

Distribution of Skin-Type Diversity in Photographs in AAD Online Educational Modules

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PRACTICE POINTS

- Recent studies have highlighted poor representation of darker skin types in textbooks.
- The Basic Dermatology Curriculum of the American Academy of Dermatology has a low (16%) representation of darker skin types in photographs; more than one-quarter of curriculum lectures had no such images.
- Darker skin types were underrepresented for skin cancers and overrepresented for sexually transmitted infections, raising questions about how photographs were chosen.
- Educators should consider using existing resources of photographs of diverse skin types when designing future curricula.

Recent studies have highlighted poor representation of darker skin types in medical textbooks and other educational materials. However, whether online educational materials also have poor representation of darker skin types remains less studied, even though trainees are increasingly relying on such resources. We evaluated representation of darker skin types in the Basic Dermatology Curriculum of the American Academy of Dermatology (AAD), a standardized curriculum for dermatology education. Results show that representation of darker skin types in photographs is low. Educators should consider tapping into existing resources for photographs of diverse skin types when designing future curricula.

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Recent studies have found poor representation of darker skin types (defined as Fitzpatrick skin types V–VI) in dermatology textbooks and online

resources.^{1,2} We sought to evaluate representation of darker skin types in the Basic Dermatology Curriculum of the American Academy of Dermatology (AAD), an online curriculum of 35 lectures that serves as a standard curriculum for dermatologic education, particularly for medical students and residents without a home dermatology program.³ Although core dermatology knowledge was specified as a curricular goal, knowledge of how dermatologic conditions manifest across various skin types was not.³

Methods

Photographs from all Basic Dermatology Curriculum online lectures showing background skin were independently labeled by 3 investigators (B.C., R.F., and G.O.) as light skin (Fitzpatrick types I–IV) or dark skin (Fitzpatrick types V–VI), along with the associated diagnosis. Photographs without visible background skin were excluded (eg, mucous membranes, palms and soles, genitalia, scalp, dermoscopic images). Photographs with indeterminate skin type were evaluated by consensus and excluded if consensus could not be reached. Inter-rater reliability for labeling skin type was determined on an overlapping sample of 24 photographs (Fleiss's κ , 0.80).

Results

Of 666 included photographs, 104 (15.6%) featured dark skin. Of all photographs of light skin (Fitzpatrick type I–IV), 80.8% were Fitzpatrick types I and II. One-quarter of lectures featured no photographs of dark skin (Figure 1). When the associated diagnoses of photographs were organized into 20 categories, 4 categories—pigmentary disorders, HIV infection, sexually transmitted infections and warts, and papulosquamous eruptions (Figure 2)—each featured 25% or more photographs of dark skin.

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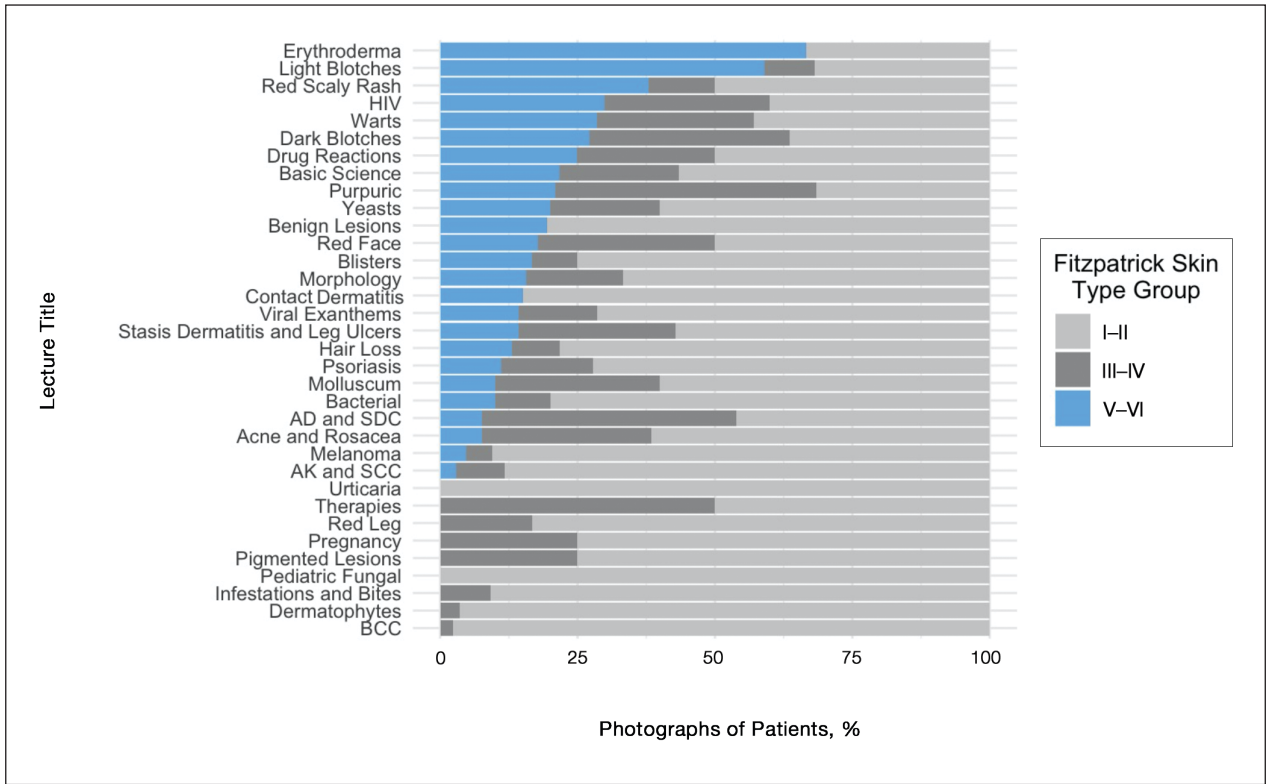


