Representation of images of black skin in pediatric textbooks☆

Dear Editor,

Dermatological conditions are highly prevalent in children, being a complaint in approximately 30% of pediatric consultations.[1] They can be manifestations of systemic diseases, such as fungal, viral, bacterial, parasitic infections, drug reactions, or genetic diseases, and an adequate physical examination is important to identify the type of lesion.

Skin manifestations present differently in black skin when compared to light colored skin, which when unknown to the physician leads to underdiagnosis, compromising patient prognosis due to a delayed or incorrect treatment.[2] There are studies that have shown, for example, that black women are three times more likely to be underdiagnosed with systemic lupus erythematosus.[3] Other dermatoses that are also commonly misdiagnosed include vitiligo, often considered a suspected case of leprosy, and pityriasis versicolor, confused with seborrheic dermatitis, erythrasma, secondary syphilis, or pityriasis rosea.[3]

In Brazil, the 2022 Census revealed that the majority of respondents declared themselves to be brown, representing 45.3% of the population, while the proportion of white individuals decreased and that of black, brown, and indigenous people increased compared to 2010.[4] However, there is a lack of studies on the representation of black skin in Brazilian reference books, which motivated this research. Thus, we evaluated the images found in pediatric textbooks, verifying the frequency of photographs portraying dermatological conditions in black skin.

For the study, three general pediatric textbooks and one pediatric dermatology textbook were selected. Three of them were available in the virtual library of Universidade Federal de Juiz de Fora, Minas Gerais state, Brazil, where the research was carried out, and a digital edition of the fourth book was purchased. The list of selected books and chapters is available in the Supplementary Material. These books were selected from among the books available in the virtual library because they showed color images, unlike the other books consulted.

The study included images of skin lesions available in the chapters related to dermatological or infectious diseases (e.g., exanthematous diseases). The images were extracted from the books and cataloged, after excluding those in black and white; those that exclusively showed mucous membranes, conjunctiva, palms of the hands or soles of the feet, which prevented the identification of the skin color of the patient.

Skin color was assessed by two independent researchers, according to the skin phototypes in the Fitzpatrick scale. Skin types I to III were considered light skin, and types IV to VI were considered dark skin, as previously defined in the literature.[5] Discrepancies between the researchers were resolved by a third author. In the statistics, a descriptive analysis was performed, and interobserver agreement was assessed using Cohen's Kappa test.[6]

A total of 797 images met the inclusion criteria and were initially selected. Of these, 91 were subsequently excluded, as they did not allow an appropriate assessment of skin color: nine were black and white images; 79 exclusively displayed mucous membranes, conjunctiva, palms, or soles; two were repeated; and one represented a fetus. Therefore, 706 images were included, but 11 of them could not be classified due to image quality issues or because the photo displayed only the lesion, with no healthy skin to be evaluated. Thus, 695 images were classified according to skin color. When classifying the images as light skin or dark skin, the researchers achieved moderate interobserver agreement, with a Kappa of 0.704 and $p < 0.001$.

The absolute and relative frequencies of images depicting black and white skin are detailed in Table 1. The proportion of images of black skin varied between 16.3% and 37.7%, with book four showing the highest percentage. Regarding the diseases covered, pityriasis had the highest percentage of black skin images (53.5%), while rheumatological and immune diseases had the lowest percentage (14.1%).

Fig. 1 shows a graph of the percentage of images classified as white or black skin for each book and in total. Fig. 2 shows the percentage of images classified as white or black skin according to the disease or dermatological lesion.

The ability to identify skin manifestations of diseases in different skin phototypes is essential in the evaluation and determination of the conduct by health professionals. The results of this research show that most of the images that illustrate the assessed pediatric and pediatric dermatology books depict skin lesions in white patients. This becomes a problem when one understands that, depending on skin color, the same disease can manifest itself in different ways.[5]

Research aimed at analyzing images in medical textbooks and materials had been conducted with the intention of ascertaining the representation of black skin. A survey of ophthalmology textbooks showed that 92.1% of the images were of light skin and 7.9% of dark skin,[7] while similar research conducted by the American College of Rheumatology states that in rheumatology materials, only 13.4% of the images showed black skin.[8]

In addition, studies have highlighted a significant underrepresentation of black skin in medical education curricula in the United States, so that the lack of adequate instruction begins in the undergraduate course and persists throughout residency. This educational gap is evident in the scarcity of images that depict common and rare dermatological conditions in darker skin in teaching materials and educational resources, as well as the lack of formal training in many residency programs.[9]

A study showed that almost 50% of dermatologists did not have sufficient experience with the management of lesions on black skin during their training.[10] This becomes a matter of concern, because ethnic minorities have worse outcomes from melanoma and non-melanoma skin cancer.[10] Also, a study showed the lack of adequate representation of black skin in images related to skin manifestations of COVID-19, with direct consequences for public health, especially con-

☆ Study conducted at the Universidade Federal de Juiz de Fora, Juiz de Fora, MG, Brazil.

