Distribution of skin of color representation in medical education resources

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To the Editor:

In current medical education, there is a fundamental lack of images in medical student resources depicting dermatologic diseases on skin of color (SOC) [1-3]. This limits the exposure of medical students and residents to a variety of diseases on different skin tones, making it challenging to properly care for diverse patients. Furthermore, little progress has been made over the past fifteen years, despite growing awareness of inequality in access to and delivery of healthcare [1, 2, 4]. The negative impact on a physician's ability to both diagnose and treat a number of dermatologic pathologies is of particular with regard to the worse outcomes for patients with SOC with skin cancer [5]. When assessing inequities in educational resources, it is important to examine the distribution of images to determine which conditions are disproportionately represented to guide improvements. Recent studies have documented a lack of representation of SOC images in several medical educational resources [2, 6]. However, one influential element that warrants further analysis is whether certain diseases are disproportionately under- or overrepresented by SOC. In our study, we aim to assess the general distribution of SOC representation and its subsequent indications in two popular educational resources, the FirstAid for the United States Medical Licensing Examination STEP one 2020 (FirstAid) and the American Academy of Dermatology's (AAD) online curriculum.

We assessed the distribution of images in both FirstAid and the AAD online curriculum, two popularly used education resources used by medical students and dermatology residents, respectively. Using the Fitzpatrick scale, images were scored as non-SOC (Fitzpatrick type I-III), SOC (IV-VI), or indeterminant. The Fitzpatrick scale was originally developed to predict responses to sun exposure by describing tanning and burning responses and is utilized in phototherapy treatments [7]. More recently, the scale is often used to classify skin tones when examining distribution of dermatologic diseases in practice and when examining educational resources. Photos were scored individually by two medical students and one board-certified dermatologist.

In the AAD online curriculum, we identified only 18.1% of images as SOC. We found that cutaneous pathologies that particularly lacked images in the AAD online curriculum included malignant neoplasms, which had <1% of SOC photos. This is substantial given that patients with SOC face higher mortality from melanoma and other skin malignancies [5]. In contrast, a high percentage of images (45.9%) depict sexually transmitted conditions on SOC. This perpetuates dangerous biases and suggests a disproportionate incidence of

these diseases in darker-skinned individuals as noted in previous studies [3].

Similarly, in FirstAid, a total of 18.78% of all images included individuals with SOC. However, this does not represent the true magnitude of underrepresentation as 77.4% of conditions had no SOC inclusion. Additionally, cartoons and schematics did not depict a single person with darker skin (not included in overall percentage). Like our results on the AAD online curriculum, 50% of sexually transmitted disease-related images in FirstAid were represented on individuals with SOC while only 9% of skin cancers were represented on darker skin. Perhaps the most notable discrepancy is in the dermatology section which included only 11% SOC images.

Our findings advance the understanding of how health disparities experienced by people of color may be rooted in underrepresentation in medical education [1]. Consequently, educational materials should illustrate skin pathology in patients with all skin tones to better train physicians in identification and treatment of disease in patients with SOC, particularly cutaneous malignancies. Additionally, efforts should focus on avoiding overrepresentation in areas such as sexually transmitted diseases that contribute to unjust implicit biases among physicians.

Potential conflicts of interest

The authors declare no conflicts of interest.

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