AUCTORES
Globalize your Research

Journal of General Medicine and Clinical Practice
Leonard B. Goldstein *

Open Access

Opinion

The Rationale for Skin Lightening Treatments, Along with Their Cultural Implications and Consequences

Leonard B. Goldstein *, Aarushi Gulatti, Stephanie Jackson, Andrew Igbokwe, Tsz Chun Chung, James Keane

A.T. Still University School of Osteopathic Medicine in Arizona

***Corresponding Author:** Leonard B. Goldstein, A.T. Still University School of Osteopathic Medicine in Arizona

Received date: March 14, 2024; Accepted date: March 28, 2024; Published date: April 16, 2024

Citation: Leonard B. Goldstein, Aarushi Gulatti, Stephanie Jackson, Andrew Igbokwe, Tsz C. Chung, James Keane, (2024), The Rationale for Skin Lightening Treatments, Along with Their Cultural Implications and Consequences, *J. General Medicine and Clinical Practice*, 7(4); **DOI:10.31579/2639-4162/165**

Abstract

Melanin is the primary orchestrator of a delicate dance between genetics, environment, and evolutionary influences that results in skin pigmentation, an intriguing display of human phenotypic variability. Melanin is produced by melanocytes located in the basal layer of the epidermis. It comes in two forms: pheomelanin, which gives colors of yellow and red, and eumelanin, which gives colors of brown and black. The complex pattern of human skin tones is created by the dynamic interaction of different melanin subtypes. Although the main function of melanin is to protect the skin from the molecular damage caused by UV radiation, dysregulation of the protein can result in hyperpigmentation, which can cause emotional and cosmetic problems. To address these pigmentary issues, a number of skin-lightening treatments have been developed. For melasma, these treatments include hydroquinone, corticosteroids, and tretinoin; for post-inflammatory hyperpigmentation, they include novel approaches such as the tetrapeptide Pro-Lys-Glu-Lys (PKEK). Regrettably, the pursuit of lighter skin is not solely rooted in medical necessity but often influenced by societal standards and cultural perceptions. Historically, many cultures have associated fair skin with beauty, femininity, and social status, perpetuating a preference for lighter skin tones. This societal pressure, particularly prevalent among women of color, has fueled the widespread use of skin lightening agents, despite their known risks and complications. Safer substitutes, such as sunscreen, have been suggested as a more sustainable method of treating hyperpigmentation in order to lessen these hazards. Sunscreen is an excellent alternative for skin-lightening procedures given that it safeguards against UV-induced aging and cancer in addition to assisting in the management of pigmentary disorders including melasma and post-inflammatory hyperpigmentation. In conclusion, the practice of skin lightening reflects a complex interplay of societal, cultural, and medical factors. While advancements in skin lightening therapies offer hope for those struggling with hyperpigmentation, addressing the underlying cultural and societal pressures is essential in promoting healthier and more inclusive beauty standards.

Kew Words: urinary incontinence; menopausal elderly women; obesity

Introduction

Skin pigmentation stands as a remarkable manifestation of human phenotypic diversity, intricately guided by the nuanced interplay of genetics, environment, and evolutionary forces, wherein melanin assumes a pivotal role. [1-3] Melanin is a skin pigment produced by melanocytes in the stratum basale of the epidermis, with subtypes eumelanin (brown/black) and pheomelanin (yellow/red) contributing various ratios and shades to the human skin color spectrum. [4-6] High quantities of dark melanin offer skin protection against molecular damage caused by harmful UV rays, thereby lessening the effects of photoaging, and reducing the risk of malignant transformation. [1,4,5] Despite these known benefits, complications arise when melanin is altered or deposited in excess. Conditions of hyperpigmentation include but are not limited to hormone-related melasma, solar lentigines, and post-inflammatory reactions that leave skin uneven, resulting in aesthetic concerns and potential emotional distress.[3,4,10]Consequently, patients may opt for skin lightening therapies such as the triple combination of hydroquinone, corticosteroids, and tretinoin for melasma,.[8] or alternatives like the tetrapeptide Pro-Lys-Glu-Lys (PKEK) for both melasma and post inflammatory hyperpigmentation.[9] Other approaches may include: agents targeting melanosome transfer or tyrosinase inhibition. [1,3,6,10] antioxidants [3] laser therapy. [6-8] or dangerous bleaching products on the more extreme end. [10-13] There are a multitude of therapies and reasons for seeking skin lightening treatment, however the risks of treatment may outweigh the benefits. Therefore, this paper delves into the rationale for skin lightening, including associated cultural implications and consequences of the practice. The esthetic standards which are utilized to judge others' appearances are often infused with sexism, racism and other forms of bigotry, including a preference for lighter skin [14-15]. Some researchers have even found correlation between lighter skin and higher incomes.[17] This article also examines how sunscreen can serve as a safer but short-term alternative to skin lightening products for addressing hyperpigmentation. Moreover, it highlights the need to address the impacts of cultural practices and advertising efforts by the

