



# Skin Spectrum™

## QUARTERLY

The Journal of *Ethnodermatology*™



# Psychosocial impact of acne in skin of color

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## Welcome to the preview edition of SSQ. Our vision: A future where every person receives optimal dermatological care

It is my pleasure to welcome you to this special preview edition of *Skin Spectrum Quarterly*<sup>™</sup>: *The Journal of Ethnodermatology*<sup>™</sup>. As Medical Editor, I am excited to present this new journal focused on advancing skin health for all.

In our increasingly diverse and connected world, understanding how skin health, disease, and treatment vary across populations is more important than ever. While great strides have been made in dermatology, there remain gaps in knowledge and disparities in care. Traditionally underrepresented populations face higher rates of misdiagnosis, inadequate treatment, and poor outcomes for many skin conditions.

*Skin Spectrum Quarterly* seeks to help close these gaps by fostering a global, inclusive dialogue on ethnodermatology. We provide a platform to publish high-quality original research, case studies, reviews, and observations related to skin health in populations of all Fitzpatrick skin types and ethnicities worldwide.

Our vision is a future where every person receives optimal dermatological care that considers their unique genetic, ethnic, and cultural essence. We consider that each one of us is “ethnic,” and comprehensive skin health begins with comprehending each patient as an individual. The journal's ethos is that comprehensive, equitable skin health is achievable for all through research, discovery, and sharing of knowledge across borders.

*Skin Spectrum Quarterly* aims to accelerate discoveries and disseminate new observations at the intersection of clinical dermatology, cultural competence in healthcare, and emerging genetic findings in skin research.

The vision behind this journal is to foster a worldwide exchange of knowledge across the spectrum of skin types and ethnicities. We aim to publish original research, clinical perspectives, reviews, and case reports to further understand skin health in global populations. The journal will cover topics including pigmentary disorders, hair and nail conditions, infectious diseases, immune-mediated diseases, skin cancer, pediatric dermatology, cosmetic dermatology, and community skin health.

This preview edition offers a small sample of the important work to be published. I want to thank our pioneering authors, reviewers, and editorial staff. We aim to disseminate practice-changing observations to improve skin health for all people. I welcome your submissions, communications, and feedback as we embark on this journey together.

*Sincerely,*

**Animesh A. Sinha, MD, PhD**  
**Medical Editor**



**Animesh A. Sinha, MD, PhD** is a Professor in the Department of Dermatology, University at Buffalo, Buffalo, N.Y. Following the completion of his MD degree in 1982 from the University of Alberta, Dr. Sinha received his PhD degree (Medical Sciences – Immunology) in 1986 from the same institution. He was awarded the prestigious Centennial Fellowship from the Medical Research Council of Canada to subsequently pursue post-doctoral research at Stanford University in the Department of Microbiology and Immunology. Dr. Sinha's subspecialty training in dermatology was completed at Yale University/Yale-New Haven Hospital. Dr. Sinha is a board-certified dermatologist whose professional goals are aimed at bridging the bench to the bedside.

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## Peculiarities of psoriasis in a Black African cohort: A histopathologic study

**Yvette Miller-Monthrope, MD, MSc, FRCPC**, comments on Enigbokan OA, Ogun GO, Ogunbiyi AO, George AO: *Ann Ib Postgrad Med* June 2023; 21(1):35–40.

### □ The presumed rarity of psoriasis in West Africa has led to a shortage of studies examining the histopathology of the condition in this setting

The aim of this study was to assess the frequency various histopathologic features of psoriasis occur in the patients at the University College Hospital in Ibadan, Nigeria, and identify any peculiarities that exist in these features in Black African patients.

Researchers recruited patients clinically diagnosed with psoriasis between Jan. 2015 and Oct. 2016. All patients were offered skin biopsy, and the collected tissue was examined histopathologically.

Researchers recruited patients clinically diagnosed with psoriasis between Jan. 2015 and Oct. 2016. All patients were offered skin biopsy, and the collected tissue was examined histopathologically.

A total of 63 patients were seen over the study period but only 48 (76.2%) gave consent for biopsy and had histopathologic assessment of the biopsies. Of the 48, plaque psoriasis was the most frequent presentation in 44 patients, and two having erythrodermic psoriasis with one patient each had pustular and guttate psoriasis. Since there were so few examples of the other clinical types, the researchers decided to only analyze histologic reports of patients with plaque psoriasis.

Overall, 44 patients with plaque psoriasis were analyzed. The mean age of the patients studied was  $39.84 \pm 20.97$  years. The ratio of male to female participants was roughly equal.

In decreasing order of frequency, the most commonly identified epidermal changes were:

- acanthosis
- hypogranulosis
- hyperkeratosis
- elongation of rete ridges

In decreasing frequency order, the most constant dermal features were:

- dermal infiltration by inflammatory cells
- dilatation of superficial dermal vessels

The authors note that Munro's micro abscesses were found in fewer than half of the patients biopsied, though such abscesses occurred more frequently in females compared to males. Some patients were found to have atypical changes, such as dermal melanophages and periadnexal infiltration by inflammatory cells.

In their conclusion, the authors write the histopathologic features they found were similar to those that have been established in the literature, though some features—Munro's micro abscesses and Kogoj's spongiform pustules—were seen less frequently than expected. They suggest histologic diagnosis of psoriasis should be considered when Munro's micro abscesses are absent and the other more common features in keeping with psoriasis are present.

### COMMENT

I was pleased to see this investigation into the histopathologic aspects of psoriasis in a West African population.

There is a need for more research into how skin conditions differ both clinically and histologically across all skin tones.

While this study had a relatively small sample size of 44 patients, the authors did see some potentially important differences in biopsy features compared to the typically reported histopathologic findings.

One interesting takeaway for me was that spongiosis, typically seen in eczematous dermatitis, was present in 22.7% of the studied lesions. In addition, melanophages were also present in some of the lesions, in support of post inflammatory pigmentary changes clinically seen in skin of color patients. Finally, the authors suggest occasional hair loss observed in psoriatic lesions could explain the periadnexal infiltration observed in some of the biopsies, however as follicular psoriasis is thought to be more prominent in black patients<sup>1</sup> this could also be an explanation for the histological finding.

The authors note that less than half of their patients had neutrophilic abscesses in the parakeratotic areas of the stratum corneum—known as Munro's micro abscesses. As well, an even smaller proportion of the biopsies showed Kogoj's spongiform pustules compared to what's been described elsewhere in the literature.

One potential limitation to the study is that the biopsy site was not specifically mentioned for each lesion. It has been well established that spongiosis may be seen in psoriatic lesions on acral skin, however it is unclear if lesions were taken from acral sites in the study.

As dermatologists, we know that a rapid, accurate diagnosis is important

# rrents and comments

Leading the global discussion about SKIN SCIENCE, ETHNICITY, and CULTURE

for improving the patient experience. I have spoken at conferences about how the understanding of the clinical appearance of psoriasis needs to be expanded so it better represents how the disease appears in darker skin types.

Here, Enigbokan, et al have found evidence that we should be thinking similarly about the histologic diagnosis of psoriasis. Their findings suggest a diagnosis of psoriasis should still be entertained in the presence of spong-

iosis and in the absence of Munro's micro abscesses and Kogoj's spongiform pustules if the other characteristic features of the condition are present.



This is a helpful reminder that psoriasis presentations can be diverse—even on the cellular level. It will be interesting to see if their findings are supported in future research.

—Yvette Miller-Monthrope,  
MD, FRCP  
Dermatologist/Pathologist

## REFERENCES

1. Ophelia E. Dadzie AP, Andrew F. Alexis, eds. *Ethnic Dermatology: Principles and Practice*. 1<sup>st</sup> ed: John Wiley & Sons, Ltd; 2013.

## Unmet need in people with psoriasis and skin of color in Canada, United States

Geeta Yadav, MD, MHS, FRCP comments on Yadav G, Yeung J, Miller-Monthrope Y, Lakhani O, Drudge C, Craigie S, Mendell A, Park-Wyllie L, *Dermatol Ther (Heidelb)* Sept. 21, 2022; 12:2401–2413.

**□ People with skin of color (SOC) experience dermatological conditions such as psoriasis differently than White individuals do. Areas of difference include access to care, diagnosis, and treatment**

The authors of this literature review set out to understand the challenges and unmet needs associated with access to care, diagnosis, and treatment of psoriasis among people with SOC in Canada and the United States.

For the search, the investigators employed psoriasis-specific terms such as “psoriasis,” “psoriatic,” and “psoriasis-form.” They also included terms to describe people with SOC overall and terms to describe specific groups among people with SOC. The search was restricted to English-language studies published between Jan. 1, 2016, and Oct. 19, 2021.

From an initial pool of 919 records, the authors included 26 studies.

Records were excluded if they were conducted entirely outside of Canada or the U.S., focused on traditional medicine interventions, did not report psoriasis-spe-

cific data, did not report data on people with SOC, or did not report data related to unmet needs in access to care, diagnosis, or treatment.

The authors identified several themes under each of the three topics of unmet needs:

### Access to care

- Differences in healthcare utilization
  - Hospitalizations
  - Physician visits
  - Differences in seeking and receiving care
  - Economic burden
  - Lack of culturally competent care

### Diagnosis

- Differences in baseline patient characteristics
- Differences in clinical presentation
  - Morphology
  - Body site distribution
  - Severity
  - Exacerbating factors
- Differences in prevalence and incidence

### Treatment

- Cultural differences in treatment preferences

- Differences in treatment patterns
  - Familiarity with treatments
  - Differences in prescribed treatment types
- Differences in clinical research
  - Underrepresentation in clinical trials
  - Underreporting in clinical trials
  - Differences in treatment efficacy in clinical trials

Overall, the authors say their findings suggest people with psoriasis and SOC face unique challenges in their disease experience. Important challenges identified include a lack of culturally competent care, a need for more universal assessment tools, and a need for studies and guidelines for preventing and managing inflammation-related pigmentation changes. Clinical trials should strive to include larger, more representative patient populations and report data on different racial and ethnic groups. The authors write that it is essential that clinicians and other stakeholders recognize and address these disparities to ensure equitable care.

—continued on page 14

### Evaluation of personalized skincare through in-silico stress



<http://tiny.cc/p1aavz>

Researchers conducted this study to identify the likely biomarkers and molecular signatures expressed in skin cells of different ethnic backgrounds, to support the design of personalized skin products based on specific demands.

**Findings:** Each skin type was characterized by the presence of single nucleotide polymorphisms (SNPs) in the genes controlling facultative and constitutive pigmentation. These SNP variations could also underlie the major differences in responses to photodamage, such as oxidative stress, inflammation, and barrier homeostasis. Two active ingredients used in cosmetic products, Resveratrol and Quercetin, also interacted with the studied genes.

**What it means:** Cells present in different skin types have genetic variations that could lead to diverse characteristics and responses to stress and stimuli. These sensitivities could be modulated by the bioactive compounds studied.

### Can microneedle fractional radiofrequency impair the skin barrier?



<https://tinyurl.com/kab542ej>

This study was conducted to evaluate whether microneedle fractional radiofrequency system (MFRS) treatment, an invasive procedure, might impair skin barrier function. Impairment was assessed through skin sensitivity and exacerbation of melasma.

**Findings:** In the first three days after treatment, transepidermal water loss gradually increased to a peak, and then returned to normal levels by day seven. There was no significant difference in TEWL from baseline to follow-up visits one, three, and six months after treatment. There were no significant changes in the thickness or density of the epidermis, melanin index, melasma are and severity index, and the 10-item Sensitive Scale before and after MFRS treatment.

**What it means:** For Chinese patients, MFRS is a safe and effective treatment for facial cosmetic conditions that does not impair the skin barrier function.

### Photoprotection for people with skin of color: Needs and strategies



<https://tinyurl.com/2wsp6xyc>

The authors of this review note there is an unmet need for improved photoprotection and better education on photodamage in skin of color populations.

**Findings:** Identified challenges related to the development of targeted sunscreens for individuals with skin of color include: a need for optimal cosmetic appeal (leaving no white residue and not disrupting skin tone); a need to provide broad-spectrum protection (UVB, UVA, long-wave UVA, and visible light), and the potential to include depigmenting agents for patients with pigmentary disorders.

**What it means:** More research is needed on photoprotection in skin of color, but public education on photoaging and pigmentary disorders should be emphasized. Dermatologists should be aware of the impact of UVB, UVA, visible light and infrared A in people with skin of color and instruct them on photodamage and associated risks, as well as prescribing photoprotective measures.

# clinical news briefing

*Summarizing publications of interest from the recent clinical literature*

## Merkel cell carcinoma: A review of clinical management



<https://tinyurl.com/mr353jff>

This is a review of current knowledge and trends in the clinical management of Merkel cell carcinoma (MCC), focusing on Asian reports.

**Findings:** Several knowledge gaps were identified. These included a lack of randomized prospective studies to evaluate the significance of sentinel lymph node biopsy, complete lymph node dissection and adjuvant radiation therapy in MCC. There is also no established second-line therapy for patients treated with immune checkpoint inhibitors with refractory disease.

**What it means:** There are unanswered questions surrounding management of MCC in Asian patients. The favorable results of clinical studies on MCC treatment performed in Western countries need to be validated in patients in Asia.

## Requirements for Brazilian outpatient Centers of Excellence in HS



<https://tinyurl.com/2p83daeu>

This paper describes the development of proposed criteria and requirements for establishing outpatient centers of excellence in Brazil for managing hidradenitis suppurativa (HS).

**Findings:** The process resulted in 10 categories for establishing outpatient centers, including their respective requirements, rationale, and classification. These categories include onboarding and welcoming; infrastructure and procedures; infusion therapy; flows and referrals; staffing; disease management; metrics during diagnosis; metrics during treatment; awareness and advocacy; research and education.

