as the existence of comedones, inflammatory lesions, and large nodules. The nodules, which are painful bumps located under the skin, typically have a diameter larger than 5 mm. Scarring can also be a possible outcome. There are nodules found on the face and trunk. This particular type is also referred to as nodulocystic acne, as it was also classified as cysts.”

TREATMENT

TOPICAL THERAPY [17,18,19]

Studies have also concluded that this includes “benzoyl peroxide ratios in the form of washes, lotions, creams, and gels with concentrations of 2.5–10%.”[17] Studies futuer concluded that “ it does not increase antibiotic resistance in microorganisms, unlike antibiotics”. Some of the most common topical retinoids used today are tretinoin, adapalene, isotretinoin, metretinide, retinaldehyde, tazarotene, and diquat retinol glucuronide (DQG-retinoylglucuronide).[18] In combination with topical erythromycin or clindamycin, benzoyl peroxide is utilized for treatment. It's probable that tretinoin and benzoyl peroxide might work better together. Studies concluded that “reducing inflammatory and noninflammatory acne lesions with a combination of a topical retinoid and an antibiotic is more effective than with either treatment alone”.[19]

SYSTEMIC THERAPY[2,20]

In addition, studies have concluded that “oral antibiotics such as tetracyclines are now utilized for the treatment of mild to severe inflammatory acne. There are further treatments available for acne, such as macrolides, co-trimoxazole, and trimethoprim. Cephalosporins and sulphonamides should not be used to treat acne since there is insufficient evidence that they are both safe and effective. The two most frequent adverse effects are vaginal candidiasis and digestive upset. Isotretinoin is a retinoid that may be taken

orally and has been shown to be particularly efficient for the treatment of severe nodular acne". [2, 20] For severe nodular acne, isotretinoin treatment must be continued for one to two months. Oral isotretinoin treatment for acne might take anywhere from four to six months. [20] About eighty percent of people say they feel better after completing a single session, and more than fifty percent say they are in full remission. [2] Studies have concluded that a second course is needed by around 20% of people. [2] The risk of mental side effects such as depression and suicidality is not clearly increased by the use of oral retinoids. [2, 20] Due to its potential for birth defects, isotretinoin usage in women of reproductive age is closely monitored. [2] A woman of reproductive age may take isotretinoin only if she has had a negative pregnancy test and is using a reliable method of contraception. [2]

HARMONAL THERAPY [16]

Studies have concluded that it may be required in "female patients who have severe seborrhoea, clinically obvious androgenetic alopecia, seborrhea/acne / hirsutism / alopecia (SAHA) syndrome, late-onset acne (acne tarda), and who have established ovarian or adrenal hyperandrogenism. To inhibit the effects of androgens on the sebaceous gland and, most likely, follicular keratinocytes as well, is the primary goal of the hormone therapy approach to acne treatment. In the treatment of acne, oral antiandrogen medications, including spironolactone and cyproterone acetate, are useful".

PHYSICAL THERAPY [16]

Studies have concluded that with a "comedone extractor, a tiny needle, or a pointed blade, both open and closed comedones may be manually removed. The use of a topical retinoid before this procedure enhances its success. Gentle cautery and laser puncture of macrocomedones may also be done. The risks of tissue injury, inadequate extraction, and refilling all contribute to the restrictions".

LITERATURE REVIEW

Durai et al.,(2015) developed a one-of-a-kind study report to explore the impact of AV and other elements that have the potential to have an influence on quality of life. They discovered that the majority of the people who took part in their study were students. Out of the total number of participants, 103 (or 73.6% of the total) were students. The most prevalent type of A lesion was a comedone, which made up 133 out of a total of 133 cases (95%), and the face made up 139 out of a total of 139 cases (99.3%). It was shown that the majority of the participants, 66 out of 47.1%, suffered from grade 1 acne. The DLQI had a mean score of 6.91, whereas the CADL only had a mean score of 5.2. Between the two separate groups of score data, there existed a correlation that might be considered to be statistically significant. It was shown that factors such as age, employment situation, marital status, the make-up of the family, and treatment history had a significant impact on a person's quality of life. Alcohol, smoking, and diet had no discernible influence on the overall quality of life. They come to the conclusion that, despite the fact that A did have an impact on the patients' quality of life, this impact was less severe in our study in comparison to the impact that A did have in their study. This is because our study focused on a smaller population of patients than theirs did. In order to be able to provide acne sufferers with treatment choices that are both more successful and more suitable, it is necessary that medical practitioners include quality of life metrics in the management of acne patients.[21]