cosmetic industry, as well as racial disparities. These issues should be considered in the pursuit of long-term solutions to prevent the abuse of skin lightening products.

Cultural implications of skin lightening treatments

Motivation for seeking skin lightening sometimes reaches beyond medical concern, stemming from societal perceptions and/or cultural influences.[13],[15] For example, Chinese culture has historically favored fair skin and associated it with one's social status, success, and femininity. [2] Studies have shown cosmetic skin lightening to be a growing dermatologic health issue primarily affecting females and communities of color.[2], [13], [15] In a cross sectional study examining the understanding, perspective, and engagement in skin whitening among female college students in Northeastern Nigeria, researchers revealed that a substantial 95.7% of participants had prior knowledge about skin lightening agents, with 48.1% actively using such agents despite wide recognition (89.1%) of their adverse effects[16] This study highlights the broad-reach of skin lightening methods and the measures individuals are willing to take to attain a lighter complexion. Interestingly, 56% of respondents attributed the whitening practice towards beautification [16] which further exemplifies the issues of cosmetic conformity. A 2019 pilot study unveiled that the habit of skin bleaching often commences during late adolescence or early adulthood, with a median duration of 13.5 years of bleaching agent usage among African and Afro-Caribbean women in New York City.[17] In a cross-sectional study involving South Asian Americans, it was discovered that 67% of users initiated the use of skin-lightening products between 10 – 20 years old, citing beauty standards and parental pressure as perpetuating factors.[18] Research has illuminated the varying pressures shaping decisions about skin pigmentation alteration, particularly targeting young women of color. This underscores the need for more research, especially in terms of skin-lightening safety and dermatological impacts on colorism.

Undesirable outcomes accompanying skin lightening treatment use

Although skin lightening is a common practice, there are a plethora of adverse effects accompanying these treatments. Additionally, the ramifications of skin lightening products extend far beyond the realm of skin health and have a significant psychological impact on users.[11] A few of the most highly used products in skin lightening treatments across different regions are hydroquinone, class I steroids, and mercury.[11] These are powerful chemicals with well-documented side effect profiles. To elaborate, hydroquinone is a teratogen which can lead to peripheral neuropathy as well as being linked to *hyperpigmentation*, the exact opposite of its intended use in a skin lightening formulation.[11]. One of the common forms of hyperpigmentation associated with hydroxyquinone usage is exogenous ochronosis, a grey hyperpigmentation associated with deposition of homogentisic acid.[11] Although less powerful, the antioxidant glutathione has been exploited for its anti-melanogenic properties in treating hyperpigmentation and skin lightening therapies.[19] While use of IV glutathione for male infertility and hepatic disease is evident, several adverse effects such as kidney dysfunction, Stevens-Johnson syndrome (SJS), toxic epidermal necrolysis (TEN), and thyroid dysfunction have been reported in the Philippines with warnings to the public on misuse of glutathione for skin-lightening.[19] Similarly, numerous 'fairness' creams for skin lightening in India are documented to contain fragrance and parabens, which are potential allergens for consumers.[20] Furthermore, class I steroids can be responsible for adrenal insufficiency, diabetes, and hypertension as well as the more common adverse effects of topical medications such as atrophy, acne, telangiectasias, purpura, and folliculitis.[11] Even more, the poor implications of mercury usage are widely known, including neuropsychiatric toxicity and nephrotoxicity as well as the lesser known adverse effects pertaining to the integumentary system, being hyperpigmentation and nail depigmentation[11] [21]. While we are well-versed in the toxic complications of each individual treatment, there are still unknowns in regards to additional complications when using one of these agents in conjunction with another.[22]. Safer, natural alternatives such as soy, licorice extracts, and mulberry are utilized in treatment of various hyperpigmentation disorders.[23] However, a lack of extensive research and standardization of outcomes limits the availability for strict cosmetic use [23].