**What it means:** This co-creation study may be considered a starting point for a deeper discussion adapted to the different realities of each service, city, region, or country.

## Contact hypersensitivity to Indian standard patch



<https://tinyurl.com/2r7kr4xs>

In this single-center, cross-sectional study, children between six months and 12 years of age, diagnosed with atopic dermatitis were patch tested with the Indian standard series. Researchers attempted to correlate the presence of contact hypersensitivity with the clinical severity of atopic dermatitis in these patients.

**Findings:** Among the 136 participants, 28 (20.6%) had patch test positivity at 96 hours. The most common allergen was fragrance mix, followed by potassium dichromate, cobalt chloride hexahydrate and nickel. The authors found SCORing atopic dermatitis (SCORAD) scores were significantly higher in patients with positive patch tests as compared to patients with negative patch tests ( $p=0.009$ ).

**What it means:** In Indian patients, greater disease severity in atopic dermatitis was found to be associated with Indian standard series patch test positivity.

# Navigating challenges in Alaska: Insight

Anna Chacon, MD, FAAD<sup>1</sup>

**KEY WORDS, PHRASES:** Alaska, health challenges, American Indian, Alaskan Native, dermatologic, cold-related, skin infection, connective tissue disease

## ABSTRACT

This review summarizes the available health services and health problems—especially those related to the skin—faced by American Indian/Alaskan Native (AI/AN) communities. By acknowledging the unique challenges encountered by AI/AN populations, this report will foster greater awareness, understanding, and collaboration to improve dermatologic care in these communities to promote optimal skin health for these people.

Challenges identified include: limited access to dermatologists, diagnostic tools, and treatment options in remote and rural areas, as well as socioeconomic barriers. AI/AN individuals experience delayed diagnosis, inadequate treatment, and limited preventive care, perpetuating the cycle of dermatologic problems.

The article also identifies specific dermatologic health problems prevalent in the Alaskan population, such as cold-related skin problems, skin infections, and distinct patterns of systemic lupus erythematosus (SLE). Congenital sucrase-isomaltase deficiency (CSID), while not a skin condition, is also addressed.

## INTRODUCTION

The AI/AN communities represent a vibrant tapestry of diverse cultures, traditions, and histories deeply rooted in the North American continent. However, amidst the richness of these Indigenous communities, there is a lesser-known struggle that often goes unnoticed—the burden of dermatologic problems.<sup>1</sup> AI/AN populations face unique dermatologic challenges intricately connected to their cultural heritage, geographic location, and socioeconomic factors. The prevalence and impact of skin conditions within these communities highlight the need for tailored healthcare solutions that respect their cultural practices and address the specific skin issues they encounter.<sup>2</sup>

Notably, the subsistence lifestyle in Alaska is deeply rooted in the state's rich Indigenous heritage and is still practised by many Alaskans today. Subsistence living involves relying on the land and its resources for sustenance. Native communities, such as the Inupiat,



Yupik, and Athabascan peoples, have honed their knowledge of the land, rivers, and oceans over generations, adapting to the harsh climate and leveraging the abundant natural resources. Consequently, the subsistence lifestyle in Alaska can also lead to various skin problems related to the

unique challenges of living in a harsh environment. For instance, exposure to freezing temperatures, especially during the long winter, can cause dry and cracked skin, leading to discomfort and potential infection. Strong winds and low humidity further exacerbate these issues, as they strip the skin of its natural moisture and protective oils. Moreover, prolonged sunlight during the summer increases the risk of sunburn and skin damage, especially for individuals who spend significant time outdoors engaging in subsistence activities. In addition, contact with natural elements such as plants, water bodies, and wildlife can also contribute to skin problems, including allergic reactions, contact dermatitis, and insect bites.<sup>1,2</sup>

Historically, AI/AN communities have relied on traditional healing practices and remedies passed down through generations. While these practices have deep cultural significance, they may only sometimes align with modern dermatologic approaches. As a result, the AI/AN population faces a delicate balance between preserving their cultural traditions and accessing effective, evidence-based dermatologic care.

Many AI/AN communities are geographically situated in remote and rural areas, often needing more healthcare infrastructure and resources. Limited access to specialized dermatologists, diagnostic tools, and treatment options further compounds the challenges AI/AN individuals face when dealing with skin conditions. Consequently, dermatologic prob-

<sup>1</sup> Dermatologist, Private Practice, Miami, Fla., U.S.A. and Dermatologist, Lake County Tribal Health Consortium, Lakeport, Calif., U.S.A.



# Pathways into health for the local population

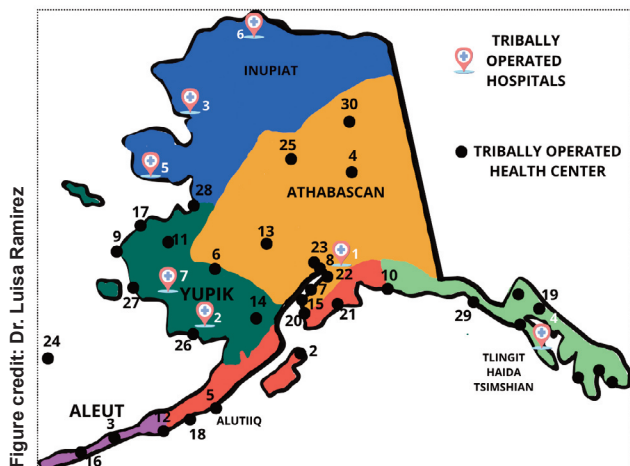
blems can persist or worsen, leading to substantial physical discomfort, psychological distress, and decreased quality of life. Furthermore, the unique socioeconomic circumstances experienced by AI/AN communities also play a significant role in dermatologic health. Disparities in education, income, and access to healthcare services contribute to increased vulnerability to skin conditions. These disparities and systemic challenges can result in delayed diagnosis, inadequate treatment, and limited preventive care, perpetuating the cycle of dermatologic problems.<sup>2</sup>

Below is a review of the health services available for Alaska's AN/AI population, as well as the most common dermatologic concerns.

## HEALTH SERVICES FOR THE ALASKAN POPULATION

The Indian Health Service (IHS) is a federal agency within the U.S. Department of Health and Human Services. Its primary responsibility is to provide healthcare services to American Indians and Alaska Natives. The IHS was established in 1955 to fulfil the government's treaty obligations and ensure the delivery of comprehensive and culturally appropriate healthcare to Indigenous populations. The agency operates a network of hospitals, clinics, and health centers in tribal communities across the country, offering a range of medical, dental, behavioral health, and public health services. The IHS operates in collaboration with tribes, tribal organizations, and urban Indian health programs to address the unique health-

**FIGURE 1:** Map of Indigenous communities in Alaska with the points where the health centers are, showing the difficult access



care needs and disparities faced by Native communities. Its mission is to raise the health status of Native Americans to the highest attainable level, promoting wellness, prevention, and access to quality care.<sup>3</sup>

One of the practical skincare services provided by the IHS is the telehealth service. Dermatologic telehealth services offered by the IHS are critical to expanding access to specialized skin healthcare for American Indians and Alaska Natives, particularly those in remote or underserved areas. Through telehealth platforms, patients can remotely connect with dermatologists and other healthcare professionals, enabling them to receive timely and expert guidance on skin conditions. Furthermore, dermatologic telehealth consultations permit the evaluation and diagnosis of various dermatologic issues, including rashes, infections, and skin lesions. Healthcare providers can provide treatment recommendations, prescribe medications, and offer self-care advice, empowering patients to participate in their skincare actively. By leveraging technology, the IHS can bridge the geographical barriers and ensure that individuals in tribal communities have access to essential dermatologic expertise, improving overall skin health outcomes and enhancing the quality of care delivered to Indigenous populations.<sup>4</sup>

It is worth noting that in Alaska, the availability of centers such as the Alaska Health Tribal Compact, Alaska Native Medical Centers, and other hospitals are crucial for the provision of healthcare services to the population, especially to Indigenous communities. However, accessing these centers is not always easy because of the state's vast geography and remote regions. Many Alaskan communities are in isolated areas with limited transportation options, making it challenging for individuals to reach the healthcare facilities they need.<sup>5</sup>

The challenges of delivering optimal healthcare to individuals in Alaska are multifaceted. The vast geographic expanse of the state, coupled with the dispersion of population centers, poses significant barriers to accessing specialized healthcare services, particularly in remote and underserved areas. Limited healthcare infrastructure, a shortage of healthcare professionals, and transportation difficulties further compound the challenges. Consequently, efforts to improve healthcare delivery in this population neces-

■ NAVIGATING CHALLENGES IN ALASKA: INSIGHTS INTO HEALTH FOR THE LOCAL POPULATION

sitate innovative solutions, such as telemedicine, mobile clinics, and targeted outreach programs to enhance access to care and facilitate early diagnosis and management of disease.<sup>14</sup>

The utilization of the emergency room (ER) for dermatologic care by AI/AN has been reported to be higher compared to other groups. This finding suggests that patients facing challenges in accessing outpatient care may resort to seeking treatment in the ER, especially in rural settings and on weekends. This delay in seeking care indicates that individuals with non-urgent skin conditions may wait until the weekend when other

healthcare options may be limited.

**DERMATOLOGIC HEALTH PROBLEMS**

A study by Kryatova and Okoye<sup>2</sup> (2016) posited that the most common primary dermatologic diagnoses in the ER for all patients included cellulitis, abscess, urticaria, contact dermatitis, and other forms of eczema. However, these specific conditions have not been extensively studied within the AI/AN population.<sup>1</sup>

Here we discuss some common dermatologic conditions experienced by AI/AN people in Alaska, in three categories: cold-related skin problems, skin infections, and connective tissue diseases.

Figure credit: Dr. Luisa Ramirez

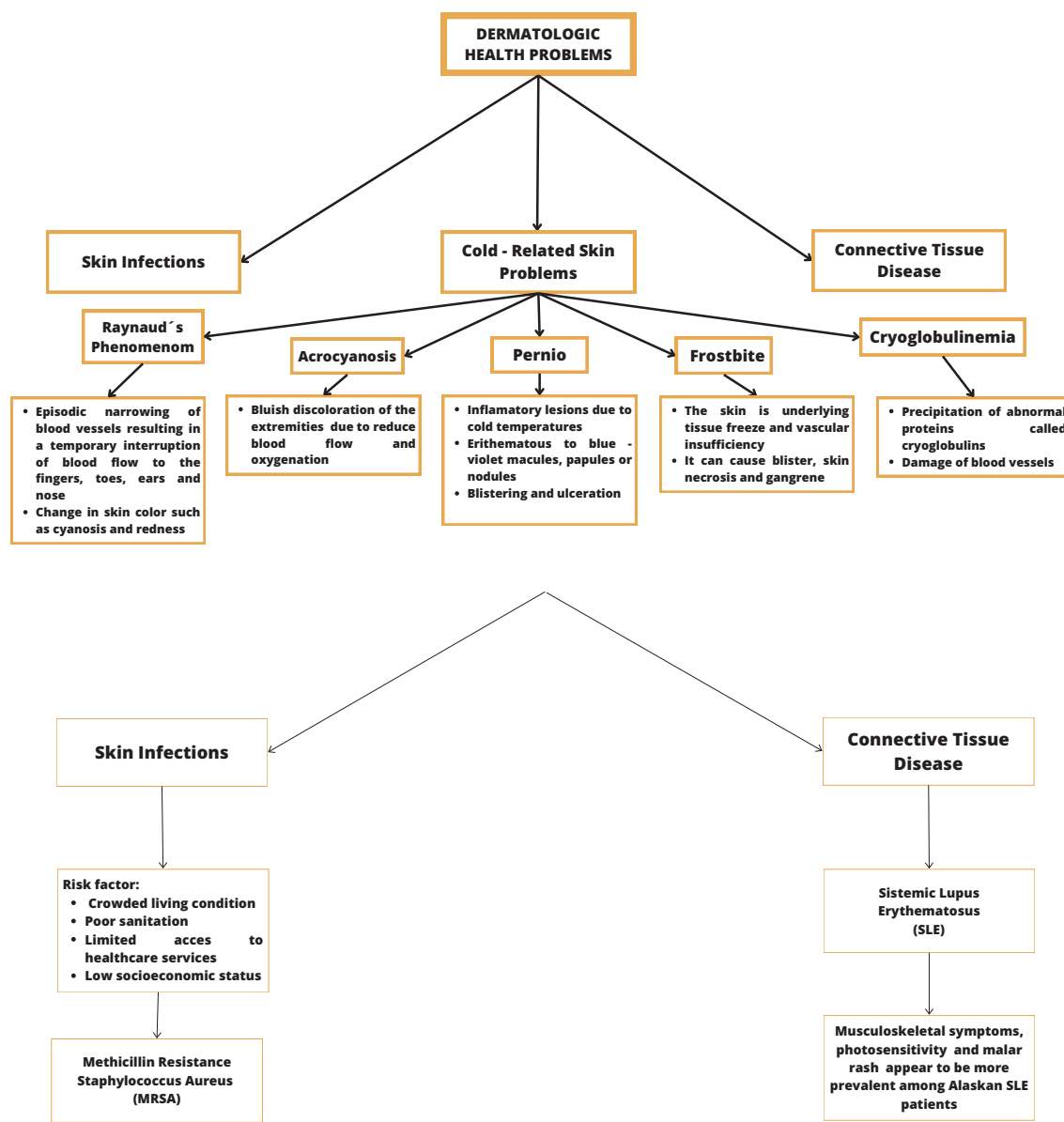


FIGURE 2: Mind map of the main dermatological conditions reported in the article for the population of Alaska.