George et al.,(2018) undertook first-of-its-kind research with the goal of analyzing the many factors that contribute to or cause adult Indians to develop AV. According to their research, the majority of patients who suffered from adult acne were between the ages of 26 and 30 years old, and there was a distinct female predominance. Acne that lasted for a long time was far more common than acne that appeared suddenly. According to 47.3% and 40% of patients, respectively, food items and cosmetics were the cause of exacerbations. Stress caused exacerbations in 32.7% of patients, while sun exposure and perspiration caused exacerbations in 26.4% and 23.6% of patients, respectively. Approximately 48 percent of patients had first-degree relatives who either had acne in the past or still did. The majority of the female patients suffered from a premenstrual flare of A, which was much more common among those who suffered from persistent A. For the vast majority of patients, pregnancy had no impact on their acne. It was shown that 44.5% of patients had seasonal fluctuation, with the majority of those patients experiencing an exacerbation during the summer months. They arrive at the conclusion that A as a disease is one that is more chronic, one that continues into adulthood, and one that needs treatment well into one's forties. Post-adolescent acne, on the other hand, is more common in girls than in boys, in contrast to teenage acne, which is more common in males. It is satisfying from a therapeutic standpoint to be able to recognize the triggers and aggravating factors that are involved and to be able to manage them.[22]

Budamakuntla et al., (2020) conducted original research to look into the prevalence, clinical features, contributing etiological factors, and aggravating factors of acne in adults. The goal was to find plausible etiological factors and effective ways to treat acne in a variety of age groups. They found that Grade II acne was the most common kind of acne (47%) and that the majority of patients had inflammatory papulopustular acne (51%). Both of these findings were made public. It was revealed that a measure of how severe the acne was may be found in the prevalence of hyperpigmentation (35%), as well as scarring (29%). The use of cleansers and moisturizers was one of the most common additional therapies for the management of acne. The patients were prescribed cleansers for 53% of the patients, while moisturizers were prescribed for 43% of the patients. The combination of adapalene and benzophenone-2 (BPO) was the most often prescribed topical treatment (34%), followed by the combination of adapalene and clindamycin (29%). They come to the conclusion that isotretinoin was the most commonly prescribed medication in all grades of acne, comprising forty percent of the patients.[23]

Kandhari S et al.,(2022) did a review paper on the professional consensus about acne management in India. They have arrived at the conclusion that A is a widespread inflammatory skin condition that has a significant and detrimental effect on an individual's quality of life. A significant amount of study has been done on the illness as well as the treatments for it. This consensus article gives the viewpoint of medical professionals on the clinical presentation of A, factors of A, assessment and management of A, as well as A management strategies used in standard clinical practice. Because effective acne drugs target one or more pathways that are involved in the development of acne, many experts believe that combination treatments are advantageous for improving both acne and PIH at the same time. Accurate diagnosis, evaluation, and assessment of acne were also stressed by experts in order to exclude the possibility of other conditions. The experts agree that patient education and counseling may play a significant role in improving treatment effectiveness and adherence, and they support this role.[24]

Shah et al., (2023) did a prospective, randomized, comparative study in order to investigate the efficiency of the aforementioned. They found that the percent change in inflammatory and non-inflammatory lesions in the minocycline 4% arm was significantly larger than in the clindamycin 1% arm on week 12 ($p < 0.0001$ for both comparisons). This was the case in the arm that received minocycline at a concentration of 4%. This was found in the arm that received 4% minocycline. At weeks 9 and 12, the success rate of the IGA treatment was significantly greater in the minocycline arm compared to the clindamycin arm. The p-value for this difference was 0.001, whereas the p-value for the clindamycin arm was 0.015. The minocycline arm displayed significantly superior parameter performance as compared to the clindamycin arm. The tolerability assessment found this to be the case. Minocycline was found to be more effective than clindamycin in a study that only included teenagers. They come to the conclusion that comparative assessment led to a significantly enhanced performance of minocycline gel at 4% compared to clindamycin gel at 1% in the Indian population. This was the conclusion that they reached. After putting the minocycline gel through its paces, this was the conclusion that could be drawn. Because of this, it is a common option for the treatment of acne in India, notwithstanding the severity of the condition being treated, ranging from minor to severe.[25]

CONCLUSION

Studies have concluded that A is a skin condition that most often affects teenagers and is characterized by blackheads, whiteheads, and inflammatory papules. Additionally, studies also concluded that the adolescent period is a complicated part of the life cycle that is characterized by various changes on many levels, including biological, physical, psychological, and social. Additionally, over the course of the previous several years, there has been a tremendous amount of advancement on this topic yet, not all advancements can be applied universally.

