Skin Tone Representation on Patient–Facing Skin Cancer Education Websites

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ABSTRACT

When patients self-detect suspicious skin lesions, they often reference online photos prior to seeking medical evaluation. Online images must be available in the full spectrum of skin tones to provide accurate visualizations of disease, especially given the increased morbidity and mortality from skin cancer in patients with darker skin tones. The purpose of this study was to evaluate the representation of skin tones in photos of skin cancer on patient-facing websites. Six federally-based and organization websites were evaluated, and of the 372 total representations identified only 49 depicted darker skin tones (13.2%). This highlights the need to improve skin tone representation on patient-facing online resources.

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INTRODUCTION

Skin self-examination (SSE) has been correlated with early detection of skin cancers; in one study over half of melanoma cases were self-recognized prior to diagnosis.[1] Patients often reference photos from online resources to guide SSE prior to medical evaluation, which may improve the accuracy of self-detecting suspicious lesions.[2] It is critical that the full spectrum of skin tones is represented when displaying online clinical images. The purpose of this study was to evaluate the inclusivity and representation of skin tones in photos of skin cancer on patient-facing websites.

MATERIALS AND METHODS

Six federally-based and organization websites (.gov,.org) with information about skin cancer were selected, including CDC.gov, NIH.gov, skincancer.org, americancancerfund.org, mayoclinic.org, and cancer.org. All photos on skin cancer-related webpages were evaluated. Hyperlinks to outside websites were excluded. Within each photo, each person or skin was counted separately as a representation. Representations were counted every time they were displayed and categorized as per Figure 1. The published 5-tone Pantone swatch[3] was used by three independent reviewers to categorize representations into

FIGURE 1. Methods of categorizing representations of skin tones.
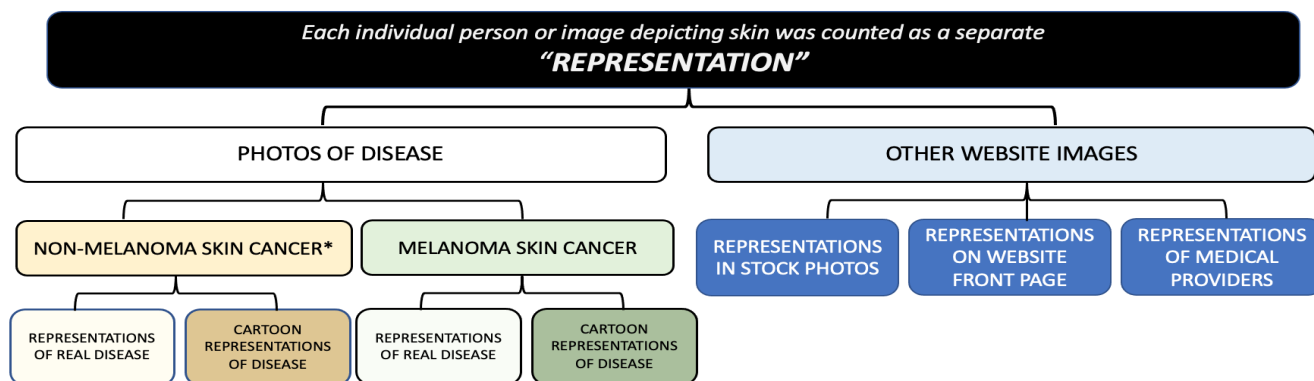
*Non-melanoma skin cancer includes squamous cell carcinoma, basal cell carcinoma, merkel cell carcinoma, kaposi sarcoma, and skin lymphoma.

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TABLE 1.

Website	Total Representations	Type of Representation						
		Non-Melanoma Skin Cancer		Melanoma Skin Cancer		Other Website Images		
		Representations of Real Disease	Cartoon Representations of Disease	Representations of Real Disease	Cartoon Representations of Disease	Representations in Stock Photos	Representations on Website Front Page	Representations of Medical Providers
CDC.gov	22/109 (20.2%)	0/1	0/0	0/1	0/0	22/104	5/16	0/3
Skincancer.org	18/140 (12.9%)	9/88	0/6	2/28	0/0	7/16	0/0	0/2
Americancancerfund.org	1/17 (5.9%)	0/0	0/0	0/12	0/0	1/5	1/5	0/0
Cancer.org	5/35 (14.2%)	4/25	0/0	1/8	0/0	0/2	0/0	0/0
Mayoclinic.org	1/21 (4.8%)	1/9	0/4	0/3	0/5	0/0	0/0	0/0
NIH (cancer.gov)	2/50 (4%)	0/4	0/14	0/0	0/18	2/14	0/2	0/0
Total	49/372 (13.2%)							

Representations of Darker Skin Tones on Patient-Facing Websites About Skin Cancer. Values are reported as representations of darker skin tones/total number of representations for each category.

"lighter toned skin" (Pantones A-B or lighter) or "darker toned skin" (Pantones C-E or darker).

RESULTS

372 total representations were identified across six websites. Of 372 total representations, only 49 depicted darker skin tones (13.2%). Of the 49 representations showing dark skin tones, 44.9% depicted pantone C (n=22), 34.7% depicted pantone D (n=17), and 20.4% depicted pantone E (n=10) (Table 1). Only 11% (14/127) of non-melanoma skin cancer (NMSC) and 5.8% (3/52) of melanoma skin cancer (MSC) were demonstrated on darker skin tones. No cartoon portrayals of NMSC (0/24) or MSC (0/23) included darker skin tones. Darker skin tones were also infrequently depicted in non-disease representations, including stock photos (22.7%; 32/141) or images on website front pages (26.1%; 6/23). No medical providers represented had a darker skin tone (0/5).

DISCUSSION

This analysis highlights that darker skin tones were severely underrepresented in photos of skin cancer on patient-facing websites, comprising less than 13.2% overall. Furthermore, less than 5% of all representations depicted pantone D, and less than 3% depicted pantone E or darker.

SSE is an important secondary prevention strategy for skin cancer, yet these data reveal that online resources do not adequately display the diversity of skin cancer presentations. The limited availability of skin cancer depictions on darker skin tones online is especially concerning given the known disparities in morbidity and mortality of said patients with skin cancer.[4] In studies assessing other media types, there is a pattern of underrepresenting skin diseases in darker skin tones.[5] There is a tremendous need for improved portrayal of darker skin tones in patient-facing websites; the current lack of representation could impact patients' ability to self-identify and seek treatment.

DISCLOSURES

The authors have no conflicts of interest to disclose.

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