## Cold-related skin problems

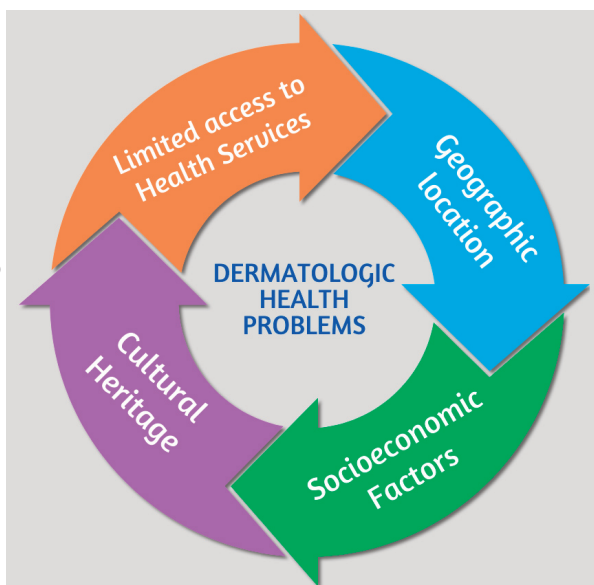
Cold exposure in the extreme climate of Alaska can significantly affect the skin, resulting in several distinct skin changes. These changes are often associated with the body's response to cold temperatures and can range from mild to severe manifestations.<sup>2</sup>

Acrocyanosis is one of the common skin changes, characterized by bluish discoloration of the extremities due to reduced blood flow and oxygenation in response to cold temperatures. Pernio, also known as chilblains, are localized inflammatory lesions that develop on the skin due to prolonged exposure to cold and damp conditions. Raynaud's phenomenon involves the episodic narrowing of blood vessels in response to cold or emotional stress, resulting in a temporary interruption of blood flow to the fingers, toes, ears, and nose, accompanied by color changes such as pallor, cyanosis, and redness.<sup>6</sup>

Frostbite is the most common cold-related skin problem which accounts for around 99% of cold-related skin conditions in Alaska. In addition, frostbite is a severe consequence of cold exposure, occurring when the skin and underlying tissues freeze. It can cause tissue damage, leading to blisters, skin necrosis, and, in severe cases, gangrene.<sup>7</sup> Another skin change associated with cold exposure is cryoglobulinemia, where the cold triggers the precipitation of abnormal proteins called cryoglobulins, leading to inflammation and damage to blood vessels. Livedo reticularis is characterized by a mottled, net-like pattern of discoloration on the skin, typically seen on the extremities, caused by the constriction of blood vessels in response to cold temperatures. Finally, cold urticaria is a type of physical urticaria that manifests as hives or wheals upon exposure to cold temperatures, causing itching, swelling, and skin redness.<sup>6</sup>

In a review of skin in the cold, Lehmuskallio, et al<sup>5</sup> noted that cold weather could also cause a flare of some pre-existing illnesses such as rosacea, eczema, psoriasis, and Raynaud's disease. The cold temperatures, dry air, and low humidity levels can worsen symptoms and cause discomfort. Patients with rosacea may exhibit increased facial redness and flushing, while patients with eczema can become more pruritic and inflamed due to dry air.<sup>8</sup> In Alaska, psoriasis is often called "winter disease" as it may manifest as more pronounced red, scaly patches, while the lack of sunlight during winter can contribute to its aggravation.<sup>9</sup> Notably, individuals with Raynaud's disease may experience reduced blood flow to the extremities, resulting in

Figure credit: Dr. Luisa Ramirez



**FIGURE 3:** Risk factors that perpetuate the dermatological conditions of the population of Alaska

color changes and numbness and elevating the severity of symptoms.<sup>10</sup> Taking proactive measures such as moisturizing the skin, protecting skin from the cold, and maintaining proper hygiene can help alleviate the impact of these skin conditions during winter.<sup>6</sup>

## Skin infections

The population in Alaska has been observed to exhibit an increased susceptibility to skin infections, which may be attributed to various factors associated with low socioeconomic status. These factors include crowded living conditions, poor sanitation, and limited access to healthcare services. Skin and soft tissue infections were found to be the most prevalent conditions among the reported cases. Consequently, healthcare practitioners must consider the possibility of methicillin-resistant *Staphylococcus aureus* (MRSA) in otherwise healthy and young individuals presenting with skin infections. Accordingly, the literature highlights the significance of early recognition and appropriate management of MRSA infections in order to mitigate the potential risks and complications associated with such infections within the Alaskan population.<sup>11,12</sup>

## Connective tissue disease

The most common dermatologic connective tissue disease is Systemic Lupus Erythematosus. Notably, preliminary studies have indicated that Alaskan individuals with SLE may exhibit distinct patterns compared to other populations. For instance, musculoskeletal symptoms, such as arthritis and myalgia, appear to be more

## ■ NAVIGATING CHALLENGES IN ALASKA: INSIGHTS INTO HEALTH FOR THE LOCAL POPULATION

prevalent among Alaskan SLE patients. Additionally, cutaneous manifestations, including photosensitivity and malar rash, have been reported at higher frequencies in Alaskan patients. These unique clinical characteristics of SLE in the Alaskan population may reflect underlying genetic, environmental, or cultural factors that warrant further investigation.<sup>14</sup>

### **Congenital sucrase-isomaltase deficiency (CSID)**

CSID is a genetic disorder characterized by the impaired activity of the sucrase-isomaltase enzyme, leading to the inability to digest and absorb sucrose and starch. While CSID has been reported worldwide, its prevalence and clinical presentation in the Alaskan population has garnered attention. Studies have suggested that CSID may be an underdiagnosed disease in Alaskan children, particularly those residing in remote and isolated communities. The small, genetically isolated populations in Alaska, limited dietary diversity, and reliance on traditional foods may contribute to the increased prevalence of CSID in these populations.<sup>13</sup>

The clinical manifestations of CSID in Alaskan populations are similar to those reported in other populations, including abdominal pain, diarrhea, bloating, and gas. However, the severity and impact of CSID symptoms may be more pronounced in Alaskan children due to the limited availability of appropriate dietary modifications and enzyme supplements. Furthermore, the isolated nature of many Alaskan communities poses challenges in accessing specialized medical care and diagnostic resources, resulting in delayed or missed diagnoses of CSID. Efforts have been made to improve awareness and diagnosis of CSID in Alaskan populations. Initiatives that enhance access to diagnostic tests, dietary modifications, and enzyme supplements to alleviate the symptoms and improve the quality of life for affected individuals are crucial.<sup>14</sup>

### **CONCLUSION**

Alaska faces unique challenges in providing adequate health services and addressing prevalent health problems. The vast geographic expanse, remote communities, and limited healthcare infrastructure pose significant barriers to accessing quality care for many Alaskans. Furthermore, the state's diverse population, including Indigenous communities, brings a focus to specific health disparities and cultural considerations that must be considered. Alaskan health

services must prioritize improving healthcare access, expanding healthcare facilities, and enhancing workforce recruitment and retention. Additionally, addressing prevalent health issues such as obesity, substance abuse, mental health disorders, and infectious diseases requires comprehensive strategies that involve community engagement, health education, prevention programs, and multidisciplinary collaboration. By recognizing the unique challenges and needs of the Alaskan population, policymakers, healthcare providers, and community leaders can work together to develop sustainable solutions that promote better health outcomes and ensure equitable access to healthcare services for all Alaskans. Continued research, investment, and innovation are essential to address the evolving healthcare landscape and improve the overall health and well-being of the diverse population in Alaska.

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**The editors of Skin Spectrum Quarterly<sup>™</sup>: The Journal of Ethnodermatology<sup>™</sup> invite commentaries on recent peer-reviewed literature relating to dermatology patients of color that have captured readers' attention. Submissions should critically engage with the original article through a scholarly lens, situating the work within the broader context of research on inequities and disparities in dermatological care. Commentaries should be approximately 250-300 words in length, cite the original article, and adopt a formal, academic tone suitable for a professional journal. Perspectives from clinicians, researchers, and patients are welcomed. Submissions or queries may be directed to the editorial office at [comments@skinspectrum.org](mailto:comments@skinspectrum.org).**

## Research letter: The importance of getting skin tone right

**TO THE EDITOR:** A child from East Africa was born with adactyly. This meant that she had no fingers on her left hand, merely vestigial stubs. This had a severe impact on her activities of daily living and self-esteem.

Her country of origin had limited healthcare services, so this congenital malformation had not been addressed at all. There had never been any proper radiology, rehabilitation—either physical or emotional—nor any attempt at prosthetics.

When she came to our attention in Toronto, Canada, in a downtown family practice, the missing fingers of her left hand

Initially, after some fitting and adjustment, we were all delighted—her parents, siblings, our team, and the young patient herself. She was able to play catch, draw, brush her own hair and, more importantly, brush her doll's hair.

On subsequent follow-up visits, however, the parents reported that their young daughter was no longer using the prosthetic.

That set the team thinking: Was the prosthetic too loose? Was it painful to wear? Did it get too cold in the Canadian winter? Was it too cumbersome to use?

It turns out that the solution was from the realm of ethnodermatology.

We had printed the 3D prosthetic hand with our standard pink spool filament. We had not considered how the child would feel at school with a pink hand. This took two months and several visits to discover, as no one had asked the child about color choice and her lived experience. We were all preoccupied with the mechanical details of the prosthetic.

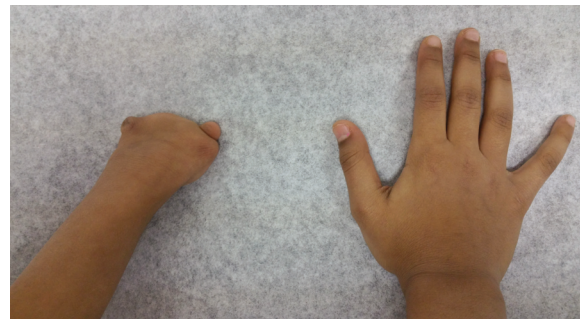
Finally, realizing our cosmetic error, we consulted the Pantone Skin Tone Guide. We acquired an appropriate reasonably matching spool of print filament. The prosthetic hand is now part of the patient's daily routine.

This re-emphasized to us the importance of ethnodermatological considerations, and the important work being highlighted by SKIN SPECTRUM QUARTERLY<sup>™</sup> and other publications.

An awareness of the SKIN SPECTRUM domain should lead to better patient outcomes.

—**Shamsa Qaadri, HBSc** (3rd year medical student)  
and **Shafiq Qaadri, Jr.** (pre-medical student)

TORONTO, ONTARIO, CANADA



were almost an incidental complaint. She had learned to live without.

Traditional prostheses were financially out of reach for the family. And Canadian wait times are Canadian wait times. With a desire to offer some help, we decided to intervene.

Using 3D scanning software, the team created a 3D template of her hand for the purpose of fabricating a functional, grasping prosthetic. The material used was Acrylonitrile Butadiene Styrene (ABS), a strong, safe biocompatible material suitable for use in medical devices. Print time was seven hours at an estimated cost of US\$25 (CAD\$35)

# currents and comments

Leading the global discussion about SKIN SCIENCE, ETHNICITY, and CULTURE

—continued from page 5

## COMMENT

This literature review aimed to dissect the nuanced landscape of psoriasis experiences by delving into the specific challenges and unmet needs faced by individuals with skin of color, setting them apart from their White counterparts. The primary objective was to gain deeper insights into the unique challenges faced by this demographic group and to ascertain the potential disparities in meeting their specific needs. Knowing the challenges is necessary if we want to start closing the outcome gaps.

Choosing to include access to care as one of the aspects of unmet need we looked at, alongside diagnosis and treatment, was a deliberate and significant choice because there has been less of a focus on access across ethnic groups in previous reviews. I am also pleased we were able to include data from studies that examined multiple racial or ethnic groups.

We included only recent studies from the last five years, including some published in 2020 and 2021, as they had not been considered by previously published reviews. This focus, and searching only one database, does mean that the review was not as comprehensive as it could have been, but I think the paper achieves its goal of assisting clinicians and other stakeholders in recognizing and addressing disparities in care for people with psoriasis.

A key takeaway we identified was a lack of culturally competent care for people with skin of color. This is a hurdle patients encounter across their journey with psoriasis.

Shifting the paradigm away from erythema as a marker for inflammation in diagnosis and assessment, coupled with the exploration of more effective strategies to prevent and manage the pigment changes that can follow the inflammatory aspects of psoriasis, represent two focal domains for improving the patient experience.

The scope for this study was local—we excluded studies conducted entirely outside of Canada and the U.S.—because specific barriers to care are going to depend on the idiosyncrasies of any given health-care system.



Several steps should be taken to reduce unmet needs among patients with psoriasis and skin of color. Assessment tools that do not rely on erythema as a marker for inflammation need to be developed and deployed. Additional studies and treatment guidelines are also needed to aid in the effective treatment or prevention of post-inflammatory pigmentation changes.

This research highlights important obstacles in providing equitable psoriasis care and outcomes. By recognizing the scarcity of culturally competent care, rethinking how we diagnose and manage the condition, and addressing issues with skin dyspigmentation, the dermatologic community can pave the way for a more inclusive and effective approach to managing psoriasis for individuals of all skin types.