FIGURE 1. Percentage of photographs of patients with light and dark skin by lecture title in the American Academy of Dermatology Basic Dermatology Curriculum. AD indicates atopic dermatitis; SDC, steroid dosing in children; AK, actinic keratosis; SCC, squamous cell carcinoma; BCC, basal cell carcinoma.

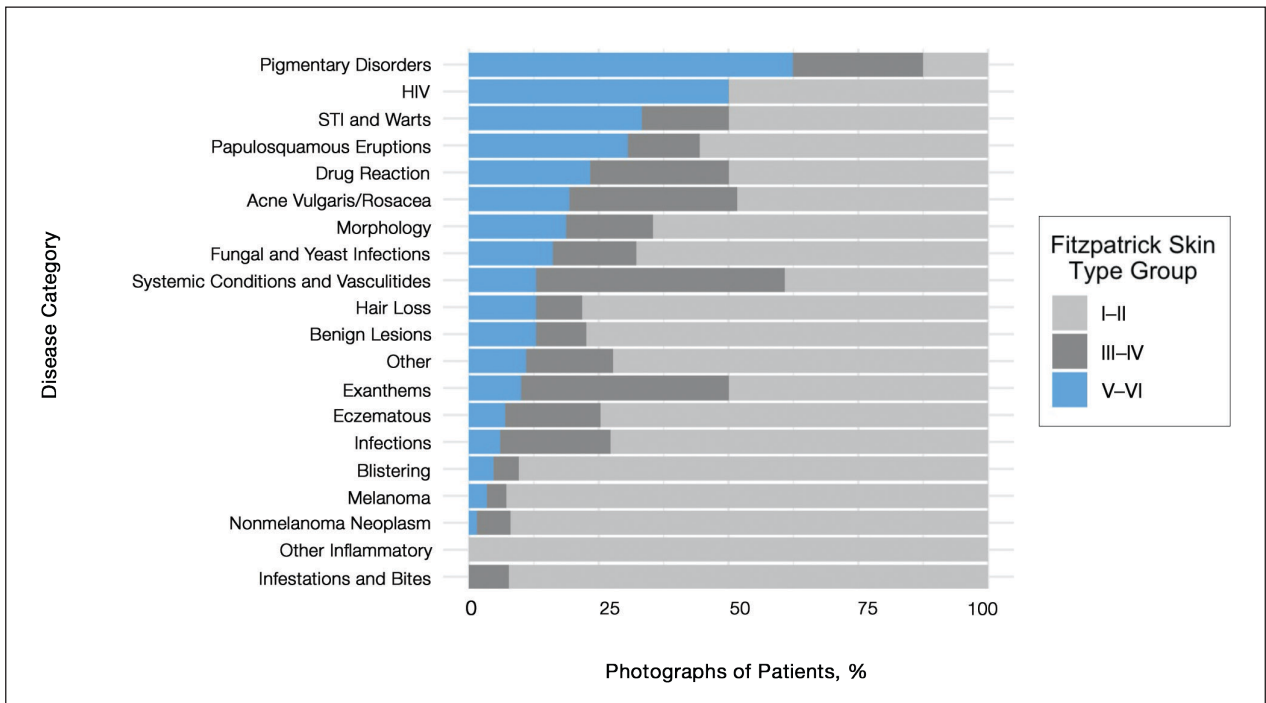


FIGURE 2. Percentage of photographs of patients with light and dark skin by disease category in the American Academy of Dermatology Basic Dermatology Curriculum. STI indicates sexually transmitted infection.