Conclusion:

There are a handful of conditions in which skin lightening treatment is considered standard of care, such as scarring from acne and rosacea as well as melasma, a condition in which the skin of the cheeks can become hyperpigmented linked with increased exposure to estrogen, ultraviolet radiation, etc.[24,25] Furthermore, many new agents, such as PKEK have demonstrated advancements in treating conditions, such is post-inflammatory hyperpigmentation and melasma, particularly in darker skin tones.[9] Nonetheless, risks and benefits need to be considered carefully prior to prescribing skin lightening agents. However, there are many cases in which skin lightening treatments are used predominantly for the purpose of beautification, rather than primarily medical concerns.[16]. In these cases, it is advisable to more carefully revisit possible adverse effects prior to routine usage of potentially detrimental skin lightening treatments. In the consumer and pharmacological domains, hydroquinone remains one of the most frequently used chemical skin lightening ingredients.[11]. As such, it is imperative to consider the possible exogenous ochronosis, peripheral neuropathy, teratogenicity, and squamous cell carcinoma which have been associated with usage of hydroquinone-containing preparations.[11]. Furthermore, class 1 steroids and mercury, other top ingredients in many skin lightening treatments have been associated with adrenal insufficiency and neuropsychiatric toxicity respectively.[11]. Even more, common ingredients in India's top skin lightening treatments include water, fragrance, glycerin, tocopherol/tocopheryl acetate, and titanium dioxide of which even seemingly benign ingredients such as fragrance have the potential to sensitize the skin and result in undesirable effects. [20].

Given that the risks associated with skin lightening treatments are readily available and typically included on the packaging of widely available skin lightening products, it is difficult to discern why such agents are still utilized by those who are not in dire need of the products. For a deeper insight into the world of skin lightening, it is imperative to shift gears and discuss the reason many people adopt skin lightening products. There are many instances in which these agents are widely accepted regimen, such as telangiectasias, melasma-associated-hyperpigmentation, and hypertrichosis, and in these cases medical providers are able to assess the risks and benefits prior to imparting a prescription.[8] Many women of color choose such skin lightening agents due to the perpetuation of harmful colorist propaganda and ideas, particularly in eastern cultures where light skin is a symbol of beauty and status.[26,2] To illustrate, Chinese culture has historically favored fair skin and even associated it with femininity and success.[2] Skin lightening is commonly practiced amongst men and women in North America, Europe, Asia, and Africa, and among several of these domains the use of skin lightening agents exceeds 50% of the population.[27] The prevalence of colorist views is exacerbated by a deep-seated sense of disempowerment, particularly among women, which significantly increases their inclination towards skin lightening practices compared to men.[26] Allowing extremely negative and powerless feelings to influence potentially risky decisions is the cause of many users of skin lightening products moving forward with these treatments despite knowing the adverse effects.[28] Furthermore, in study by Dlova NC, skin lightening product satisfaction was shown to be 90% although nearly one third of users report unfavorable side effects.[28] Although users have seen benefits of these treatments, it is critical to raise awareness as some of the most vulnerable populations are being exposed to high risk ingredients and potentially irreversible side effects.[28] It has even been reported that children and adolescents ages 10-20 often turn to skin lightening due to parental pressure.[18] Furthermore, it is imperative that medical professionals, activists, and researchers do their part to bring light to not only potential harm that can come of skin lightening treatments, but more importantly, the discriminatory stereotypes that have propelled the use of these treatments for years.