Table 1 Representation of skin colors in the analyzed images, for each book and group of diseases.

	n (%)	
	Black skin	White skin
Book 1 (n = 172)	28 (16.3)	144 (83.7)
Book 2 (n = 87)	15 (17.3)	72 (82.7)
Book 3 (n = 28)	7 (25.0)	21 (75.0)
Book 4 (n = 408)	154 (37.7)	254 (62.3)
Rheumatological/immunological (n = 85)	12 (14.1)	73 (85.9)
Acne (n = 25)	4 (16.0)	21 (84.0)
Diaper dermatitis (n = 5)	1 (20.0)	4 (80.0)
Other dermatites (n = 21)	5 (23.8)	16 (76.2)
Nail conditions (n = 12)	3 (25.0)	9 (75.0)
Exanthematous diseases (n = 46)	12 (26.0)	34 (74.0)
Elementary lesions (n = 31)	9 (29.0)	22 (71.0)
Congenital lesions (n = 128)	38 (29.7)	90 (70.3)
Skin infections (n = 132)	40 (30.3)	92 (69.7)
Dyschromias (n = 8)	3 (37.5)	5 (62.5)
Atopic dermatitis (n = 35)	13 (37.1)	22 (62.9)
Urticaria (n = 10)	4 (40.0)	6 (60.0)
Pityriases[a] **(n = 15)**	8 (53.3)	7 (46.7)
Others (n = 142)	52 (36.6)	90 (63.4)
Total (n = 695)	204 (29.3)	491 (70.7)

[a] Includes, pityriasis, alba, rubra and lichenoid forms.

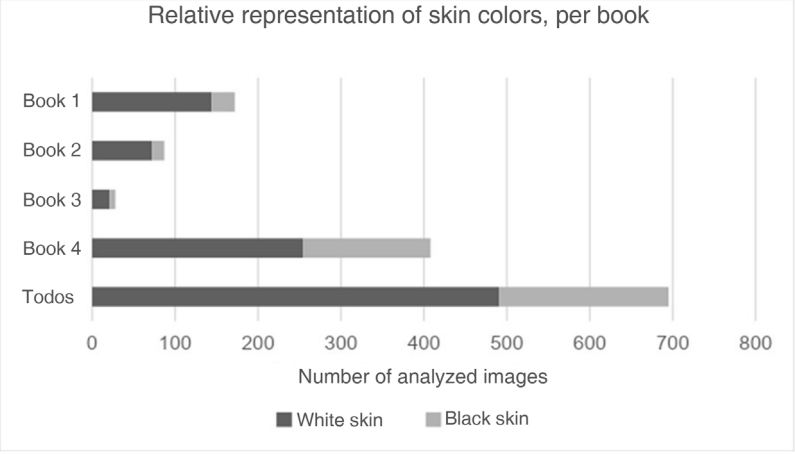

Figure 1 Number of images representing black and light skin in each book.

sidering the disproportionate impact of the pandemic in the black community.[5]

As limitations of this study, we highlight the selection of books on pediatrics, which may limit the representation of more common skin lesions in adults. There is an interobserver subjectivity in the assessment of skin phototypes which may affect the accuracy of classifications. Furthermore, the fact that photographs were being analyzed represents a challenge, since the lighting and sharpness of the image may distort the perception of skin color. However, the systematic approach in the selection of books and images increases transparency and reproducibility. The use of the validated Fitzpatrick scale allows greater standardization in the classification, reducing subjectivity. The use of Cohen's Kappa test to assess interobserver agreement provides a robust measure of the consistency of the classification.