—Geeta Yadav, MD, MHS, FRCPC  
Dermatologist



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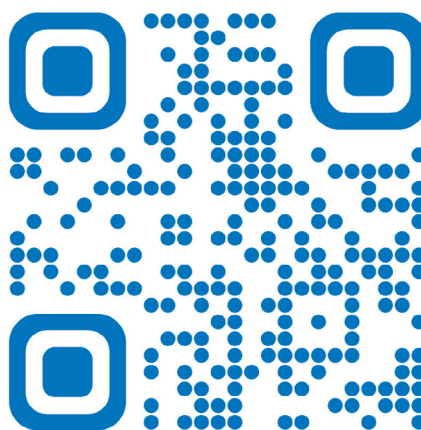
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# Psychosocial implications of acne

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**KEY WORDS, PHRASES:** acne; skin of color (SOC); psychosocial; post-inflammatory hyperpigmentation (PIH); keloid scarring

## ABSTRACT

In skin of color (SOC) patients, acne vulgaris, a common dermatological condition, can have substantial negative quality-of-life effects. The psychological, emotional, and social implications of acne on self-esteem, body image, and interpersonal relationships have been highlighted in earlier literature. However, to our knowledge, existing research on the psychosocial effects of acne in patients with SOC has not been critically evaluated. This includes defining the impact of differing clinical, cultural, and societal presentations in SOC patients, all of which contribute to the challenges of living with acne. Specifically, there is a need to explore cultural norms, beauty standards, racial discrimination, and social stigmatization both in healthcare and in society as it relates to acne. Further studies to fully comprehend the psychosocial effects of acne in patients with SOC are warranted. By recognizing distinct challenges in SOC with acne, healthcare professionals can improve patient outcomes and implement more inclusive and holistic approaches to acne management across the skin spectrum.

## INTRODUCTION

Acne vulgaris is one of the most common dermatological conditions affecting 90% of adolescent patients and 15% of the general population.<sup>1</sup> Disease sequelae including keloid scarring and post-inflammatory hyperpigmentation (PIH) are more common in darker skin tones, and can have a substantial impact on the physical appearance of an individual. Often the effects of these sequelae are long-standing and difficult to treat, leading to worse psychosocial outcomes.

Psychosocial implications of acne include an impact on the emotional state, self-esteem, body image, social interactions, and decrease in overall quality of life (QOL) in affected individuals.<sup>2</sup> Prior works focusing on the psychosocial repercussions of acne have not described them in patient populations of color. Consequently, there remains a gap in the body of knowl-

edge on the psychosocial effects of acne on skin of color (SOC). As SOC patients have distinctive clinical manifestations of acne, such as increased risk of PIH and keloid scarring, this patient population may have additional and unique emotional and mental burdens secondary to their condition.<sup>3</sup> The psychosocial implications of people with SOC afflicted by acne are also greatly influenced by cultural and social factors. This may include the impact of cultural norms, societal beauty standards, racial prejudice, and social stigma distinct in SOC patients with acne.<sup>4</sup>

In this review, the current body of research on the psychosocial effects of acne in SOC is evaluated. Our aim is to provide a comprehensive overview of the distinctive difficulties and experiences affecting SOC pa-

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MAAZI



DR. LI



# Acne in patients with skin of color

tients and identify gaps in the existing literature. Through improved recognition and understanding, health care professionals can provide improved holistic care to manage acne in this population with an effective and sustainable approach.

## METHODS

An OVID search of Medline and Embase databases was completed on May 26, 2023, following Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) guidelines.<sup>5</sup> The search included literature from the last five years, with the subject headings and keywords, “acne,” and “acne vulgaris” separated by OR combined with 20 terms describing individuals with SOC (health disparity OR minority health OR cultural factor OR health care disparities OR population group OR Hispanic OR African American OR transcultural care OR health care disparity OR minorities OR ethnic group OR Latinx OR Black\* OR skin of color OR people of color OR ethnic groups OR people of color OR population groups OR Hispanics OR cultural factors OR Latino\* OR skin of color OR African Americans OR minority OR Latina\*). Included publications were peer-reviewed, English articles assessing the psychosocial outcomes in a human patient population with SOC and acne vulgaris. Articles were excluded if they were abstracts and non-English. The title, abstract, and full-text screening were completed by two authors (DM, MM). A third author (EM) resolved any conflicts in this screening process upon discussion with the other authors. Citation chaining analysis was performed on all included articles, and relevant review articles, prior to their exclusion to ensure no literature was missed. No protocol was registered, as this is a scoping review.

Using the following column titles, data was extracted and aggregated into an external Microsoft Excel spreadsheet with the following headings: article title, author, year of publication, country of publication, aim of study, sample size, study design, description of study design, study inclusion criteria, primary psychosocial consequences identified, secondary psychosocial consequences, approaches to treatment, summary of paper, and study limitations. The extracted data was reviewed in duplicate by two authors (MM and DM), and all disagreements were recon-

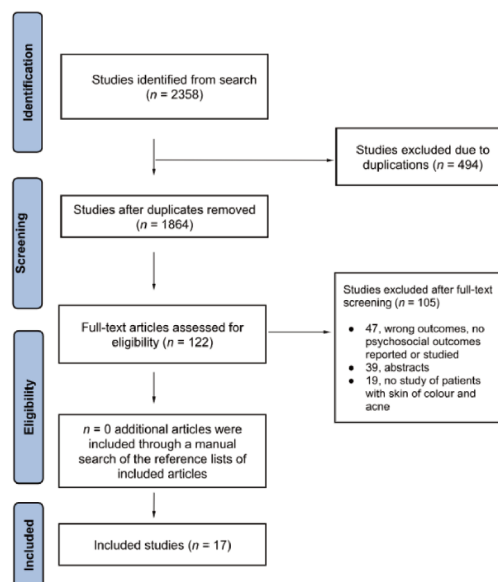
ciled between MM and EM before initiating the manuscript.

## RESULTS

Our literature search yielded 1,864 non-duplicate articles, of which 1,742 were excluded based on title and abstract review (Figure 1). Of the 122 studies retrieved for full-text screening, 105 were excluded. A total of 17 studies were ultimately included in the review, none of which were conference abstracts.

The 17 included publications were published between 2005 and 2022 and included eight cross-sectional studies,<sup>3,6-12</sup> two mixed methods studies,<sup>1,13</sup> five review articles,<sup>2,4,14-16</sup> and two cohort studies<sup>17,18</sup> (Table 2). Studies were conducted mostly in the United States;<sup>1,2,4,6-16</sup> the remaining were from Nigeria,<sup>3</sup> South Africa,<sup>18</sup> and Australia.<sup>17</sup>

Out of the 17 included publications evaluating SOC patients with acne, all of them explored psychosocial implications focusing on one or more of the following: general psychosocial impact, anxiety, depression, self-esteem, QOL, impact on one’s physical perception, stigma, mental health, and other potential psychological or social effects (Table 2). Seven of 17 articles discussed approaches to treating SOC



**FIGURE 1:** Flow diagram of literature screening using the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for scoping reviews (PRISMA-ScR) guidelines.

## ■ PSYCHOSOCIAL IMPLICATIONS OF ACNE IN PATIENTS WITH SKIN OF COLOR

patients considering the psychosocial effects of acne.<sup>1, 2, 6, 12, 14-16</sup> Eight of 17 articles discussed PIH and keloid scarring and their relation to psychosocial outcomes in SOC patients with acne.<sup>1-3, 6, 11, 14-16</sup>

### Psychosocial Impact

Anxiety was the most frequently noted psychological consequence, noted in nine of 17 studies.<sup>1, 3, 7, 12-14, 16, 17</sup> One study assessing acne in Nigerian undergraduate students<sup>3</sup> found that 19.2% had anxiety as a result of their acne, while two different studies evaluating acne in female adults found that 19.5% of non-White patients had anxiety due to their acne<sup>13</sup> and 73.3% of non-White women expressed symptoms of anxiety,<sup>6</sup> respectively. The most noted outcomes on the Patient Health Questionnaire-4 (PHQ-4) due to having acne were feelings of being nervous, anxious, or on edge (38.1%), and not being able to stop or control worrying (38.8%).<sup>13</sup> Nine studies reported on depression, with patients experiencing mild, moderate and severe symptoms.<sup>6</sup> While one survey study on Nigerian undergraduate students found that 29 out of 200 patients in SOC with acne (14.5%) were depressed,<sup>3</sup> another survey study on female patients reported that 73.3% of patients had symptoms of mild, moderate or severe depression.<sup>6</sup>

Social impact specifically was also evaluated in 12 of 17 studies.<sup>1-3, 6, 7, 10, 13-18</sup> 12.5% of SOC students with acne felt socially unacceptable, and 6% had reduced self-esteem.<sup>3</sup> Five studies in total found one or more of the following: effects of their acne caused reduced academic performance, issues with work, social isolation, or restriction of activities.<sup>1, 3, 11, 13, 17</sup> Callender et al<sup>6</sup> reported negative impact on perceived attractiveness, confidence, and self-conscious behaviour in patients with SOC and acne. Gorelick et al<sup>13</sup> found that 45% of patients felt unattractive, 45.2% felt embarrassed, 45.5% self-conscious, and 45.5% dissatisfied with their physical appearance. QOL was assessed in multiple studies (8 of 17), with all indicating reduced QOL among SOC patients with acne.<sup>1, 3, 6, 9, 10, 13, 14, 18</sup> Although it is not specific to psychological or social functioning, reduced QOL can result in psychosocial issues and psychosocial issues inversely can reduce QOL.

Perceived differences in psychosocial functioning were noted between SOC patients and non-SOC patients (seven of 17 studies). Three studies<sup>9, 12, 18</sup> reported that SOC patients had worse psychosocial outcomes than non-SOC patients, two studies found no overall significant difference,<sup>6, 8</sup> and two studies<sup>7, 13</sup> found differences in certain domains that differed between the patient populations. For example, in a study with 312 female subjects with acne, QOL was found to be impacted by acne with greater negative outcomes in Hispanic and Asian patients compared to Whites and Blacks, while non-White patients had worse social functioning compared to White patients.<sup>13</sup> Kohn et al<sup>8</sup> found no significant differences in mental health outcomes between White and SOC patients. This contrasts with Nagpal et al<sup>9</sup> who reported an overall significantly worse QOL for non-White patients even after controlling for gender, diagnosis, age, severity, and illness perception. These studies did not examine differences in outcomes related to PIH which will be discussed further in this paper.

Author	Year	Study Design	Country
Akinboro et al.	2018	Cross-sectional survey	Nigeria
Alexis et al.	2022	Mixed methods	US
Baldwin et al.	2011	Review	US
Callender et al.	2014	Cross-sectional study	US
Cheng et al.	2010	Cross-sectional study	US
Darji et al.	2017	Cross-sectional study	US
Elbuluk et al.	2021	Review	US
Franca and Keri	2017	Cross-sectional study	US
Gorelick et al.	2015	Cross-sectional study	US
Kohn et al.	2022	Cross-sectional study	US
Lawson et al.	2017	Review	US
Magin et al.	2012	Retrospective cohort study	Australia
Mosam et al.	2005	Prospective cohort study	South Africa
Nagpal et al.	2019	Cross-sectional study	US
Natsuaki and Yates	2021	Review	US
Savory et al.	2014	Mixed methods	US
Yee et al.	2023	Cross-sectional study	US