As discussed above, many conditions leave individuals susceptible to hyperpigmentation and photosensitivity, such as telangiectasias, melasma-

associated-hyperpigmentation, and hypertrichosis.[6] For these conditions, the primary topical agent suggested is often a broad spectrum sunscreen.[29] Sunscreen has shown a beneficial effect in managing pigmentary disorders, such as melasma and postinflammatory hyperpigmentation but also for curbing the aging and malignancy associated with ultraviolet radiation.[29] As sunscreen has a wide array of benefits, this product would be a great alternative to skin lightening that global leaders, physicians and estheticians could promote.[29] In fact, there has been research done specifically on those with people of color who are typically not regular users of sunscreen to assess possible skin lightening benefits of sunscreen; this study discovered significant skin lightening after 8 weeks of sunscreen use, indicating that regular sunscreen application can improve dyschromias in people of color.[30] Crucially, systemic racism and colorist ideas perpetuated by cosmetic companies and emphasize the need for targeted health messaging.[31] Globally, teenagers and young adults in particular can experience colorism as a part of their daily education, media consumption, interactions with law enforcement, and employment, which can create a desire for having a lighter skin tone and propel this population towards skin lightening agents.[32] Of course, addressing the injustice present in day-to-day life will improve the perpetuation of harmful racist and colorist stereotypes. Additionally, further education on the consequences of skin lightening and redirection towards beneficial sunscreen products will only go so far in addressing the root of the issue. For this reason, education in media literacy and critical race theory are a more advantageous alternative in the short term.[32] Furthermore, celebration of different cultures and skin types will further propagate a sense of togetherness and pride in individual cultures rather than shame.[32]

References:

1. Naik PP, Farrukh SN. (2022). Influence of Ethnicities and Skin Color Variations in Different Populations: A Review. *Skin Pharmacol Physiol.;*35(2):65-76.
2. Chen, HY., Jablonski, N.G. (2022). Deeper than the surface: Exploring symbolic cultural cues behind skin color among three groups of women of Chinese heritage. *Am J Cult Sociol 10, 136–163*
3. Thawabteh AM, Jibreen A, Karaman D, Thawabteh A, Karaman R. (2023). Skin Pigmentation Types, Causes and Treatment-A Review. Molecules.;28(12):4839. Published 2023 Jun 18.
4. Abbas K, Qadir MI, Anwar S. (2019). The Role of Melanin in Skin Cancer. Crit Rev Eukaryot Gene Expr;29(1):17-24.
5. Rachmin I, Ostrowski SM, Weng QY, Fisher DE. (2020). Topical treatment strategies to manipulate human skin pigmentation. Adv *Drug Deliv Rev;* 153:65-71.
6. Yoo J. (2022). Differential diagnosis and management of hyperpigmentation. Clin Exp Dermatol. ;47(2):251-258.
7. Juhasz MLW, Levin MK. (2018). The role of systemic treatments for skin lightening. J Cosmet Dermatol.;17(6):1144-1157.
8. Kandhari R, Khunger N. (2013). Skin lightening agents - Use or abuse? - A retrospective analysis of the topical preparations used by melasma patients of darker skin types. Indian J Dermatol Venereol Leprol;79(5):701-702.
9. Farwick M, Maczkiewitz U, Lersch P, Summers B, Rawlings AV. (2011). Facial skin-lightening benefits of the tetrapeptide Pro-Lys-Glu-Lys on subjects with skin types V-VI living in South Africa. J Cosmet Dermatol;10(3):217-223.
10. Couteau C, Coiffard L. (2016). Overview of Skin Whitening Agents: Drugs and Cosmetic Products. Cosmetics; 3(3):27.
11. Pollock S, Taylor S, Oyerinde O, et al. (2020). The dark side of skin lightening: An international collaboration and review of a public health issue affecting dermatology. Int J Womens Dermatol.;7(2):158-164. Published 2020 Sep 17.
12. Owolabi JO, Fabiyi OS, Adelakin LA, Ekwerike MC. (2020). Effects of Skin Lightening Cream Agents - Hydroquinone and Kojic Acid, on the Skin of Adult Female Experimental Rats. Clin Cosmet Investig. Dermatol; 13:283-289. Published 2020 Apr 6.
13. Masub N, Khachemoune A. (2022). Cosmetic skin lightening use and side effects. J Dermatolog Treat;33(3):1287-1292. doi:10.1080/09546634.2020.1845597
14. Al-Sarraf A, Bewley A, De Luca I, Prilutskaya M, Corazza O. (2021). Image enhancing drugs: a narrative review on the motivational risk factors influencing skin lightening use. Emerging Trends in Drugs, *Addictions, and Health.* Jan 1.
15. Daftary K, Poondru S, Patel N, Shramuk M, Muhammad L, et all., (2023). Colorism attitudes and use of skin lightening agents in the United States. *Int J Womens Dermatol*;9(3): e092. Published 2023 Jul 13.
16. Amodu MO. (2018). Knowledge, attitude and practice of skin whitening among female university students in Northeastern Nigeria. *Open Access Library Journal*;5(04):1.
17. Benn EKT, Deshpande R, Dotson-Newman O, et al. (2019). Skin Bleaching Among African and Afro-Caribbean Women in New York City: Primary Findings from a P30 Pilot Study. Dermatol Ther (Heidelb);9(2):355-367.
18. Banala M, Mamidipaka A, Ogunleye T (2023). Skin-Lightening Product Use Among South Asian Americans: *Cross-Sectional Survey Study JMIR Dermatol;*6: e49068
19. Sonthalia S, Jha AK, Lallas A, Jain G, Jakhar D. (2018). Glutathione for skin lightening: a regnant myth or evidence-based verity? *Dermatology Practical & Conceptual*.;8(1):15-21.
20. Gopinath H, Manjula B, Karthikeyan K. (2021). Fragrance, sunscreens, botanicals, and potential allergens in bestseller "fairness" creams in the Indian market: A consumer exposure study. *Indian Journal of Dermatology*;66(3):279-283.
21. Dlova NC, Hamed SH, Tsoka-Gwegweni J, Grobler A. (2007). Complications of chronic use of skin lightening cosmetics. *International Journal of Dermatology*. 2007;46(Suppl 1):34-36. doi:10.1111/j.1365-4632. 03402.x
22. Juliano CCA. (2022). Spreading of Dangerous Skin-Lightening Products as a Result of Colourism: A Review. *Applied Sciences*; 12(6):3177.
23. Dobos G, Luedtke A, Sawhney M, Schaefer I, Mays A, et all., (2016). Are Natural Ingredients Effective in the Management of Hyperpigmentation? A Systematic Review. JIDSP;18(Suppl 1): S74.
24. Serra, M., Bohnert, K., Narda, M., Granger, C., & Sadick, N. (2018). Brightening and improvement of facial skin quality in healthy female subjects with moderate hyperpigmentation or dark spots and moderate facial aging. *Journal of Drugs in Dermatology: JDD*, 17(12), 1310–1315.
25. Dlova NC, Hamed SH, Tsoka-Gwegweni J, Grobler A. (2015). Skin lightening practices: an epidemiological study of South African women of African and Indian ancestries. *British Journal of Dermatology*; 173:2-9.
26. Adbi A, Chatterjee C, Cortland C, Kinias Z, Singh J. (2021). Women's Disempowerment and Preferences for Skin Lightening Products That Reinforce Colorism: Experimental Evidence from India. *Psychology of Women Quarterly*;45(2):036168432199379.
27. Lartey M, et al. (2017). Skin bleaching and cosmetic surgery: a cross-sectional study in Accra, Ghana. *PLoS One*;12(11): e0185687.
28. Dlova NC, Hamed A. (2017). Skin bleaching in South Africa: A result of colonialism and a manifestation of post-colonial racialised knowledge systems. *South African Journal of Science.*;113(5-6):1-8.
29. Hamzavi I, Fatima S, Braunberger T, Mohammad T, Kohli I. (2020). The role of sunscreen in melasma and postinflammatory hyperpigmentation. *Indian Journal of Dermatology*.;65(1):5.
30. Harboe, Yoon-Soo Cindy, et al. (2016). "Evaluation of the Efficacy of Sunscreen in the Prevention of Hyperpigmentation in Dark-Skinned Patients: A Randomized Controlled Trial."

Journal of Investigative Dermatology Symposium Proceedings, vol. 17, no. 1, pp. 50-51

31. Van Hout MC, Wazaify M. (2021). Parallel discourses: leveraging the Black Lives Matter movement to fight colorism and skin bleaching practices. *Public Health*; 192:1-2.
32. Craddock N, Dlova N, Diedrichs PC. (2018). Colourism. *Current Opinion in Pediatrics*;30(4):1.

DOI:10.31579/2639-4162/165