The underrepresentation of black patients with skin lesions in the scientific community not only reflects but also perpetuates disparities in the health care of patients of different races and ethnicities. The lack of a variety of images of dermatological conditions in black skin can result in lack of familiarity by healthcare professionals to identify and diagnose these conditions in patients with darker skin. This lack of knowledge can lead to delays, underdiagnosis, or misdiagnosis, impacting the quality and effectiveness of treatment. These negative consequences highlight the critical importance of increasing the representation and

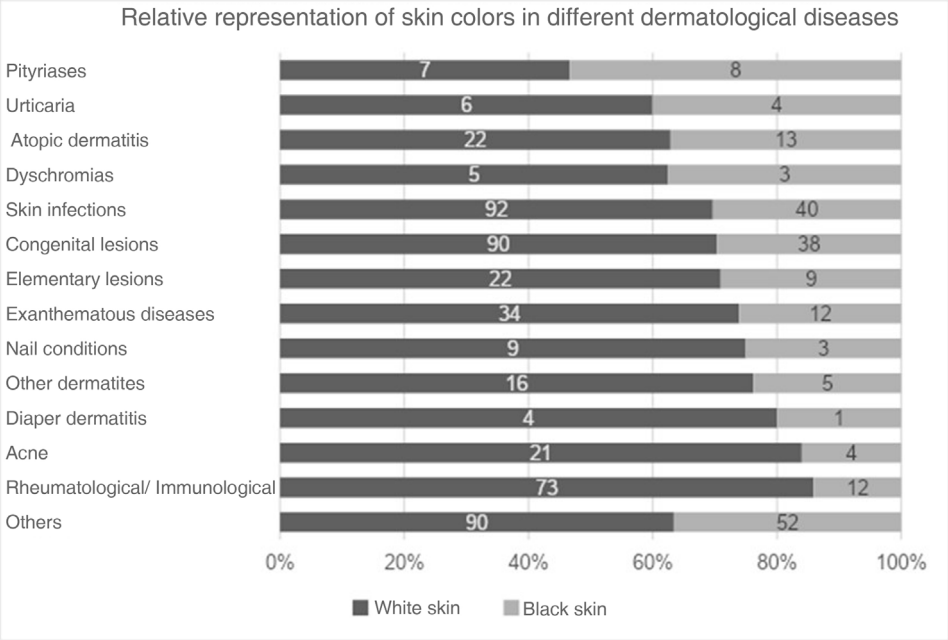

Figure 2 Number of images representing black and light skin in each group of dermatological diseases.

visibility of dermatological conditions in black patients in the scientific literature and clinical practice. Curricular changes to increase the recognition of diverse phototypes and the creation of imaging atlases and dermatology manuals focused on black skin are required.

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Authors' contributions

Maria Eduarda Duarte de Oliveira: Collection of data; drafting and editing of the manuscript; critical review of the literature.

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Appendix A. Supplementary data

Supplementary material related to this article can be found, in the online version, at doi:https://doi.org/10.1016/j.abd.2024.07.006.

Conflicts of interest

None declared.

References

1. Pereira NG, Costa CCC, Teruel MC, Santos MAL, Franco MCA. Dermatological disorders and associated risk factors among children from northern Brazil: a 2014–2019 update. Residência Pediátrica. 2021;11:1–5.
2. Alchorne MMA, Abreu MAMM. Dermatology in black skin. An Bras Dermatol. 2008;83:7–20.
3. Gomes MNSF. Manifestações clínicas cutâneas em doentes de raça negra [Dissertações de Mestrado]. Coimbra (Portugal): Faculdade de Medicina da Universidade de Coimbra; 2023.
4. Censo Demográfico 2022 [Internet]. Censo Demográfico 2022 – IBGE. Available from: https://censo2022.ibge.gov.br/.
5. Lester JC, Jia JL, Zhang L, Okoye GA, Linos E. Absence of images of skin of colour in publications of COVID-19 skin manifestations. Br J Dermatol. 2020;183:593–5.
6. McHugh ML. Interrater reliability: the kappa statistic. Biochem Med (Zagreb). 2012;22:276–82.
7. Cheng T, Curley M, Barmettler A. Skin color representation in ophthalmology textbooks. Med Sci Educ. 2022;32:1143–7.
8. Strait A, Graf J, Margaretten M, Yazdany J, Goglin S. Race, ethnicity, and disparities in rheumatology educational materials. Arthritis Care Res (Hoboken). 2022;74:1416–20.
9. Syder NC, Omar D, McKenzie S, Brown-Korsah JB, Taylor SC, Elbuluk N. Gaps in medical education curricula on skin of color in medical school, residency, and beyond: Part 1. J Am Acad Dermatol. 2023;89:885–92.
10. Buster KJ, Stevens EI, Elmets CA. Dermatologic health disparities. Dermatol Clin. 2012;30:53–9, viii.