Comment

Our analysis of curricular photographs found dark skin representation in 16% of photographs, mirroring earlier findings in other educational resources.^{1,2} There was little (<5%) representation of skin cancer in individuals with darker skin, which may merely reflect lower incidence, but there is concern that lack of education about skin cancer might contribute to disparities in care, such as delayed diagnosis.²

For some conditions common in darker-skinned patients, such as acne vulgaris, representation was low; the lecture “Acne vulgaris” featured only 1 photograph of dark skin. In contrast, dark skin types were well represented in photographs of sexually transmitted infections, such as HIV infection, syphilis, and warts, which may suggest bias when dark skin is chosen to represent diseases, as noted in prior findings.^{1,2}

Limitations of this study included individual judgment of skin type and use of the Fitzpatrick scale. Although interrater reliability was excellent, the validity of Fitzpatrick classification of skin color is controversial, given that it was intended to describe propensity for sunburn and that types V to VI were added later to describe darker skin.⁴

Suggestions for Improvement—Given the abundance of resources with depictions of skin of color in teaching materials (eg, *Taylor and Kelly’s Dermatology for Skin of Color*, *Ethnic Dermatology: Principles and Practice*) and digital resources (eg, VisualDx [<https://www.visualdx.com>]), a logical solution might be to add a greater percentage of photographs depicting darker skin from outside resources to address the imbalance. Still, this might be challenging with limited space. Often, there is only room for a single representative photograph. Therefore, greater effort must be made to consistently show how diseases might present variably on different background skin types or, at the least, to create new resources showing greater skin type diversity.

Furthermore, given the lack of representation of skin of color, authors of educational resources can prioritize capturing images of skin pathology presenting in darker skin during their clinical work. Authors who do not have

access to a substantial census of patients with darker skin can collaborate with dermatologists who specialize in skin of color to gather such images.

Technical issues include difficulty capturing high-quality images of dermatologic conditions in darker skin because eruptions in these patients might have a narrower range of contrast. Although resources on taking high-quality clinical images are widely available, specific advice for photographing darker skin is lacking and warrants future research.⁵⁻⁷ Collaboration with professional photographers who are experienced with clients with darker skin might be useful in developing guidelines.

Conclusion

Given recent guidance by the AAD to “include common skin disorders and diseases requiring special consideration in people with skin of color” and highlight “current disparities in health outcomes within dermatology,”⁸ our findings might guide future improvements in curricula.

REFERENCES

1. Adelekun A, Onyekaba G, Lipoff JB. Skin color in dermatology textbooks: an updated evaluation and analysis. *J Am Acad Dermatol*. 2021;84:194-196.
2. Lester JC, Taylor SC, Chren M-M. Under-representation of skin of colour in dermatology images: not just an educational issue. *Br J Dermatol*. 2019;180:1521-1522.
3. Cipriano SD, Dybbro E, Boscardin CK, et al. Online learning in a dermatology clerkship: piloting the new American Academy of Dermatology Medical Student Core Curriculum. *J Am Acad Dermatol*. 2013;69:267-272.
4. Ware OR, Dawson JE, Shinohara MM, et al. Racial limitations of Fitzpatrick skin type. *Cutis*. 2020;105:77-80.
5. Muraco L. Improved medical photography: key tips for creating images of lasting value. *JAMA Dermatol*. 2020;156:121-123.
6. Shainhouse T. Clinical photography best practices. *Dermatology Times*. May 13, 2016. Accessed January 10, 2021. <https://www.dermatologytimes.com/view/clinical-photography-best-practices>
7. How to take the best photos for teledermatology. VisualDx. Accessed January 10, 2020. <https://info.visualdx.com/l/11412/2020-03-31/6h4hdz>
8. Pritchett EN, Pandya AG, Ferguson NN, et al. Diversity in dermatology: roadmap for improvement. *J Am Acad Dermatol*. 2018;79:337-341.