

# Delays in Medical Care Among Skin of Color Melanoma Patients: A Population-Based Study

Sabrina Khan MD,<sup>a\*</sup> Charlotte Jeong BS,<sup>b\*</sup> Caterina Zagona-Prizio MD,<sup>c</sup> Manan D. Mehta MD,<sup>d</sup> Nicole Maynard MD,<sup>e</sup> Rasika Reddy MD,<sup>f</sup> Danielle Yee MD,<sup>g</sup> April W. Armstrong MD MPH<sup>a</sup>

<sup>a</sup>Division of Dermatology, Department of Medicine, David Geffen School of Medicine at the University of California, Los Angeles, Los Angeles, CA

<sup>b</sup>University of Arkansas for Medical Sciences College of Medicine, Little Rock, AR

<sup>c</sup>Department of Dermatology, University of Colorado School of Medicine, Boulder, CO

<sup>d</sup>Department of Dermatology, State University of New York (SUNY) Downstate Health Sciences University, Brooklyn, NY

<sup>e</sup>Department of Psychiatry and Human Behavior, University of California, Irvine, School of Medicine, Irvine, CA

<sup>f</sup>Department of Dermatology, University of Southern California Keck School of Medicine, Los Angeles, CA

<sup>g</sup>Department of Dermatology, University of California Davis School of Medicine, Sacramento, CA

\*Co-first authors

## INTRODUCTION

In the United States (US), the incidence of melanoma, the most aggressive and fatal type of skin cancer, has been increasing at an average rate of 1.4% annually over the last decade.<sup>1</sup> Individuals with skin of color (SOC) have a markedly lower incidence of melanoma compared to their white counterparts.<sup>1</sup> However, SOC patients suffer from worse clinical outcomes, including diagnosis at more advanced stages<sup>2</sup> and consequently, lower rates of survival.<sup>3-5</sup> SOC patients consistently present with later stages of melanoma, regardless of the location of the lesion.<sup>5</sup> Barriers to obtaining medical care may contribute to challenges in early detection and appropriate management of melanoma. It is critical to investigate the determinants of timely access to healthcare to address gaps in diagnosis and treatment. This study aims to compare delays in access to medical care between SOC and white melanoma patients in the US and to characterize reasons for delayed care.

## MATERIALS AND METHODS

We conducted a nationally representative, cross-sectional study utilizing the National Health Interview Survey from 2007–2018 in respondents with a self-reported history of melanoma skin cancer. Respondents were identified as SOC if they identified as Black, Asian, American Indian/Alaskan Native, or Native Hawaiian/Pacific Islander. Respondents were asked if they received delayed medical care in the past 12 months for the following reasons: 1) inability to obtain an appointment, 2) clinic not open, 3) unable to reach a physician/clinic by telephone, 4) lacked transportation, 5) wait was too long to see a physician. Multivariable logistic regression was used to model the odds of receiving delayed care. Analyses were performed using the svy suite of commands in Stata 15.0. Threshold for significance was set at  $P < 0.05$ .

## RESULTS

Among the 8,904,798 weighted respondents with melanoma, 266,641 (3.1%) self-identified as SOC (Table 1). Compared to white patients, a significantly greater percentage of SOC patients reported receiving delayed medical care due to inability to obtain appointment (18.9% vs 8.3%,  $P=0.0048$ ), inability to reach the physician/clinic by phone (12.4% vs 2.7%,  $P=0.0001$ ), lack of transportation (9.6% vs 1.6%,  $P=0.0001$ ), and long wait time (10.3% vs 3.9%,  $P=0.0341$ ; Table 1). SOC patients with melanoma were 2.27 times more likely to receive delayed access to medical care compared to white patients when controlling for age, sex, insurance status, income, education level, and region (aOR [95% CI]=2.27 [1.01-5.10]; Table 2).

## DISCUSSION

Overall, our findings suggest that SOC individuals with melanoma have higher odds of obtaining delayed medical care compared to white melanoma patients. Delays in access to necessary healthcare services can exacerbate or partially explain previously established racial disparities in the detection, management, and survival of melanoma.<sup>4</sup> Specifically, barriers in access may further prolong presentation and diagnosis at later stages. Furthermore, difficulty obtaining appropriate medical services can worsen delays in treatment; non-white patients have been shown to experience delays in surgical excision of melanoma compared to white patients.<sup>6</sup> These factors may contribute to the lower melanoma-specific survival seen in SOC patients.<sup>3</sup>

Moreover, our study identified the inability to obtain an appointment (18.9%) and the inability to reach a clinic by telephone (12.4%) as common causes of receiving delayed care among SOC melanoma patients. Given that SOC patients

TABLE 1.