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Sebaceous carcinoma: clinical and demographic profile of patients in a tertiary referral hospital in Brazil☆

Dear Editor,

Sebaceous carcinoma (SC) is a rare malignant neoplasm, described by Allaire in 1891, usually located in the head and neck and with a predilection for the periocular region (38.7%).[1] It has a higher incidence in the elderly (6th to 7th decades of life), in males (58% of cases), and in Caucasian population (86.2%).[1,2] The authors retrospectively evaluated 22 cases of patients diagnosed with at least one SC, including three patients diagnosed with two primary SC, between January 2006 and December 2020, in a Brazilian university hospital. As described in previous studies,[2] males had a higher incidence of SC, corresponding to 55% of the evaluated cases. The mean age at diagnosis was 67 years (24 to 94 years of age) and the majority of patients were Caucasian.

Clinically, the diagnosed SC showed varied characteristics, presenting as papules, plaques, nodules or tumors, generally yellowish or erythematous, with telangiectasias, a pearly gloss, keratosis or ulceration. The craniocephalic and cervical regions were preferentially affected, and, in ten cases, the SC was located in the periocular region (six in the upper eyelid and four in the lower eyelid; Fig. 1A). One case of SC was described in the neck, one in the ear pinna (Fig. 1B), three in the malar region, five in the nasal region, one in the scalp, one in the lip (Fig. 1C) and one in the chin. Only two SC were diagnosed outside the head and neck area (shoulder and chest). Nine patients were investigated for the presence of Muir-Torre Syndrome (MTS), and only four had the loss of expression of at least one mismatch repair gene confirmed by immunohistochemistry. Half of the studied cases had a diagnosis of other skin tumors such as basal cell carcinomas (BCC), squamous cell carcinomas (SCC), sebaceous adenomas and sebaceomas, single or multiple, with or without association with MTS. Moreover, eight cases had a diagnosis of non-skin neoplasms such as (1) invasive ductal breast carcinoma (without association with MTS), (2) Hodgkin's lymphoma, (3) non-Hodgkin's lymphoma and colon adenocarcinoma, (4) bilateral retinoblastoma (not investigated for MTS), (5) colon adenocarcinoma, (6) sigmoid neuroendocrine tumor and hepatocarcinoma, (7) colon adenocarcinoma, duodenal papilla adenocarcinoma with liver metastasis and prostate adenocarcinoma, (8) colon adenocarcinoma and multiple myeloma (confirmed for MTS).

The treatment of choice in ten cases of SC was wide excision of the tumor. Mohs micrographic surgery was performed in one case, and in another case, radiotherapy was adopted as an adjuvant method. Only one case was treated with palliative radiotherapy. Four tumors were removed by shaving or saucerization. Patients mean follow-up time was four years, and only nine remained in outpatient follow-up until the end of the study. Three patients had SC metastasis: (1) one SC diagnosed in the lower eyelid, showed metastasis in a cervical lymph node, and wide excision was performed, without new recurrences; (2) two SC diagnosed in the upper and lower eyelids, with parotid and pulmonary metastases, were treated with excision of all tumors associated with radiotherapy, without recurrence; (3) one SC diagnosed in the shoulder, initially treated with wide excision, showed local recurrence one year later associated with lymph node metastasis, and died. There were also two deaths from causes unrelated to SC (hepatocarcinoma and multiple myeloma). The collected data are shown in Table 1.

Morphologically, SC can present with varied characteristics, mimicking benign tumors (sebaceous hyperplasias, sebaceous adenomas, sebaceomas, nevocellular nevi), malignant neoplasms (BCC and SCC), as well as inflammatory diseases, such as chalazion, blepharitis and keratitis. The latter conditions are considered differential diagnoses of periocular lesions.[1,3] SC diagnosis is confirmed by histopathology of biopsies representing the deep dermis (Fig. 2) and immunohistochemical examination (positive EMA (epithelial membrane antigen) positive oil red O stain, positive Sudan black, with these last two stains performed on frozen sections; Fig. 3). Histopathology of SC is characterized by the presence of irregular and asymmetric sebaceous lobules; sebocytes present a vacuolated cytoplasm, hyperchromasia and nuclear atypia (Fig. 2).[2,4] Because it is rare and mimics other dermatoses, inadequate diagnostic procedures, such as shaving and saucerization, are performed, causing a further delay in the diagnosis of SC.

Most cases of SC occur sporadically and have as risk factors immunosuppression, especially solid organ transplantation and acquired immunodeficiency syndrome, exposure to ultraviolet (UV) radiation, radiotherapy, viral infections, a history of familial retinoblastoma and MTS.[5] The predominance of SC lesions in photoexposed areas was documented in the present study, with 90% of the tumors located in the head and neck and 40% in the eyelid region (among them, two cases with lesions in the upper and lower eyelids). Another piece of evidence that

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