Country	Population	Study Objective	Study Outcome
India	200 undergraduate students at the Ladoke Akintola University of Technology aged 18 years or above being treated for acne.	To understand the psychosocial and self-esteem implications of acne and facial hyperpigmentation on acne students.	Acne with facial hyperpigmentation, compared to acne without hyperpigmentation, is associated with increased anxiety. Quality of life (QoL) was significantly reduced among acne patients with facial hyperpigmentation (1.77±1.62, vs 1.07±1.02, p<0.001) compared to those without hyperpigmentation. Acne and facial hyperpigmentation were associated with social life interference, avoidance of public facilities, poor body image and self-esteem and perception of worse disease. Acne overall, was related to a reduction of self-worth.
USA	Used a modified Delphi process with face-to-face discussions followed by a review. Discussion included expert advisors with experience on the topic (clinicians and researchers). The review included 30 clinical studies, 10 guidelines, algorithms, consensus papers, and systematic reviews, 11 epidemiology and QoL, and 27 reviews or books.	To address acne vulgaris in paediatric and adult groups with SOC and inform dermatologists and other healthcare professionals caring for patients with acne who have SOC.	Clinicians should understand the psychosocial implications with acne as they are an important factor of the disease process. Patients with acne who have any indication of mental health problems may benefit from a more formal evaluation and possible counselling. Acne is commonly associated with PIH in patients of colour, which is often worse for patients than the acne lesions that caused the dyschromia. In skin of colour, PIH can occur secondary to acne, and is significant especially in the context of mental health outcomes.
USA	N/A	To inform clinicians on how to best care for patients with acne vulgaris and ensure skin colour, culture, and patient and provider attitudes are taken into consideration.	Clinicians should be aware about the psychosocial effects of acne on their patients. Especially with patients who may have worse lesions or more severe acne, mental health problems can be prominent, and counselling should be taken into consideration. In skin of colour, PIH can be more bothersome than acne itself and should be taken into consideration.
USA	208 females that included only women between the ages of 25 and 45 years with facial acne and 25 or more visible lesions. 51.4% were White/Caucasian, 48.6% non-White/Caucasian and the rest were Hispanic/Latina, Asian, or Other. Mean age of participants was 35 +/- 6 years.	To describe racial differences in clinical characteristics, psychosocial impact, perceptions, behaviours, and treatment satisfaction in facial adult female.	Understanding how acne therapies vary for different patient populations specifically with race/ethnicity, gender, and age. Acne is characterized and understood in non-White/Caucasian women and the racial differences are highlighted. Treatment preferences were examined, and race comparisons were made for White/Caucasian and non-White/Caucasian patients. These differences were used to provide awareness to clinicians about the psychosocial effects of acne in non-White women and to recommend treatment considerations for improving future care.
USA	1214 students aged 10-19 years with different races, ethnicities and gender across public middle and high schools in New Jersey. 52% were boys, 47% girls, and 14% Asian, 40% White, 10% Black and 24% Hispanic	To ask students questions about self-acne severity, frequency, treatment, beliefs on external factors affecting acne, and perception on the psychosocial impact of acne.	Adolescents with acne associate their acne based on the view of their condition and treatment. Understanding differences in racial and ethnic views of illness perception and blame are important in providing patient-centred care. Since most adolescents have acne of some severity and self-treat, better education about their acne management and improving access to treatment may be an important way to decrease the potential psychosocial difficulties and reduce the risk of racial disparities in acne morbidity.
USA	48 US adults (30 females and 18 males) with facial acne and PIH (25 with acne and PIH, 23 with only acne). 34 Caucasian, 4 Hispanic, 3 African American, 6 Asian/Pacific Islander and 1 Other.	To utilize a psychometric scale to measure differences in quality of life between patients with acne and PIH and those with only acne as well as comparing PIH severity and its psychosocial impact on patients.	This study determined the importance in recognizing the psychosocial impacts of acne on patients' overall health. PIH is a significant component when evaluating acne in patients of SOC, and appropriate therapy should be provided to target acne hyperpigmentation along with acne itself for best outcomes.
USA	22 Clinical trials related to PIH, including 6 publications with African American/Black subjects, 5 with Asian subjects, 1 with Hispanic, and 10 with mixed populations	To determine differences between patients with acne who are White and those with skin of colour (SOC), specifically in shared decision-making, and patient satisfaction with care.	Patients with acne with SOC report overall lower satisfaction compared with their White counterparts. Clinicians should continue efforts to engage with their patients and work to identify other factors that may contribute to lower satisfaction in patients with acne with SOC.
USA	50 patients with acne who attended a Dermatology outpatient clinic at University of Miami Hospital. Patients consisted of 38 women (76%), 12 men (24%), from 18-44 years old, and a mean age of 26.02. 22 (44%) were Hispanic, 22 (32%) were White (Caucasian), 5 (10%) Asian/Pacific Islanders, 2 (4%) multi-racial, 1 (2%) Hispanic/Black, and 1 (2%) Other.	To investigate the psychosocial impact of acne and post-inflammatory hyperpigmentation among patients treated in a dermatology outpatient clinic at the University of Miami Hospital.	Acne with PIH is associated with decreased quality of life and worse psychological impact as a result. Many patients with acne would like psychological help but do not receive it.
USA	312 female adults with acne (30.8% Black, 17.6% Hispanic, 17.3% Asian/other, 34.3% White with mean age 35.3 +/- 5.9 years.	312 female adults with acne (30.8% Black, 17.6% Hispanic, 17.3% Asian/other, 34.3% White with mean age 35.3 +/- 5.9 years.	Acne negatively impacts QoL in the areas of self-perception and social and emotional functioning.
USA	8537264 patients in the United States in the Medical Expenditure Panel Survey database (6952001 White and 1585263 SOC patients) with acne and who reported mental health outcomes during 2004-2017. SOC patients were defined as Black, American Indian/Alaskan Native, Asian, Native Hawaiian/Pacific Islander, or multiple races.	To evaluate the differential impact of acne on mental health in patients from different racial and ethnic backgrounds	Study did not uncover differences in mental health outcomes among different races and ethnicities. However, found disparities in access to acne treatment between these groups. Patients with SOC are less likely than White patients to be seen by a dermatologist for acne or be prescribed adequate acne treatment. To reduce disparities, clinicians must be aware of these disparities and advocate for changes that mitigate them.
USA	N/A	To better understand the common skin and hair disorders in women of colour and lead to improved outcomes in this patient population	Determined that important biological differences in skin and hair structure do exist in individuals of colour and may account for increased incidence of keloids and pigmentary disorders. In SOC patients, tailored and fast diagnosis and treatment is imperative to reduce unfavourable outcomes.
Australia	244 students ages 14-17 at four Australian high schools. Students were determined by their skin type.	To assess the reliability of a test within a 12-month cohort study that examined the psychological sequelae of acne.	The Fitzpatrick Skin Phototype Classification (FSPC) test is the accepted measure for a skin type test. Results from the study suggest its reliability is good, even when provided through a concise questionnaire item suitable for assessing skin type as a potential confounder in studies of other outcome factors.
Africa	148 acne patients, attending the dermatology outpatient department of King Edward VIII Hospital. 120 consented to the study. 53 (49.5%) were Indian, 48 (44.9%) were African, four (3.7%) were Coloured and two (1.9%) were White.	To evaluate the adverse psychosocial effects of acne in black patients from Africa.	It is important for providers to treat the underlying psychosocial impacts of acne on the patient. This is just as important as acne treatment itself. In healthcare systems and patient populations that face barriers and challenges in healthcare, this is even more critical.
USA	132 patients with distinct pathology (61 with acne, 24 with psoriasis, 47 with eczema) presenting to the WCM Dermatology outpatient clinic in New York, from March-April 2017. Patients with a self-reported diagnosis of acne, psoriasis, or eczema were administered the survey prior to their visit with their physician.	To examine the effect of illness perception (IP) on Quality of Life (QoL) and make comparisons across acne, psoriasis, and eczema among different ethnic and cultural backgrounds.	Results suggest that acne impacts and severely reduces QoL especially in SOC patients. IP is different across ethnic/cultural backgrounds, and this also dictates how care is provided, thus making it imperative that providers take close attention to the unique backgrounds of their patients.
USA	N/A	To examine and establish that acne is a condition that disproportionately affects patients of darker skin tones and is associated with impacting and reducing mental health outcomes in youth because of common disparities in our culture and healthcare system.	Specific patient characteristics such as race, culture, and biology shape acne and how it presents and the psychosocial impact that it has on the patient. Youth with darker skin face unique challenges with acne that results in worse outcomes both physically and psychologically and is precipitated by health disparities.
USA	After interviewing a focus group of 7 patients, 15 patients with PIH (12 African American, 3 Asian) were photographed. 4 raters (1 board-certified dermatologist and 3 dermatology residents) then ranked the photographs in order of severity and assigned a PAHPI score. Later this was done with 6 raters and 21 patients with mild to moderate PIH and included healthy adults ages 18 to 99 years with Fitzpatrick skin types III to VI and PIH secondary to acne.	To determine the reliability and validity of an outcome measure for PIH after acne in patients with skin of colour.	The post-acne hyperpigmentation index (PAHPI) is an outcome measure that is validated for PIH, and its knowledge can be used to understand and determine the efficacy of PIH treatments. It assesses PIH and its severity and is a good predictor of reduced quality-of-life in PIH patients.
USA	15561215 patients with acne. 1335061332 (86.8%) White and 20550833 (13.2%) Skin of Colour (SOC). All patients were given a diagnosis of acne from 2009-2017 and participated in the 2019 Medical Expenditure Panel Survey (MEPS). Patients with SOC were identified by reported race of Black, American Indian/Alaskan Native, Asian/Pacific Islander, or multiple races.	To determine differences between patients with acne who are White and those with skin of colour (SOC), specifically in shared decision-making engagement and patient satisfaction with care, using the 2009-2017 and 2019 Medical Panel Expenditure Survey.	It is important for providers to treat the underlying psychosocial impacts of acne on the patient. This is just as important as acne treatment itself. In healthcare systems and patient populations that face barriers and challenges in healthcare, this is even more critical.

## ■ PSYCHOSOCIAL IMPLICATIONS OF ACNE IN PATIENTS WITH SKIN OF COLOR

### Approaches to treatment

Treatment interventions with respect to SOC patients and psychosocial implications (10 of 17 studies) were also discussed.<sup>1-3,6,7,12-16</sup> Many authors proposed that treatments should emphasize the importance of improving QOL and psychosocial impact.<sup>1-3</sup> Therapeutic strategies that can target acne most efficiently were very important to SOC patients.<sup>1,2</sup> Kingston et al<sup>12</sup> discussed access to treatment as a barrier reflecting that Black patients were less likely to receive isotretinoin for acne compared to White patients, and Callender, et al<sup>6</sup> indicated that more than 75% of SOC patients would prefer to receive treatment from a healthcare professional from the same cultural and/or ethnic background as them. A critical point for SOC patients is that approaches to treatment should focus on keloid scarring and/or PIH with the goal of reducing PIH and scarring secondary to acute and subacute disease inflammation, and counselling patients on methods to prevent further discoloration of the skin.<sup>1,3,6,8,13,14,16</sup>

**TABLE 2:** Search strategy

#### Database(s):

Embase <1974 to 2023 May 25>

Ovid MEDLINE(R) ALL <1946 to May 25, 2023>

#	Query	Results from 26 May 2023
1	(health care disparity or health disparity or population group or minority health or cultural factor or transcultural care or hispanic or african american or health care disparity or health care disparities or health disparity or health disparities or population group or population groups or ethnic group or ethnic groups or minority or minorities or cultural factor or cultural factors or transcultural care or hispanic or Hispanics or latino* or Latina* or latinx or african american or african americans or black* or skin of colour or skin of color or people of colour or people of color).mp.	1,303,627
2	exp Acne Vulgaris/	26,449
3	exp acne/	53,844
4	<a href="#">acne.tw</a> .	45,497
5	or/2-4	66,388
6	1 and 5	2,323

For example, Elbuluk et al<sup>15</sup> found that patients should be counselled on sunscreen use, protective clothing, and sun avoidance specifically in more richly pigmented skin tones. Significantly more non-White/Caucasian women than White/Caucasian men found the following characteristics of treatment to be “very important”: few side effects, no bleaching/staining sequelae or skin dryness, and effectiveness to reduce PIH.<sup>6</sup>

### Post-inflammatory hyperpigmentation and keloid scarring

PIH and/or keloid scarring secondary to acne in the context of psychosocial impact was reported in nine of 17 studies and is another important consideration in patients with SOC.<sup>1,3,4,6,10,11,14-16</sup> All of the evaluated studies indicated that PIH and/or keloid scarring was associated with worse psychosocial outcomes compared to acne without PIH—a significant concern in SOC patients. Nigerian undergraduate students with acne and PIH expressed a significant level of subjective anxiety (26.5% vs. 10.3%) and emotional distress (35.4% and 10.33%) compared to those without PIH.<sup>3</sup> PIH was rated as the most troublesome acne sign in non-White/Caucasian women (26.7%) and PIH was the most important marker of acne clearance (41.6% for non-Caucasian vs. 8.4% for Caucasian).<sup>6</sup> Another study found that acne itself was more disturbing to both male and female Caucasian patients than non-Caucasian patients, while PIH was more distressing to non-Caucasian patients than Caucasians.<sup>1</sup> The authors also reported that patients with acne and PIH had greater statistically significant impairments in all domains that was assessed of QOL compared to patients with only acne.<sup>1</sup>

### DISCUSSION

Acne vulgaris is a common disease with demonstrated significant implications on the psychosocial functioning of individuals. For patients with SOC, it is important to appreciate that these implications may be more prominent as a result of greater risk of keloid scarring and substantially more PIH in comparison to White/Caucasian individuals.<sup>6</sup> Acne, PIH, and scarring in patients with SOC require special efforts toward tailoring management strategies, including prevention toward reducing the burden of psychosocial impact; reducing the formation of PIH and scarring; and reducing access and barriers to treatment and care which can exacerbate adverse outcomes.<sup>2,6,14</sup>

The most common psychosocial implications of acne on patients of SOC include increased emotional distress, anxiety, depression, self-esteem, self-

worth, self-image, confidence, stigmatisation, reduced QOL, missed work opportunities, academic struggles, social withdrawal, and overall worsening of psychological and social functioning.<sup>1,3,6,7,10,18</sup> It is important to note that the rates of common psychiatric disorders and symptoms such as anxiety and depression in acne patients differed substantially across studies. For example, Akinboro, et al<sup>3</sup> reported depression in 14.5% of SOC patients with acne, while Callender, et al<sup>6</sup> found 73.3% of patients had symptoms of depression. There are multiple reasons for this variability which include different patient populations, different definitions of symptoms, different sample sizes, ethnic and/or cultural differences, and different ways of measuring symptoms and diagnosed disorders (i.e., PHQ-4 in Gorelick, et al<sup>13</sup> versus the Cardiff Acne Disability Index in Akinboro et al<sup>3</sup>). Nonetheless, although rates of psychosocial implications differ between studies, patients with acne universally have a higher rate of adverse psychosocial outcomes compared to the general population and this is further exacerbated in those with PIH.<sup>15,19</sup> Moreover, studies that reported worse outcomes in non-SOC patients compared to SOC patients, or no significant difference at all, did not evaluate patients that were specifically impacted by PIH or keloid scarring. The literature included in our review examined PIH and scarring in SOC patients and showed that there were significantly worse psychosocial outcomes in this population.<sup>1,3,7,10</sup> Thus, with respect to psychosocial outcomes, acne is a debilitating condition for patients across the spectrum of ethnic and cultural backgrounds. Specifically for patients that are SOC, barriers accessing treatment and care compounded by higher rates of PIH and keloid scarring can have severely negative implications on psychosocial outcomes compared to other groups.<sup>8,12</sup>

Psychosocial effects are also relevant in the context of treatment considerations and modalities in patients who are SOC. Effective and efficient treatment is necessary to reduce the burden of illness and prevent sequelae such as PIH or scarring.<sup>1,2</sup> The literature also showed that patients with SOC are less likely than White patients to be seen by a dermatologist for acne or be prescribed systemic agents for acne.<sup>8</sup> Moreover, one of the most important considerations for treatment in SOC patients is treatment to avoid and reduce PIH and scarring, and to treat these sequelae when they occur.<sup>6,10,16</sup> All the studies emphasized the importance of such therapeutic interventions.<sup>6</sup>

PIH and keloid scarring are substantially more common in patients who are SOC compared to non-SOC patients.<sup>6</sup> Although secondary to acne, they are the greatest acne-related concerns for SOC patients causing significant psychosocial disease burden.<sup>4</sup> Additionally, PIH requires unique treatment considerations, and it is important that clinicians understand the impact of PIH and scarring in the SOC patient population. There are also modifiable risk factors related to offsetting PIH, which may include time to initiate treatment, ultraviolet light exposure, and various environmental effects that can increase the occurrence of PIH and scarring.<sup>15,16</sup> Ultimately, SOC and non-SOC patient outcomes differ across studies, with PIH and scarring resulting in substantially worse psychosocial effects for the former group who are already adversely impacted by barriers to access and treatment.<sup>8,12</sup>

Our scoping review has several limitations. First, the search terms and inclusion criteria may not have produced an exhaustive inclusion of studies using different terms or descriptions for SOC patients and psychosocial implications. However, we attempted to remedy this by applying the most inclusive keywords and subject headings. Second, the definition of “psychosocial,” was quite specific, and other factors commonly encountered by patients with SOC such as reduced access to care, racism, and discrimination may also apply, but were out of scope given the search strategy though they certainly can result in negative psychosocial consequences. Third, there was a relative paucity of literature in comparing SOC patient populations to non-SOC patient populations affected by acne on psychosocial outcomes. We are currently unable to definitively conclude whether psychosocial outcomes are worse in patients with SOC compared to other groups.

