

# Enduring Gaps in Representation: A Comprehensive Reanalysis of Skin of Color in Popular Medical Education Materials



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## BACKGROUND

- Prior studies found that skin of color (SoC) appeared in only 20.1% of images in USMLE preparatory materials<sup>1–3</sup>.
- Since then, most major medical education resources have been significantly updated.
- These updates have offered opportunities to improve SoC representation, responding to calls from the dermatology community.

## OBJECTIVE

Our study examines SoC representation in newly updated USMLE resources compared to earlier analyses.

## METHODS

- Images were extracted from the Dermatology sections of UWorld Step 1&2 question banks (QB), AMBOSS Step 1 QB, Pathoma 2023, First Aid 2024, and Boards and Beyond.
- Images were rated using the Fitzpatrick Skin Phototype Scale (FSPS) by two reviewers (SS and TEJ), with score discrepancies resolved by a third reviewer (MAS)
- FSPS types IV-VI were classified as SoC and FSPS types I-III considered non-SoC
- SoC representation in newer resources was compared to previously reported rates using chi-square analysis.

## RESULTS

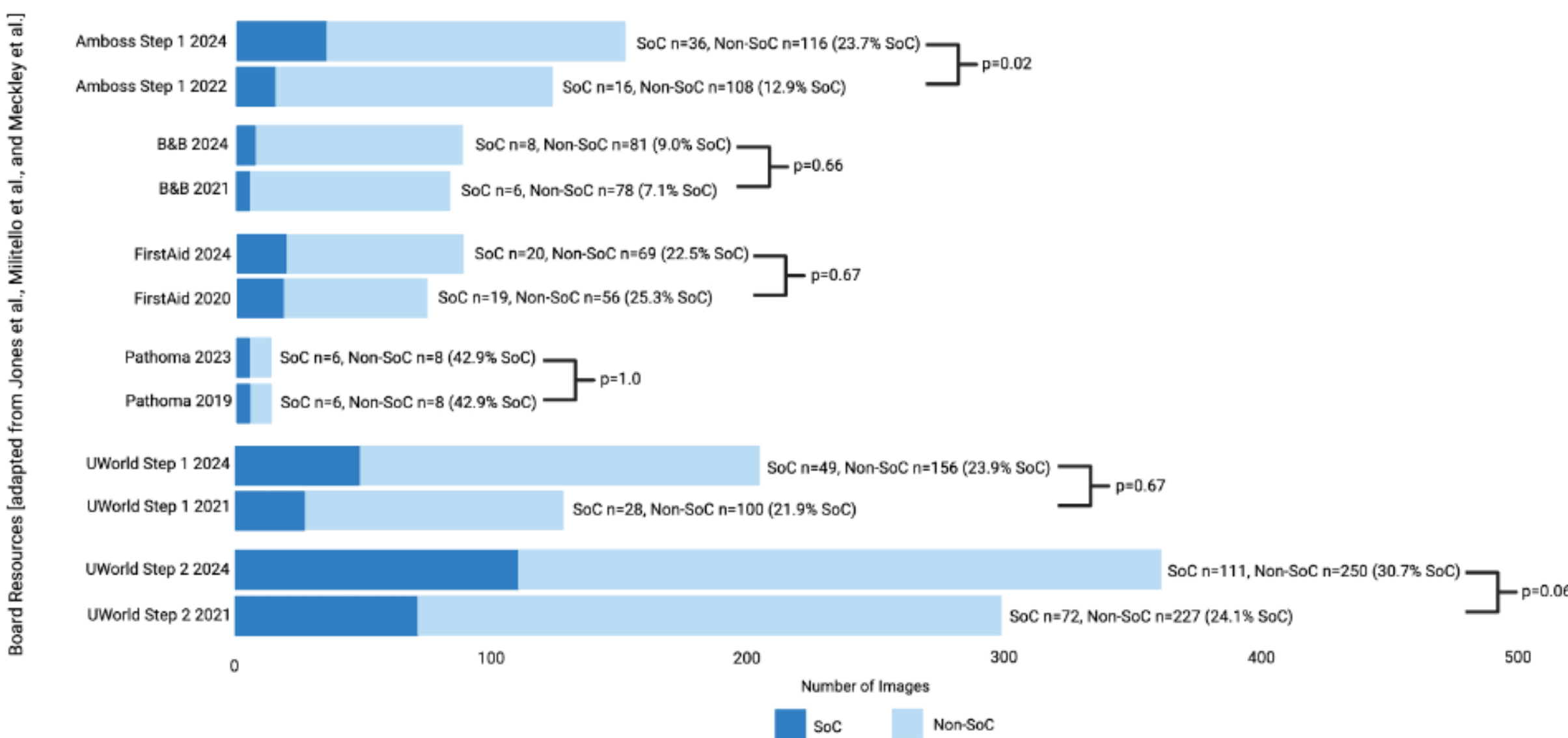


Figure 1. Number of skin of color versus non-skin of color dermatology images by boards preparation resources in our analysis compared to that reported by Jones, Militello, and Meckley.

	Resource						Total
	Amboss Step 1	Boards & Beyond	First Aid 2024	Pathoma	UWorld Step1	UWorld Step2	
Total Question Bank Images	152	89	89	14	205	361	910
SoC Images (n)	36	8	20	6	49	111	230
SoC Images (%)	23.7%	9.0%	22.5%	42.9%	23.9%	30.7%	25.3%
Acne	1/2	0/2	0/1	0	1/6	3/8	5/19
Vulgaris							(26.3%)
Atopic Dermatitis	0/5	0/3	0/2	0	4/6	5/16	9/32
							(28.1%)
Contact Dermatitis	1/3	0/2	1/2	0	2/9	4/12	8/28
							(28.6%)
Psoriasis	3/7	0/5	2/5	0/1	4/15	3/16	12/49
							(24.5%)
Seborrheic Dermatitis	0/2	0/1	0/1	0	0	4/12	4/16
							(25.0%)

Table 1. Representation of skin of color in popular medical education resources, stratified by common dermatologic diagnoses.

## RESULTS

- Nine-hundred and ten images were extracted, of which 230 represented skin of color (25.3%) (table 1).
- All resources except Pathoma demonstrated varying degrees of improvement in SoC representation (figure 1).
- Statistically significant improvement was seen in AMBOSS (23.7% vs. 12.9%;  $p=0.02$ ) and substantial changes were demonstrated in UWorld Step 2 (30.7% vs. 24.1%;  $p=0.06$ ).
- We identified 95 diagnoses that represented SoC in at least one image.
- Diagnoses more prevalent in non-white patients, such as discoid lupus erythematosus, pseudofolliculitis barbae, and keloids, had high rates of SoC representation (11/12; 91.7%).
- Diagnoses including malar rash and erythema migrans, which appear differently in SoC were exclusively depicted in non-SoC individuals.

## CONCLUSIONS

Our findings indicate progress in SoC representation across most medical education resources. However, with non-white individuals comprising over 40% of the U.S. population according to the 2020 Census, the current level of SoC representation remains insufficient. As updates improve but continue to lag, students should prioritize resources with high-quality skin of color images as highlighted by Clark et, al<sup>4</sup>.

## REFERENCES

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