REFERENCES

1. Aslam, I., Fleischer, A., & Feldman, S. (2015). Emerging drugs for the treatment of acne. Expert opinion on emerging drugs, 20(1), 91-101.
2. Dawson, A. L., & Dellavalle, R. P. (2013). Acne vulgaris. *Bmj*, 346.
3. Bhate, K., & Williams, H. C. (2013). Epidemiology of acne vulgaris. *British Journal of Dermatology*, 168(3), 474-485.
4. Collier, C. N., Harper, J. C., Cantrell, W. C., Wang, W., Foster, K. W., & Elewski, B. E. (2008). The prevalence of acne in adults 20 years and older. *Journal of the American Academy of Dermatology*, 58(1), 56-59.
5. Yentzer, B. A., Hick, J., Reese, E. L., Uhas, A., Feldman, S. R., & Balkrishnan, R. (2010). Acne vulgaris in the United States: a descriptive epidemiology. *Cutis*, 86(2), 94-99.
6. Goodman, G. (2006). Acne and acne scarring: the case for active and early intervention. *Australian family physician*, 35(7).

7. Purvis, D., Robinson, E., Merry, S., & Watson, P. (2006). Acne, anxiety, depression and suicide in teenagers: a cross-sectional survey of New Zealand secondary school students. *Journal of paediatrics and child health*, 42(12), 793-796.
8. Picardi, A., Mazzotti, E., & Pasquini, P. (2006). Prevalence and correlates of suicidal ideation among patients with skin disease. *Journal of the American Academy of Dermatology*, 54(3), 420-426.
9. Taylor, M., Gonzalez, M., & Porter, R. (2011). Pathways to inflammation: acne pathophysiology. *European Journal of Dermatology*, 21(3), 323-333.
10. Lynn, D. D., Umari, T., Dunnick, C. A., & Dellavalle, R. P. (2016). The epidemiology of acne vulgaris in late adolescence. *Adolescent health, medicine and therapeutics*, 13-25.
11. Goldberg, D., & Berlin, A. (2011). *Acne and rosacea: epidemiology, diagnosis and treatment*. CRC Press.
12. Spencer, E. H., Ferdowsian, H. R., & Barnard, N. D. (2009). Diet and acne: a review of the evidence. *International journal of dermatology*, 48(4), 339-347.
13. Adityan, B., Kumari, R., & Thappa, D. M. (2009). Scoring systems in acne vulgaris. *Indian Journal of Dermatology, Venereology and Leprology*, 75, 323.
14. Tan, A. U., Schlosser, B. J., & Paller, A. S. (2018). A review of diagnosis and treatment of acne in adult female patients. *International journal of women's dermatology*, 4(2), 56-71.
15. Zaenglein, A. L., Graber, E. M., Thiboutot, D. M., & Strauss, J. S. (2008). Acne vulgaris and acneiform eruptions. *Fitzpatrick's dermatology in general medicine*, 8, 897-917.
16. Kamra, M., & Diwan, A. (2017). Acne: current perspective. *Journal of Applied Pharmaceutical Research*, 5(3), 01-07.
17. Benner, N., & Sammons, D. (2013). Overview of the treatment of acne vulgaris. *Osteopathic Family Physician*, 5(5), 185-190.
18. Hoeger, P. H., & Irvine, A. D. YanAC." Chapter 79: Acne". *Harper's Textbook of Pediatric Dermatology* 2013.
19. Anderson, L. (2006). *Looking Good: The Australian guide to skin care, cosmetic medicine and cosmetic surgery*. Australasian Medical Publishing.
20. Schnopp, C., & Mempel, M. (2011). Acne vulgaris in children and adolescents. *Minerva pediatrica*, 63(4), 293-304.
21. Durai, P. C. T., & Nair, D. G. (2015). Acne vulgaris and quality of life among young adults in South India. *Indian journal of dermatology*, 60(1), 33.
22. George, R. M., & Sridharan, R. (2018). Factors aggravating or precipitating acne in Indian adults: A hospital-based study of 110 cases. *Indian journal of dermatology*, 63(4), 328.
23. Budamakuntla, L., Parasramani, S., Dhoot, D., Deshmukh, G., & Barkate, H. (2020). Acne in Indian population: An epidemiological study evaluating multiple factors. *IP Indian J Clin Exp Dermatol*, 6(3), 237-242.
24. Kandhari S, Girdhar M, Kulkarni DS, Arsiwala S, Sakhiya J, Karthikeyan K, et al.(2022) Expert consensus on the management of acne in India. *Int J Res Med Sci*,10:980-90.
25. Shah, B., Mistry, D., Gonsalves, N., Vasani, P., Dhoot, D., & Barkate, H. (2023). A Prospective, Randomized, Comparative Study of Topical Minocycline Gel 4% with Topical Clindamycin Phosphate Gel 1% in Indian Patients with Acne Vulgaris. *Antibiotics*, 12(9), 1455.

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