**Demographic Characteristics and Reasons for Receiving Delayed Medical Care in Skin of Color Melanoma Patients vs White Melanoma Patients from 2007–2018**

Characteristic	Skin of Color Melanoma Patients (n=266,641)	White Melanoma Patients (n=8,638,157)	P-Value
Age (mean, y)	62.4	64.5	0.221 <sup>a</sup>
Sex, n (%)			
Male	162,868 (61.1%)	4,188,161 (48.5%)	0.046 <sup>b</sup>
Female	103,773 (38.9%)	4,449,996 (51.5%)	
Annual Household Income, n (%)			
\$0-\$49,999	134,028 (54.2%)	3,570,515 (44.9%)	0.292 <sup>b</sup>
\$50,000-\$99,999	73,710 (29.8%)	2,429,450 (30.6%)	
>\$100,00	39,449 (16.0%)	1,946,922 (24.5%)	
Education, n (%)			
< HS graduate	50,018 (28.7%)	711,123 (13.4%)	0.0167 <sup>b</sup>
HS diploma or GED	41,207 (23.7%)	2,033,010 (38.4%)	
> HS	83,011 (47.6%)	2,546,113 (48.1%)	
Insurance Status			
Uninsured	27,781 (10.8%)	311,309 (3.6%)	0.0135 <sup>b</sup>
Insured	229,273 (89.2%)	8,320,262 (96.4%)	
Region			
Northeast	31,446 (11.8%)	1,430,039 (16.6%)	0.550
Midwest	57,106 (21.4%)	2,097,561 (24.3%)	
South	123,289 (46.2%)	3,113,699 (36.0%)	
West	54,800 (20.6%)	1,996,858 (23.1%)	
Reasons for Receiving Delayed Medical Care	Skin of Color Melanoma Patients (n=266,641)	White Melanoma Patients (n=8,638,157)	P-Value
Unable to get an appointment soon, n (%)	49,721 (18.9%)	711,266 (8.3%)	0.0048 <sup>b</sup>
Office/clinic not open, n (%)	14,843 (5.6%)	259,982 (3.1%)	0.3343 <sup>b</sup>
Unable to reach physician/clinic by telephone, n (%)	236,957 (12.4%)	32,703 (2.7%)	0.0001 <sup>b</sup>
Lacked transportation, n (%)	25,366 (9.6%)	134,324 (1.6%)	0.0001 <sup>b</sup>
Wait too long to see physician, n (%)	27,122 (10.3%)	331,773 (3.9%)	0.0341 <sup>b</sup>

Skin of color includes Black, American Indian/Alaskan Native, Asian, Native Hawaiian/Pacific Islander, or multiple races

<sup>a</sup>Two-tailed t-test<sup>b</sup> $\chi^2$  test

are more likely to be Medicaid-insured or be uninsured,<sup>4</sup> it is possible that many may seek care at outpatient dermatology clinics at safety net hospitals.<sup>7</sup> Many of these clinics have long wait times for appointment availability and are understaffed,<sup>7</sup> which may contribute to delays in obtaining care. Furthermore, SOC patients may have difficulty taking leave from work during clinic hours, which may contribute to challenges in acquiring

an appointment.<sup>7</sup> Limitations of this survey-based study include non-response bias and self-reported diagnosis of melanoma. Future research directions may focus on the impact of delayed access to healthcare services on disease burden. As the demographics of the US shift towards a non-white majority,<sup>1</sup> it is crucial for dermatologists to acknowledge obstacles in obtaining timely medical care in SOC individuals.

TABLE 2.

**Multivariable Logistic Regression Analysis of Delays in Access to Medical Care<sup>a</sup>**

Independent Variables	Dependent Variable: Received Delayed Medical Care	
	aOR (95% CI)	P-Value
<b>Race/Ethnicity</b>		
White	1 [Reference]	--
Skin of Color	2.27 (1.01-5.102)	0.048
Age	0.98 (0.97-1.00)	0.021
<b>Insurance Status</b>		
Uninsured	1 [Reference]	--
Insured	0.38 (0.06-2.20)	0.277
<b>Sex</b>		
Male	1 [Reference]	--
<b>Annual Household Income</b>		
\$0-\$49,999	1 [Reference]	--
\$50,000-\$99,999	1.18 (0.71-1.96)	0.512
>\$100,000	0.80 (0.41-1.54)	0.501
<b>Education</b>		
<HS graduate	1 [Reference]	--
HS diploma or GED	0.47 (0.22-0.99)	0.046
> HS	0.41 (0.18-0.92)	0.031
<b>Region</b>		
Northeast	1 [Reference]	--
Midwest	1.20 (0.39-3.67)	0.746
South	1.42 (0.52-3.86)	0.495
West	1.40 (0.46-4.25)	0.552

<sup>a</sup>Includes those who delayed medical care due to 1) inability to obtain appointment, 2) clinic not open, 3) unable to reach physician/clinic by telephone, 4) lacked transportation, 5) wait was too long to see physician

**DISCLOSURES**

Sabrina Khan MD, Charlotte Jeong BS, Caterina Zagona-Prizio MD, Manan Mehta MD, Nicole Maynard MD, Rasika Reddy MD, and Danielle Yee MD have no conflicts of interest to disclose. April W. Armstrong, MD MPH has served as a research investigator, scientific advisor, or speaker to AbbVie, Alumis, BMS, Galderma, Leo, UCB, J&J, Lilly, Novartis, Sun, Sanofi, Takeda, Regeneron, and Pfizer.

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**AUTHOR CORRESPONDENCE****April W. Armstrong MD MPH**

E-mail:..... armstrongpublication@gmail.com