Ethnic/Population Characteristics of Acne Vulgaris: Clinical Significance and Treatment Strategies – Literature Review

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Abstract

Background: Despite the fact that acne does not represent a life-threatening condition, it has a significant impact on an individual's psycho-emotional state. Acne markedly reduces quality of life, self-esteem, hinders career advancement, and affects individual well-being.
Aim: The aim of the study was to analyze the ethnic and population characteristics of acne vulgaris and assess their clinical significance and impact on treatment strategies.
Methods A literature review and data analysis were conducted in PubMed, Cochrane Library, Google Scholar, and Embase databases for the period 1998-2024. 54 articles related to ethnic/population characteristics of acne were selected for analysis.
Results: According to the analyzed literature, it emerges that the ethnic/population characteristics of acne are determined by skin characteristics themselves. The biological foundations of acne manifestation in different ethnic groups result from complex differences in skin anatomy and physiology. In individuals of African and African-American origin, papulo-pustular and nodular forms are prevalent; in individuals of Eastern and Middle Eastern origin, severe forms and markedly pronounced inflammatory reactions are frequent; in individuals of Asian origin, acne is characterized by more inflammatory (papulopustular) eruptions, while in individuals of Caucasian origin, comedones are most commonly found. According to literature considering physiological ethnic/population differences - skin thickness, sebaceous gland activity, melanogenesis - is of great importance in developing effective acne treatment tactics. Ethnic characteristics are extremely important from a therapeutic approach perspective as well, since ethnic groups respond differently to standard acne therapy, which is related to genetic, physiological, and environmental factors.
Conclusioins: Understanding the ethnic/population characteristics of acne is essential for proper selection of treatment tactics. **(TCM-GMJ August 2025; 10 (2): P47-P50)**

Keywords: Acne Vulgaris, Ethnic Dermatology, Post-inflammatory Hyperpigmentation, Acne Treatment, Ethnic/Population Characteristic Of Acne, Phototype Of Skin

Introduction

Acne vulgaris represents one of the most widespread diseases, affecting 9,4% of the world's population. The lifetime risk of acne development reaches 85% (1). Despite the fact that acne does not represent a life-threatening condition, it has a significant impact on an individual's psycho-emotional state (2). Acne markedly reduces quality of life and self-esteem, hinders career advancement and affects individual well-being (3,4,5,6,7). Acne is considered a multifactorial condition where environmental factors, along with genetic factors, have significant influence on its development. The importance of epigenetic factors should also be considered. Etiological factors of acne include: genetic factors, endocrinological disorders (such as polycystic ovary syndrome), use of comedogenic cosmetic products, certain medications (e.g., steroids, anticonvulsants, lithium), excessive sun exposure, mechanical irritation, including self-irritation. Insulin resistance and stress may also play certain roles.

The aim of the study was to analyze the ethnic and population characteristics of acne vulgaris and assess their clinical significance and impact on treatment strategies.

Methods

A literature review and data analysis were conducted in PubMed, Cochrane Library, Google Scholar, and Embase databases for the period 1998-2024. Fifty-four articles related to ethnic/population characteristics of acne were

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selected for analysis.

Results and discussion

The frequency of acne varies according to ethnic groups, populations, age, and gender (8,9). It appears that ethnic characteristics of acne are related to genetic factors, physiological characteristics of the skin, environmental factors, and lifestyle (10). Despite acne being a global phenomenon and its basic pathophysiology being similar in all humans, there are significant differences in its clinical manifestations and treatment response among different ethnic/population groups. According to data by Callander VD and Baldwin H, acne belongs to the most frequent dermatological diseases in African Americans, Latino Americans, and Asians (11). Its frequency, according to a broad multi-ethnic study, reaches up to 37% in African Americans, 23% in Indians, 32% in Spanish speakers, 30% in Asians, and 24% in Caucasians (*12*). Epidemiological studies show that acne can develop at any age, including in postmenopausal women, though it most commonly manifests during sexual maturation and adolescence, in the 15-20 year period (13). According to Gollnick and co-authors' data, acne is characterized not only by racial-population distribution characteristics but also by differences in the arrangement of acne elements, development of its clinical forms, post-inflammatory hyperpigmentation, and types of scarring (14).

The ethnic differences that manifest during acne are extremely interesting. In the Caucasian population, comedones are more frequently found (15). In Asians, the eruption is more inflammatory (16). In individuals of African and Afro-American origin, papular and nodular forms are frequent. In individuals of African origin, eruption near hair is often noted, which is related to their use of special hair softening products (17). Also, according to a 2023 study conducted by da Rocha, acne is more frequently noted in individuals with dark skin color compared to those with light skin color (18).In different ethnic groups, the sizes of pores in the skin epidermis also differ - African American and Latino American women have larger pores compared to Asian women, which may influence the severity of acne and arrangement of elements (19). According to a study conducted on 2,585 women living in different countries, it was determined that the largest pores on the face were noted in Brazilian women, while the smallest were in Chinese women (20).