Patients with SOC have significant psychosocial sequelae as a result of acne, and PIH and keloid scarring represent common secondary outcomes which appear to adversely affect the population compared to other groups. Future research should aim to better understand how to best treat and approach SOC patients with acne. More research is needed to understand what treatment modalities work best and to compare treatment modalities and the resulting impact they have on PIH and keloid scarring with respect to psychosocial outcomes in those affected by acne. PIH and keloid scarring secondary to acne could also be explored further, to understand what components of PIH and keloid scarring are associated with worse psychosocial outcomes. Finally, there is a need for re-

## ■ PSYCHOSOCIAL IMPLICATIONS OF ACNE IN PATIENTS WITH SKIN OF COLOR

search to understand how structural, political, economic, and geographical barriers in SOC patients with acne can impact and interplay with psychosocial and treatment outcomes.

### CONCLUSION

The current body of research indicates that acne can be a debilitating condition with adverse psychosocial implications for all patient populations. There are adverse psychosocial outcomes, treatment considerations, and secondary acne characteristics such as PIH and keloid scarring that are distinct to patients with SOC. Although patients with SOC are understandably affected by the psychosocial implications of acne, variations in study findings on the topic limit our ability to draw definitive conclusions at this time. More research is needed to compare treatment modalities specific to acne in SOC, to determine consistent, optimal approaches to managing PIH and scarring, and to understand how external barriers can be modified to improve comprehensive, sustainable, and effective disease outcomes for diverse populations.

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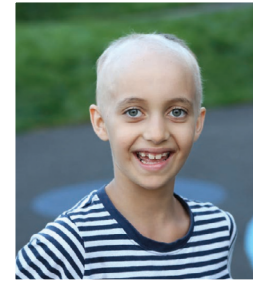
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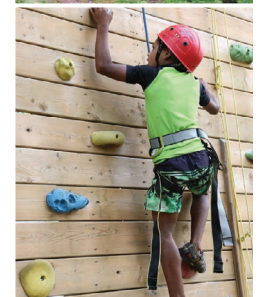
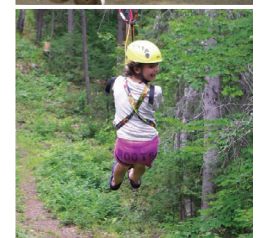


**Le Camp Liberté** a été créé par un groupe de dermatologues déterminés à offrir à des enfants qui ont des problèmes de peau variant de modérés à graves la possibilité de vivre l'expérience d'un camp d'été. Avec ses emplacements dans l'est et l'ouest du Canada, le **Camp Liberté** accueille plus de 40 enfants par été sans qu'il en coûte quoi que ce soit aux parents, grâce à l'appui de généreux donateurs.

Nos camps bénéficient des services complets de dermatologues, de médecins résidents et d'infirmières bénévoles qui s'occupent d'enfants aux prises avec un vaste éventail de problèmes de peau, y compris la dermatite atopique, l'épidermolyse bulleuse et la pelade.

## COMMENT POUVEZ-VOUS AIDER?

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■ SKIN SPECTRUM QUARTERLY: CLINICAL DIALOGUE ON ACNE

# Addressing unmet needs in 2023: The challenges of acne vulgaris therapy

Commentaries by **Jaggi Rao, MD FRCPC<sup>1</sup>**, **Andrew F. Alexis, MD MPH<sup>2</sup>**

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**KEY WORDS, PHRASES:** Acne vulgaris • altered keratinization • sebum production • inflammation • four pillars of acne • C. acnes

**T**he armamentarium for treating patients with moderate to severe acne across the six Fitzpatrick skin types is expected to expand in 2023. This Clinical Dialogue on Acne reviews current scholarly knowledge of acne vulgaris, including the four pillars of acne, and discusses emerging treatment options and challenges. This review is followed by a discussion between Dr. Jaggi Rao of Edmonton, Alberta, Canada and Dr. Andrew Alexis of New York City about an emerging topical therapy for the management of moderate to severe acne.

## INTRODUCTION

Acne vulgaris is a common dermatological condition with significant impact on patients' quality of life.<sup>1</sup> Despite the availability of various treatment options, there are still unmet needs in the management of moderate to severe acne. This paper reviews the four causal factors or 'pillars' of acne vulgaris and existing treatments for the condition. It includes a discussion of the challenges faced in acne therapy and a new topical treatment, clascoterone cream 1% (Winlevi, Sun Pharma), may hold in addressing those challenges. Real-world experience with topical clascoterone cream 1% is reviewed through a dialogue with a dermatologist who has explored its use in practice.

## OVERVIEW

Effective acne management requires addressing the four pillars of acne—altered keratinization, increased sebum production, Cutibacterium acnes proliferation, and inflammation. Current treatment approaches involve a combination of topical, oral, and procedural interventions to address one or more of these pillars.

Insufficient patient compliance with long-term treatment plans, variability in treatment response and tolerability, comorbidities and the potential for persistent sequelae after treatment are all factors that lead to unsatisfactory treatment outcomes.<sup>2</sup> New treatment options that address more of the causes of acne while at the same time overcoming barriers to good out-

comes could lead to greater patient satisfaction.

One new class of acne medications being explored is topical androgen receptor inhibitors, which address the altered sebum production and inflammation associated with acne. They could be used in concert with other topical agents that correct C. acnes proliferation and abnormal keratinization. The first-in-class topical androgen receptor inhibitor approved by Health Canada, topical clascoterone 1%, is indicated for use B.I.D. for the treatment of moderate to severe acne.

## BACKGROUND

Acne vulgaris is a common condition familiar to all clinicians and affecting patients across all skin types. Although a wide range of treatments are available, including topical, oral, and procedural (laser, microneedling) approaches, there remain unmet needs for optimal treatment of these acne patients.

These unmet needs include early identification and rapid initiation of acne treatment; the ability to predict adverse events during treatment; scar prevention and treatment (texture and dyschromia); effective and safe alternatives to oral isotretinoin; and safe and reliable control of androgenic influences on acne development.

Acne vulgaris is generally influenced by four pathogenic factors: alteration in keratinization; increased sebum production; an increase in Cutibacterium acnes; and development of inflammation.<sup>3</sup> These path-

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**FIGURE 1:** Acne lesion types, L-R. Open or closed comedones, papules, pustules, nodules/cysts. (Source: Dr. Jaggi Rao)

ogenic factors are recognized as the four pillars of acne.

“The severity of acne is categorized into four grades based on lesion types present,<sup>4</sup> illustrated in Figure 1. Grade 1 is comedonal acne (mild, open or closed comedones, no papules or pustules); Grade 2 is papular acne (moderate, with inflammatory papules, plus or minus comedones); Grade 3 is pustular acne (moderate, with pustules, plus or minus comedones or inflammatory papules); Grade 4 is nodulocystic acne (severe, with nodules and/or cysts, plus or minus comedones or inflammatory papules or pustules).

### REVIEW: STATUS OF TREATMENTS FOR MODERATE TO SEVERE ACNE

The current clinical approach for the treatment of moderate to severe acne involves a combination of topical, oral, and procedural interventions. Individual

treatment plans are based on the severity of acne, individual patient factors, and treatment response. Following is an overview of the therapies most typically used in Canada.<sup>5</sup>

#### 1. Topical medications including:

- **Retinoids:** Examples include tretinoin, adapalene, trifarotene, and tazarotene. Regulate keratinocyte proliferation and sebum production, reducing blockage of the pilosebaceous canal. Reduce the release of pro-inflammatory cytokines.
- **Benzoyl peroxide:** Antibacterial vs. *C. Acnes*. Also has mild sebostatic and keratolytic properties.
- **Antibiotics:** Examples include clindamycin or erythromycin. Antibacterial and anti-inflammatory.
- **Azelaic acid:** Antibacterial and anti-inflammatory. Inhibits follicular keratinization<sup>6</sup> and reduces hyperpigmentation.

#### 2. Oral medications, including:

- **Antibiotics:** Examples include doxycycline, minocycline, seracycline or tetracycline. Antimicrobial and anti-inflammatory. Physicians usually prescribe for a limited duration to minimize antibiotic resistance.
- **Hormonal therapy:** Typically prescribed to fe-

## CLINICAL DIALOGUE ON ACNE: DR. ANDREW

The topical cream clascoterone 1% (Winlevi, Sun Pharma) was approved by the U.S. Food and Drug Administration in August 2020 for the topical treatment of acne vulgaris in patients 12 years of age and older.

In this Clinical Dialogue on Acne, Dr. Jaggi Rao and Dr. Andrew F. Alexis discuss Dr. Alexis' clinical experience with 1% clascoterone at his practice in New York City, and how any practice pearls can be applied to Canada when the therapy becomes available.



**DR. ALEXIS**

**Dr. Rao:** Dr. Alexis, what has been your experience

with this topical medication in your practice?

**Dr. Alexis:** I have had the opportunity to use 1% clascoterone in my patients with moderate to severe acne. It has been a wonderful addition to our therapeutic armamentarium, in that for the first time we have a topical agent that targets the sebaceous gland. By targeting the sebaceous gland, we can potentially reduce sebum production and even the release of pro-inflammatory cytokines from the sebocytes.

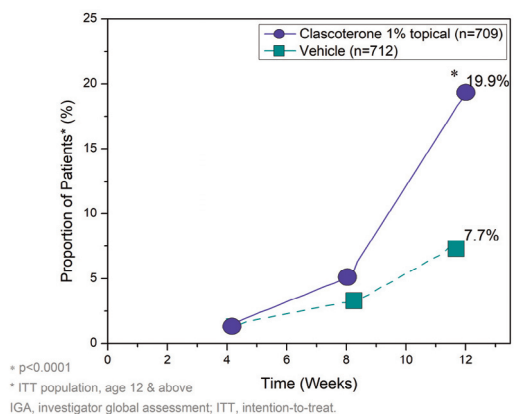
With this one topical agent, we are targeting two of the major pathogenic factors or pathways that contribute to acne: excess sebum production and inflamma-

tion. We have been waiting a long time for an agent to address excess sebum production.

**Dr. Rao:** Any other points you would like to make?

**Dr. Alexis:** Another advantage is that we can use this anti-androgen approach, again for the first time, in both male and female patients. Historically, we have used oral spironolactone for hormonal aspects of acne. But that is limited to, by and large, adult women and certainly females only, and it has an oral route of administration.

So to have a topical that targets the androgen receptor found in the sebocyte that can be used in both male and female patients 12



**TABLE 1:** Proportion of patients achieving IGA success through week 12 \* p<0.0001; †ITT population, age 12 and over.

male patients. Examples include oral contraceptives containing estrogen and progestin or anti-androgen medications such as spironolactone. Primarily regulate sebum production.<sup>7</sup>

- **Retinoids:** Regulate keratinocyte proliferation and sebum production, reducing blockage of the pilosebaceous canal. Reduce the release of pro-inflammatory cytokines.

- 3. Procedural interventions:** Dermatologists may recommend certain procedures to complement topical and oral treatments, particularly for the management of potential scarring and hyperpig-

mentation. These procedures include: chemical peels; laser and light therapies, including intense pulsed light (IPL), or photodynamic therapy (PDT), and microneedling.

It is important to note that the choice of treatment depends on individual patient factors, and different approaches may be combined for optimal results. A personalized treatment plan will consider any potential side effects and develop appropriate follow-up care. Regular communication between clinicians and patients is crucial to track progress, make therapy adjustments, and ensure the best possible outcome.

## THE CHALLENGES OF TREATING ACNE

Clinicians may encounter several challenges when treating patients with moderate to severe acne, including:

- **Patient adherence:** Acne treatment often requires a long-term commitment, so one of the biggest challenges is ensuring patient adherence with the prescribed treatment plan. Failure to adhere with the treatment plan can hinder treatment and prolong acne symptom duration.
- **Treatment response variability:** Different individuals may respond differently to the same acne treatments. What works well for one patient may not be as effective for an-

## ALEXIS IN CONVERSATION WITH DR. JAGGI RAO

years of age and older, according to the FDA approved indication in the U.S., has really been a remarkable advance in treating acne.

**Dr. Rao:** Can you comment on the tolerability of 1% clascoterone cream?

**Dr. Alexis:** From a tolerability standpoint, 1% clascoterone cream has been very favourable, with very low rates of any adverse cutaneous effects in my experience, as well as in the pivotal phase three trials. Another aspect that I like, which is off-label, is combination therapy. You can employ 1% clascoterone B.I.D. as a monotherapy, of course, it has been demonstrated to have superior

efficacy with respect to Investigator Global Assessment and in inflammatory lesions and non-inflammatory lesions versus vehicle.

