Diversifying Skin Tone Representation in Dermatology Preclinical Curriculum

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Introduction

Current research shows that health outcomes for patient of color are worse for dermatologic conditions such as non-melanoma skin cancer, melanoma skin cancer, and atopic dermatitis.[1] One in 3 Black men or women diagnosed with melanoma in the United States will die of the disease compared to 1 in 7 non-Hispanic White (NHW) men and 1 in 11 NHW women.[2] However, most of the textbooks, research and medical education in Dermatology has mainly portrayed or emphasized dermatologic conditions in non-skin of color.[3] For instance, in the Dermatology textbook Fitzpatrick's Dermatology 5th edition only 11% of the images were portrayed in skin of color.[4] In the instances in which dermatology textbooks do depict skin of color it is most often to show sexually transmitted diseases (STDs) and not in acne, psoriasis, skin cancer and other dermatologic conditions.[5] Some skin lesions appear differently in skin of color compared to non-skin of color, as seen in Figure 1.

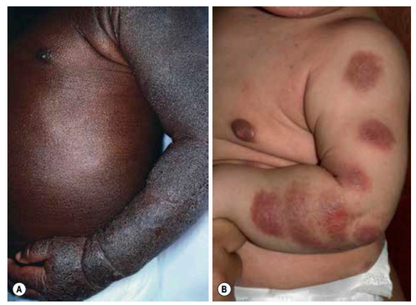

Figure 1) Comparison of Atopic Dermatitis in infants with skin of color versus non skin of color from the textbook, Dermatology 4th edition.

Exposure to dermatologic diseases in skin of color has been shown to increase physician and student confidence in diagnosing pathology in patients of color. Non-dermatologists, including internists, continue to provide a large portion of care to patients with dermatologic diagnoses, making it important for all medical students to learn and be exposed to dermatologic conditions in patients of color. We aimed to determine how diverse the skin tone representation was in the Dermatology curriculum at Case Western Reserve University School of Medicine (CWRUSOM).

Methodology

FITZPATRICK SCALE OF SKIN PHOTOTYPES

SKIN PHOTOTYPE	SKIN COLOR	RESPONSE TO UV IRRADIATION
I	White	Always burns, does not tan
II	White	Burns easily, tans with difficulty
III	Beige	Mild burns, tans gradually
IV	Brown	Rarely burns, tans easily
V	Dark brown	Very rarely burns, tans very easily
VI	Black	Very rarely burns, tans very easily

Figure 2) The Fitzpatrick skin type scale, where skin types I-III represent non skin of color and skin types IV-VI represent skin of color.

Using the Fitzpatrick skin type scale as seen in figure 2, we classified images from the Dermatology lecture material at CWRUSOM with skin types 1-3 as non skin of color, and images of people with skin types 4-6 as skin of color.
Then we compared the proportion of images of skin of color to the proportion of images of non-skin of color using a chi-square test in all lectures combined and in the skin cancer lecture.

Results

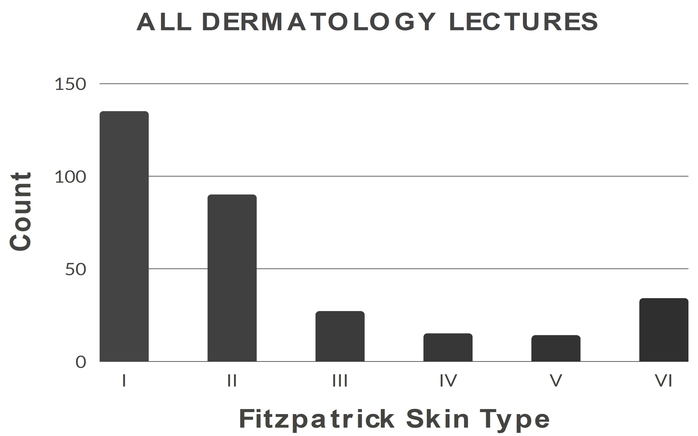

Figure 3) There are 213 image counts of non skin of color and 63 image counts of skin of color in all lecture material. The relation between these variables was significant, X2 (1, N = 276) = 81.522 , p = 0.001. Non skin of color was statistically more likely to be represented then non-skin of color.

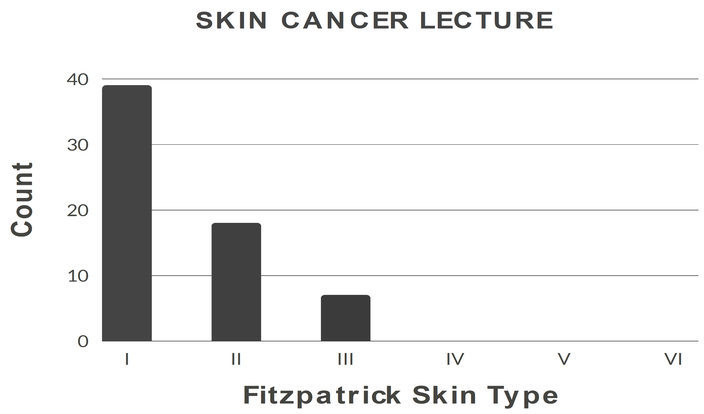

Figure 4) There are 64 image counts of non skin of color and 0 image counts of skin of color in the skin cancer lecture material. The relation between these variables was significant, X2 (1, N = 64) = 64,, p = < 0.00001. Non skin of color was statistically more likely to be represented then non-skin of color.

Discussion

The dermatology curriculum at CWRUSOM preferentially shows more non-skin of color then skin of color as seen in figure 3, with a statistically significant difference, X2 (1, N = 276) = 81.522 , p = 0.001. The lecture that showed the least diversity in skin tone representation was the Skin Cancer lecture showing no skin of color at all with a statistically significant difference of, X2 (1, N = 64) = 64,, p = < 0.00001.
This demonstrates a need to diversify the skin tone representation in the lecture material, especially in the skin cancer lecture.
The limitations to this study was that only one person categorized the images to each Fitzpatrick skin type which can introduce researcher bias. In addition, there is no true way to identify a persons Fitzpatrick skin type by looking at just an image, since it is based on their reaction to sun exposure (burning vs tanning). However, the main comparison is between the number of images depicting skin of color, vs non skin of color rather then the individual Fitzpatrick skin types. It would be interesting to investigate the difference between the Fitzpatrick Skin types if there was a better way to accurately measure the Fitzpatrick skin type using the unaided eye.

Future Directions

-In addition to diversifying the lecture material we plan to introduce a person of color to the IQ case who was diagnosed with melanoma to further emphasize that people of color do get melanoma and have worst survival outcomes.
-We are including questions to the end of block survey to see if the addition of more diverse skin tone representation in the lecture and IQ case makes students feel more comfortable treating a diverse patient population in the future.
-We aim to expand this methodology to other topics in the medical school curriculum where diseases manifest in the skin such as immunology.

References

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