Ethno-specific changes in pathophysiology deserve separate mention. Sebum production, which represents a significant factor in acne pathogenesis, differs among different ethnic groups (21). Studies have shown that sebum production is higher in individuals of African and Afro-American origin than in Caucasian and Asian populations (22). According to Grimes 2004 data, individuals of African origin more frequently have oily skin, which promotes acne development (23).According to various data, the structure of the outer layer of the skin - stratum corneum - differs among different ethnic groups. According to A.W. Rewling's data, in individuals of African origin, the stratum corneum is more compact, while in the Asian population, the stratum corneum is thinner and less tightly organized (24). These differences influence the development of follicular hyperkeratosis, which represents a significant component of acne pathogenesis (25). According to Derrick C Wan's data, there are also differences in the severity of inflammatory reactions (26).

Skin color, which is determined by melanin content, plays a significant role in the development of post-acne complications (27). In individuals with dark skin color, such as those of African, Latino American, and South Asian origin, as well as in individuals with dark skin types (Fitzpatrick scale 4-6), more severe inflammatory changes and post-inflammatory hyperpigmentation are noted after acne, which is due to enhanced melanocyte activity (12,28,29).Studies determined that post-inflammatory hyperpigmentation was noted in 65,3% of African Americans, 52,7% of Latino Americans, and 47,4% of patients of Asian origin. Individuals with dark skin types are often more troubled by post-inflammatory hyperpigmentation itself than by acne elements (30,31,32). Considering this is important when developing treatment regimens. According to research results, post-inflammatory hyperpigmentation correlates with the degree of skin pigmentation - the darker the skin type, the more intense the post-inflammatory hyperpigmentation and the longer it persists (33). This emphasizes the necessity of developing preventive strategies to reduce or avoid post-inflammatory pigmentation in ethnic patients with dark skin.It should be noted that in Africans, post-inflammatory hyperpigmentation also persists longer, while in Asians, erythema is noted along with hyperpigmentation (34). The type and severity of post-acne scarring also differ among ethnic groups (35). Hypertrophic scars are more frequently found in individuals of African, Asian, and Latino American origin, while atrophic scars predominate in individuals of Caucasian origin (36,37). This is related to the disturbed balance of collagen synthesis and degradation, which differs among different ethnic groups (38,39).The development of keloid scars with considerably high probability near the jawbone and on the body in individuals of Caucasian origin is often associated with severe acne course (33).

Considering physiological ethnic/population differences - skin thickness, sebaceous gland activity, melanogenesis - is of great importance in developing effective acne treatment tactics. Ethnic characteristics are extremely important from a therapeutic approach perspective as well, since ethnic groups respond differently to standard acne therapy, which is related to genetic, physiological, and environmental factors (40).

Topical retinoids (tretinoin, adapalene, tazarotene) are widely used for acne treatment (41). In African, Latino American, and Asian populations, these preparations often cause acute irritation, as well as erythema and exfoliation (42,43). According to Verallo-Rowell's data, to reduce effects, it is recommended to start with treatment low concentration of topical retinoids and gradually increase the concentration (44).

It should also be considered that in individuals with dark skin types, benzoyl peroxide use may cause skin drying,

irritation, and possibly temporary hypopigmentation, and therefore low concentration (2.5%) preparations are better tolerated in this population (30).

Regarding antibiotic therapy effectiveness - studies have determined that it is similar across ethnic groups (45). It should be noted that according to Shah SK and co-authors' data, tetracycline-class antibiotics may cause photosensitization, which is particularly problematic in dark-skinned patients due to the risk of post-inflammatory hyperpigmentation (46,47).

According to studies by Alexis AF and co-authors, isotretinoin use in dark-skinned patients is associated with the risk of post-inflammatory hyperpigmentation (48). Regarding patients of Asian origin, they often respond better to low doses of isotretinoin than patients of Caucasian origin according to studies (49,50).

For hormonal acne treatment in women, representatives of different ethnic groups respond differently to hormonal therapy, including oral contraceptives and spironolactone (51,52). However, it should be noted that women of Latino origin may more frequently require hormonal therapy due to the high prevalence of PCOS (53).

It is considered appropriate to consider ethnic group characteristics when performing cosmetic procedures. During laser therapy, individuals with dark skin have a higher risk of post-inflammatory hyperpigmentation, and specific parameters are also needed for different skin types (54).

Conclusion

Considering the physiological ethnic/population differences of acne - skin thickness, sebaceous gland activity, melanogenesis - is of great importance in developing effective acne treatment tactics. It is also important to determine etiological factors and clinical forms of acne in developing adequate treatment strategies.

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