But in the real-world setting, we do have the opportunity to use it in combination with other agents. And so being able to target all four pathogenic factors of acne at the same time with a well-rounded topical acne regimen represents a significant advance, in my view. One example would be to prescribe a retinoid-benzoyl peroxide fixed combination in the evening and 1% clascoterone in the morning.

And so just with those two different products and a 24-hour regimen, that patient now is tar-

getting all four of the pathogenic factors of acne from the over production of C. acnes, hyperkeratinization of the hair follicle, excess sebum production, and inflammation. Achieving that four-pronged approach with only topical therapy is a tremendous advance.

[Clascoterone's] novel mechanism of action—being able to target the sebaceous gland and the androgen-driven aspects of the disease, which we



other, and clinicians need to closely monitor the patient's progress and adjust the treatment plan accordingly.

- **Side effects and tolerability:** Some acne treatments can have side effects or cause skin irritation. Dermatologists need to assess the patient's tolerance to these treatments and manage any adverse effects. Balancing the need for efficacy with minimizing side effects can be a delicate task.
- **Psychological impact:** Acne can significantly impact a person's self-esteem and mental well-being, especially in cases of moderate to severe acne.
- **Comorbidities and underlying causes:** Acne can be associated with underlying medical conditions such as polycystic ovary syndrome (PCOS) or hormonal imbalances. Dermatologists must assess the patient's medical history and, if required, collaborate with other specialists to address these comorbidities. Treating the underlying cause can be crucial for long-term acne management.
- **Treatment resistance:** In some cases, acne may not respond adequately to standard treatments, and clinicians may need to discuss alternative treatment options or combination therapies.
- **Scarring and hyperpigmentation:** Moderate to severe acne lesions can lead to scarring or hyperpigmentation, which may persist even after successful treatment. Dermatologists may need

to incorporate additional treatments, such as topical agents for hyperpigmentation, chemical peels, laser therapy, or microneedling, to address these residual skin issues and improve the skin's overall appearance.

## NEW CLASS OF MEDICATION

Topical androgen receptor inhibitors target sebum production at the follicle and inflammation by regulating androgenic hormones. This class of medications could potentially be used in conjunction with agents that target other pillars of acne. Data from an open-label extension study of the topical antiandrogen agent clascoterone 1% show that roughly 50% of patients were able to achieve Investigator's Global Assessment (IGA) scores of 0 (clear) or 1 (almost clear) after nine months of treatment.<sup>8</sup> The improvement in acne was significantly better than vehicle alone by week 12 (Table 1).<sup>9</sup> The investigators observed no significant difference in treatment-related adverse events between the active clascoterone 1% and vehicle control arms.

## CONCLUSION

The management of moderate to severe acne poses significant challenges despite the range of available treatments. The introduction of clascoterone cream 1% may offer a promising addition to the armamentarium for clinicians.

know is a key driver of sebum production—is really advantageous for a topical.

There are many scenarios where a female patient using oral spironolactone can use topical 1% clascoterone as an alternative to achieve that anti-androgen effect. I have had patients who I have discussed the option of an anti-androgen-based therapy with and in many cases there is a preference on the part of the patient to go with a topical versus an oral.

I think it is important to mention that this is not a medication that should be pigeonholed just for adult females with hormonal acne. This therapy is approved for

males and females, 12 years of age and above.

We know that androgens and their effects on the sebaceous gland are relevant to any acne patient, regardless of gender. And so being able to treat both boys, girls, men, and women with this topical agent to target this particular pathway, which had been a sort of blind spot with available topical therapies previously, has certainly been a great advantage over the past year.

**Dr. Rao:** 1% clascoterone is a topical, and that means it is easy and preferable [for many patients] to use. I imagine that people will probably even use it for maintenance once their acne has cleared if there

is a predictable hormonal aspect to [their acne].

**Dr. Alexis:** I can certainly see a role for long-term maintenance using 1% clascoterone as well.

When we look at the tolerability rates of any cutaneous adverse events they are very low, and very favourable compared to vehicle.

**Dr. Rao:** What has been your experience combining 1% clascoterone topical therapy with oral therapy?

**Dr. Alexis:** Combination with oral therapy is a scenario that I have had experience with and would certainly consider in the right patient. If a patient has more severe disease requiring oral therapy as we frequently see, we combine oral therapy with

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Reviewed by Heather Woolery-Lloyd, MD, Dermatologist, University of Miami Health Systems

topicals.

I have no concern combining oral antibiotics, for example, with topical clascoterone. Now, one might wonder, well, what about combining oral spironolactone and topical clascoterone? I have not yet had that experience. I cannot recall any specific patient that I have done that for, but whether there is value in doing so in some scenarios remains to be seen.

My typical combination with an oral agent would be with an oral antibiotic. An example would be an oral antibiotic with a topical retinoid-benzoyl peroxide fixed combination product. I always want to include benzoyl peroxide when I use an oral antibiotic just to inhibit the

development of antibiotic resistance. The patient would be directed to use the benzoyl peroxide-retinoid product at night and 1% clascoterone in the morning. If needed I might prescribe an oral antibiotic as well.

Another advantage of 1% clascoterone cream is in combination with oral isotretinoin. Historically a patient on oral isotretinoin would have difficulty tolerating many of the topicals that we would prescribe, whereas I would not be terribly concerned about increased tolerability issues such as irritation when using 1% clascoterone with oral isotretinoin.

**Dr. Rao:** We always thought of

isotretinoin as a monotherapeutic drug, largely because we did not have a topical agent that would do what isotretinoin is doing. Isotretinoin fulfills most of the four pillars, but does not effectively manage the androgenic causes of acne. So there is a good rationale to use a topical plus oral isotretinoin in the form of a topical 1% clascoterone.

**Dr. Alexis:** I think it is important to treat our acne patients with a mechanistic approach aiming to target the four pathogenic factors of acne whenever possible.

And with the addition of this new topical androgen receptor inhibitor clascoterone, we can now with topical therapy alone target all four pathogenic factors.

# REVIEW: THE FOUR PILLARS OF ACNE

## I. INFLAMMATION IN ACNE VULGARIS

Acne vulgaris is a prevalent dermatological condition characterized by the development of inflammatory and non-inflammatory lesions on the skin. Inflammation is one of the fundamental factors contributing to the pathogenesis of acne and is recognized as a significant pillar alongside sebum production, hyperkeratinization, and bacterial colonization. Understanding the role of inflammation in acne vulgaris is crucial for effective management and treatment strategies.

The inflammatory response plays a central role in the development and progression of acne vulgaris, contributing to the formation and persistence of acne lesions.

Various triggers, such as comedone rupture and bacterial components, stimulate the immune system. This leads to the release of pro-inflammatory cytokines, chemokines, and inflammatory mediators, promoting inflammation within the pilosebaceous unit.

In response to the inflammatory signals, neutrophils migrate to the site of acne lesions. These neutrophils release enzymes and reactive oxygen species, leading to tissue damage and exacerbation of the inflammatory process.

Targeting inflammation is a crucial aspect of acne treatment. Several therapeutic approaches aim to reduce inflammation and improve acne outcomes.

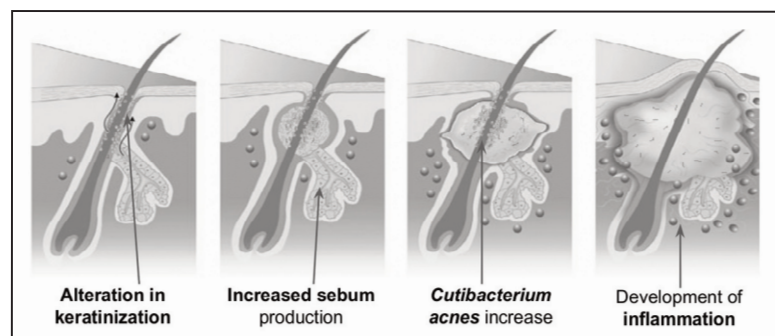
- **Topical and Systemic Anti-inflammatory Agents:** Although topical treatments containing anti-inflammatory agents such as corticosteroids or nonsteroidal anti-inflammatory drugs (NSAIDs) can help reduce inflammation in other conditions, these agents are not typically used in acne. Acne

treatments with known anti-inflammatory effects include topical retinoids and topical antibiotics. Systemic anti-inflammatory medications, including oral antibiotics or isotretinoin, may be prescribed for more severe cases.

- **Topical Retinoids:** Retinoids exhibit anti-inflammatory properties by modulating cellular differentiation and reducing inflammation within the pilosebaceous unit. They are effective in treating inflammatory acne lesions and preventing their formation.
- **Anti-inflammatory Dietary Modifications:** Certain dietary changes may help manage inflammation in acne. Consuming a low-glycemic index diet, rich in fruits, vegetables, whole grains, and lean proteins, may help reduce insulin levels and subsequent inflammation.
- **Laser and Light Therapies:** Various laser and light-based therapies, such as pulsed dye laser or photodynamic therapy, target inflammatory components of acne. They can reduce inflammation, inhibit sebaceous gland activity, and promote tissue healing.

Inflammation is a crucial pillar in the pathogenesis of acne vulgaris, playing a central role in the development and persistence of acne lesions. Understanding the role of inflammation allows physicians to implement targeted treatment strategies to manage this aspect of acne. By employing anti-inflammatory agents, retinoids, dietary modifications, and laser/light therapies, physicians can help to address inflammation, improve acne symptoms, and optimize patient outcomes.

## THE FOUR PATHOGENIC FACTORS OF ACNE



## II. C. ACNES COLONIZATION IN ACNE VULGARIS

One of the key factors contributing to the pathogenesis of acne is bacterial colonization, specifically by *Cutibacterium acnes* (*C. acnes*). Understanding the role of bacterial colonization in acne etiology is essential for effective management and treatment.

*C. acnes*, a commensal bacterium, is found abundantly on the

skin surface, particularly in sebaceous-rich areas. In individuals prone to acne, there is an increased colonization of *C. acnes* within the pilosebaceous units. This colonization contributes to the development and progression of acne through various mechanisms.

**1. Inflammatory response:** *C. acnes* activates the innate immune system, leading to the release of pro-inflammatory cytokines and chemokines. This inflammatory response plays a crucial role in the formation of inflammatory acne lesions.

**2. Lipase production:** *C. acnes* produces lipases that break down sebum triglycerides into free fatty acids. Excess free fatty acids disrupt the skin's lipid barrier, promoting follicular hyperkeratinization and comedone formation.

Managing *C. acnes* colonization is an important aspect of acne treatment. Several approaches can be employed:

**Topical and Systemic Antibiotics:** Antibiotics such as erythromycin and clindamycin are commonly used to reduce *C. acnes* colonization. However, their long-term use should be avoided due to the risk of the development of antibiotic resistance.

**Topical Retinoids:** Retinoids help normalize the pilosebaceous unit and possess anti-inflammatory properties. They indirectly impact *C. acnes* colonization by reducing follicular hyperkeratinization.

**Benzoyl Peroxide:** Benzoyl peroxide exhibits antibacterial activity against *C. acnes*, reducing colonization. It also has keratolytic and anti-inflammatory properties, making it an effective treatment option.

**Photodynamic Therapy:** Photodynamic therapy selectively targets *C. acnes* using a photosensitizing agent and light exposure. This approach can reduce bacterial colonization.

*C. acnes* colonization is a significant contributor to the pathogenesis of acne vulgaris. Understanding its role allows physicians to implement targeted treatment strategies. By managing bacterial colonization through appropriate interventions such as antibiotics, retinoids, benzoyl peroxide, or photodynamic therapy, physicians can effectively address this pillar of acne and improve patient outcomes.

### III. ALTERED SEBUM PRODUCTION AND COMPOSITION

Acne vulgaris is a common skin disorder that can be triggered by excessive oil or sebum production. Excess sebum combined with dead skin cells can form a plug inside the pore, resulting in blackheads and pimples.

Sebaceous glands, distributed throughout the skin, play a crucial role in maintaining skin hydration and lubrication. Androgens, particularly dihydrotestosterone, stimulate the production of sebum by increasing sebocyte proliferation and lipid synthesis. In patients with acne-prone skin, there is an exaggerated response to androgen stimulation, resulting in excessive sebum production. The accumulation of sebum within the pilosebaceous units leads to the obstruction of hair follicles and the formation of comedones.

Sebum acts as a substrate for microbial colonization, particularly by *Cutibacterium acnes* (*C. acnes*), a commensal bacterium of the pilosebaceous unit. Increased sebum production promotes the growth and proliferation of *C. acnes*, leading to the release of inflammatory mediators. This triggers an inflammatory response, characterized by the production of pro-inflammatory cytokines, chemotactic factors, and reactive oxygen species. The resultant inflammation contributes to the formation of papules, pustules, and inflammatory acne lesions.

Several treatment approaches have been developed to modulate sebaceous gland activity and reduce sebum production:

**Topical Retinoids:** Retinoids, such as tretinoin and adapalene, normalize the keratinization process within the pilosebaceous unit, reducing the formation of comedones and promoting the expulsion of trapped sebum. They also have anti-inflammatory effects, reducing the severity of acne lesions.

**Anti-Androgens:** Anti-androgen medications, such as spironolactone and clascoterone, can be used in cases where hormonal imbalances contribute to sebum overproduction. These agents inhibit androgen receptor activation and reduce sebaceous gland activity.

**Oral Isotretinoin:** Isotretinoin suppresses sebum production, normalizes keratinization, and exhibits antimicrobial properties against *C. acnes*.

**Laser and Light Therapies:** Certain light-based therapies, such as photodynamic therapy and

## FURTHER READINGS ON CURRENT ACNE RESEARCH

**Systematic review of clinical practice guidelines for acne vulgaris published between January 2017 and July 2021.** The authors of this review aimed to critically appraise reporting in acne guidelines and compare the results to previous systematic reviews of acne guidelines. They also examine acne treatment guidance on pre-specified acne treatments of interest. In: *Skin Health and Disease* (May 23, 2023; e240).

**Efficacy and safety of 1% clascoterone cream in patients aged >12 years with acne vulgaris.** This is a pooled data analysis of the efficacy and safety of 1% clascoterone cream after 12 weeks of treatment from two phase III trials. The investigators found clascoterone was efficacious, with a favourable safety profile and low rates of local skin reactions in the study population. In: *Journal of Drugs in Dermatology* (Feb. 1, 2023; 22(2):174-181).

**The effectiveness of pyruvic acid peeling in improving the quality of life of patients with acne vulgaris.** This study assessed the impact of pyruvic acid peeling on the quality of life of 200 patients with mild-to-moderate acne vulgaris. The authors report the procedure significantly decreased the severity of acne and improved the quality of life of the patients. In: *Journal of Clinical Medicine* (May 22, 2023; 12(10):3592).

**The assessment of moderate acne vulgaris face skin using blood perfusion and hyperspectral imaging: A pilot study.** The purpose of this research was to assess the potential

for detecting acne preclinically through imaging blood microcirculation. The authors write that their findings suggest not only that this imaging approach may aid in the early detection of acne lesions but may also be a tool for quantifying the effectiveness of acne treatment. In: *Journal of Cosmetic Dermatology* (May 29, 2023, online ahead of print).

**Androgen receptor inhibitors in the treatment of acne vulgaris: Efficacy and safety profiles of clascoterone 1% cream.** This narrative review provides a summary of the clinical trials on the efficacy and safety of clascoterone 1% cream to support medical provider understanding regarding which patients will benefit most from this medication. In: *Clinical, Cosmetic and Investigational Dermatology* (July 15, 2022; 15:1357-1366)

**Case report: Acne vulgaris treatment with 5-Aminolaevulinic acid photodynamic therapy and adalimumab: A novel approach.** This report presents the case of a patient with severe and refractory acne vulgaris who was treated with a combination of 5-Aminolaevulinic acid photodynamic therapy and adalimumab, resulting in significant improvement in the condition. In: *Frontiers in Medicine* (Lausanne) (May 12, 2023; 10:1187186).

**Avidumicin, a novel cyclic bacteriocin produced by *Cutibacterium avidum*, shows anti-*Cutibacterium acnes* activity.** In this in vitro study researchers assessed the growth inhibition activity against *Cu. acnes* of 122 strains of

bacteria isolated from the skin of healthy volunteers and acne patients. They identified *Cu. Avidum* and a protein produced by the bacteria—avidumicin—as potential alternative agents in antimicrobial therapy for acne vulgaris. In: *The Journal of Antibiotics* (Tokyo) (June 1, 2023, online ahead of print).

**Efficacy of oxybrasion and cosmetic acids on selected skin parameters in the treatment with acne vulgaris.** The authors of this paper evaluated the efficacy of an oxybrasion treatment—an exfoliation procedure—applied alone or in combination with cosmetic acids in improving acne-prone skin and selected skin parameters. They found that while both approaches resulted in skin and skin parameter improvements, the combination treatment resulted in greater improvements. In: *Clinical, Cosmetic, and Investigational Dermatology* (May 19, 2023; 16:1309-1317).

**A comparative study of 20% azelaic acid cream versus 5% tranexamic acid solution for the treatment of postinflammatory hyperpigmentation in patients with acne vulgaris: A single-blinded randomized clinical trial.** This study was conducted to compare the efficacy of twice-daily administration of 20% azelaic acid cream versus 5% tranexamic acid solution for the treatment of post-inflammatory hyperpigmentation in patients with acne vulgaris. Both treatments were found to be comparably effective though the safety profile of the tranexamic acid was significantly better in the first month post-treatment. In: *Journal of Research in Medical Sciences* (April 1, 2023; 28:18)



lasers targeting sebaceous glands, can reduce sebum production by selectively damaging sebaceous glands.

Sebum overproduction is a central component in the pathogenesis of acne vulgaris, contributing to follicular obstruction, microbial colonization, and inflammation. By targeting sebum production, physicians can effectively manage acne by reducing the primary causative factor. Understanding the role of sebum overproduction as one of the four pillars of acne is essential in providing evidence-based and personalized treatment approaches for patients with this common dermatologic condition.

#### IV. ABNORMAL KERATINIZATION

Acne vulgaris is characterized by the formation of comedones, papules, pustules, and, in severe cases, nodules or cysts. The pilosebaceous unit, comprising the hair follicle and sebaceous gland, plays a critical role in acne pathogenesis. The pathogenesis of acne involves multiple factors, with abnormal keratinization recognized as one of the four pillars of acne.

Abnormal keratinization refers to the disruption of the normal development, differentiation, and shedding of keratinocytes within the pilosebaceous unit. In acne-prone individuals, this process is characterized by increased keratinocyte proliferation, altered differentiation, and impaired desquamation, leading to the formation of microcomedones.

Excessive production of keratinocytes within the follicular epithelium, combined with increased sebum production, leads to the formation of microcomedones. These microcomedones obstruct the hair follicle, resulting in the accumulation of sebum and the colonization of *Cutibacterium acnes*, (C.

acnes). This microenvironment promotes inflammation and the development of acne lesions.

Several therapeutic approaches aim to normalize keratinocyte proliferation, differentiation, and desquamation:

**Topical Retinoids:** Retinoids, such as tretinoin and adapalene, promote the normalization of keratinocyte differentiation and reduce hyperkeratinization. They also facilitate the shedding of comedones.

**Salicylic Acid:** Salicylic acid acts as a keratolytic agent by enhancing the desquamation of hyperkeratotic cells. It unclogs pores and prevents the formation of comedones.

**Chemical Peels:** Superficial chemical peels containing alpha-hydroxy acids or beta-hydroxy acids accelerate the exfoliation of dead skin cells, thereby reducing follicular obstruction and comedone formation.

**Combination Therapies:** Combining topical retinoids with other agents, such as benzoyl peroxide or antibiotics, can provide synergistic effects. This approach targets multiple pathogenic factors, including abnormal keratinization, sebum production, and microbial colonization.

Abnormal keratinization is a primary component in the pathogenesis of acne vulgaris, contributing to the formation of comedones and subsequent inflammation. By employing therapies that balance keratinocyte proliferation, differentiation, and desquamation, physicians can effectively manage acne and improve patient outcomes. This comprehensive approach addresses the root cause of acne vulgaris, ultimately providing relief and enhancing the quality of life for affected individuals.

# 2023 honor roll

*Practitioners who have made a difference, as nominated by their peers*

## A dermatologist's mission:

### Dr. Susan C. Taylor works to advance skin of color considerations

**D**r. Susan C. Taylor had a vision of treating chronic conditions such as hypertension and diabetes but learning about dermatology when she neared completion of medical school sent her career in a different direction.

"When I went to medical school, I was pretty convinced I was going to be a physician who would take care of patients with diabetes or hypertension or cardiovascular



disease in the inner city, but during my fourth year of medical school, I found that I really had an affinity for dermatology," recalled Dr. Taylor, Founder and Past President of the Skin of Color Society. "It was my first exposure to dermatology, and it was an opportunity to be able to see and feel the pathology without, for example, listening through a stethoscope and looking at an X-ray." Dr. Taylor is the Bernett

L. Johnson Endowed Professor and Vice Chair for Diversity, Equity, and Inclusion, Department of Dermatology, Perelman School of Medicine at the University of Pennsylvania, Philadelphia. She is also President-Elect of the American Academy of Dermatology (AAD), taking office in March 2024.

While dermatology piqued Dr. Taylor's interest, she remained committed to her intention to pursue internal medicine as a specialty. "Although I was very interested in dermatology, I decided I would stay true to my original mission and go on to complete a residency in internal medicine," she said. "Halfway through, I didn't think that I would ultimately feel fulfilled in internal medicine and decided to do a residency in dermatology."

#### COMMITTED TO DERMATOLOGY

After completing her residency in dermatology, she began practicing as a dermatologist in Philadelphia. She found that patients, many of whom had skin of color, were seeking her care because they were not getting answers about their skin concerns from other practitioners.

"When I initially started private practice in Philadelphia, I found that I was sought out by many patients of color," said Dr. Taylor. "They wanted a dermatologist who understood their cultural practices and their disorders. Many of those patients had been turned away by other dermatologists who told them, 'Nothing can be done. This is normal. Don't worry about it' when their disorder truly represented a disease entity."

The disorders presented by patients with skin of color ranged from hair disorders to pigmentation concerns. "One of the major issues was hair loss, and different disorders that affected the scalp, such as seborrheic dermatitis," said Dr. Taylor. "And [most der-

matologists] didn't understand the hair type and the grooming practices. They didn't understand that for some of these types of hair loss, something could indeed be done."

As an example of inappropriate care, patients with skin of color with seborrheic dermatitis were being prescribed medications that would have damaged their hair, said Dr. Taylor. In addition, there was a failure to understand and treat pigmentation issues, such as discolorations of the skin, she added.

#### SOC PATIENTS NOT RECEIVING APPROPRIATE CARE

Around the time that Dr. Taylor was providing care for patients with skin of color and was realizing that these patients were not receiving appropriate care from many dermatologists, she was approached about taking up a leadership position that would put dermatologic care for patients with skin of color front and center.

"I received a call from my former Columbia professors who had identified a need for some type of center in New York City that focused on people with skin of color, and they asked me if I would come to New York and create that center," said Dr. Taylor. "I ultimately did because there was a real paucity in dermatologists who understood the conditions and knew how to treat the conditions."

Dr. Taylor founded the Skin of Color Society in 2004 and was President until 2009. The society has continually promoted a focus on skin of color in dermatology, and as a result, the writing of articles, the writing of textbooks, and the development of lectures for dermatology colleagues about disorders that affect individuals with skin of color has been widely expanded, she said.

"Attempts have increased over the past 20 years or more to have more textbooks, more journal articles, and more atlases with images of patients of color, as well as attempts to enroll more patients of color in clinical trials," said Dr. Taylor. "All of those things were missing or very sparse back in 1999 and 2000."

Dr. Taylor said the tipping point in dermatology where skin of color is concerned occurred in 2020, following a period of social and racial unrest in the United States after the murder of George Floyd. "I think that is when people really started to look at these issues and make a concerted effort to make sure there was more and more attention paid to groups with skin of color," said Dr. Taylor.

One of Dr. Taylor's goals is that skin of color in dermatology be part and parcel of learning content in medical school and in medical residency. "The hope is that, with regard to curricula, that skin of color will be completely integrated into all lectures, into all textbooks, and make up a good part of journal articles. That skin of color is not treated as separate, but that it is included by everyone," said Dr. Taylor. "That is the goal."

# Laundry Products & Sensitive Skin: How to Support Patients for Better Quality of Life

**60-70% of women and 50-60% of men report having some level of sensitive skin.<sup>1</sup>**

Are you making laundry recommendations that protect your patients from potentially irritating ingredients like scents and perfumes?

## Sensitive skin impacts patient quality of life

Painful and irritating — flare-ups of sensitive skin symptoms can have a profound impact on a patient's day-to-day activities. Posing as a barrier to participating in the things a person needs (or wants) to do, unmanaged sensitive skin symptoms can quickly result in adverse physical and mental health outcomes for your patients.

Broadly defined as a condition that can cause itching, burning, stinging, and dryness of the skin, sensitive skin presents differently for each patient.<sup>1</sup> Caused by many different factors, recent research shows that regular use of household items such as scented laundry detergents impacts the severity of a patient's sensitive skin symptoms — something that, when left unaddressed, can decrease patient quality of life.<sup>2</sup>

## Scented detergents can be irritating to patients with sensitive skin

When most patients think about clean clothing, they often associate it with a fresh and powerful scent.

With many laundry products offering freshly scented options, sensitive skin patients may not be aware of the irritation fragrance can cause.

In a recent 2021 multi-national study, it was found that 4.1% of participants reported having an allergy to fragrance ingredients added to everyday household products like laundry detergent.<sup>3</sup>

## It's time to bring the laundry routine into patient discussions

As a healthcare professional looking out for patients' best interests, it is time to bring laundry into the conversation about their personal care routine. To better support your patients with sensitive skin, we recommend healthcare professionals:

- Create an open line of discussion with your sensitive skin patients to learn more about their current laundry practices.
- Discuss the potential risks of using laundry products containing scents and perfumes, even if labelled as "natural" or made as "Bio" products from locally produced vendors.
- Offer specific recommendations for a laundry regimen that is entirely fragrance and perfume-free for the best results.<sup>4</sup>

## Help your patients build a fragrance-free laundry regimen

As one of the easiest ways to support patients with sensitive skin, recommending a fragrance-free laundry regimen like the Tide, Downy, and Bounce Free & Gentle collection is a great option.



**Tide, Downy, and Bounce Free & Gentle Regimen.  
#1 Dermatologist Recommended.**

Dermatologist-recommended and created with sensitive skin in mind, the **Free & Gentle regimen** is a simple three-step process:



- **Step 1: Clean** – Tide Free & Gentle's Lift and Block cleaning action cleans to the fibre level and prevents soils from redepositing.



- **Step 2: Protect** – Downy Free & Gentle provides a conditioning benefit by reducing friction between clothes and skin.



- **Step 3: Enhance** – Bounce Free & Gentle provides an anti-static treatment that has been shown to repel pet hair.

When working with patients struggling with sensitive skin, it is essential to bring the laundry routine into the discussion. By highlighting the importance of a fragrance-free laundry regimen that is designed without potentially irritating perfumes and scents, healthcare professionals can help patients improve their quality of life, allowing them to get back to doing the things they love.

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Reference: 1. AbbVie Corporation. Data on file.