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Acral lentiginous melanoma incidence by sex, race, ethnicity, and stage in the United States, 2010–2019

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Abstract

Introduction: Acral lentiginous melanoma (ALM) is a rare type of melanoma associated with delayed diagnosis and poor survival rates. This study examines ALM incidence rates in comparison to all other melanoma types.

Methods: We used data from the Centers for Disease Control and Prevention's National Program of Cancer Registries and the National Cancer Institute's Surveillance, Epidemiology, and End Results Program, which together cover 99% of the US population. We calculated age-adjusted rates and rate ratios for ALM and all other malignant melanomas by sex, race and ethnicity, stage, and year of diagnosis (2010–2019).

Results: ALM incidence rates were significantly lower among non-Hispanic Black persons (1.8 per 1,000,000); non-Hispanic Asian/Pacific Islander (API) persons (1.7 per 1,000,000); and Hispanic Black, American Indian/Alaska Native (AI/AN), and API persons (1.5 per 1,000,000) compared to non-Hispanic White persons (2.3 per 1,000,000). Rates were significantly higher among Hispanic White persons (2.8 per 1,000,000) compared to non-Hispanic White persons. For all other melanoma types, incidence rates were significantly higher among non-Hispanic White persons compared to persons in each of the other racial and ethnic categories. The percentage of melanomas that were ALM ranged from 0.8% among non-Hispanic White persons to 19.1% among Hispanic Black, AI/AN, and API persons.

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Disclaimer

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Appendix B. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.ypmed.2023.107692.

CRediT authorship contribution statement

Dawn M. Holman: Conceptualization, Writing – original draft. **Jessica B. King:** Methodology, Formal analysis, Writing – review & editing. **Arica White:** Writing – review & editing. **Simple D. Singh:** Writing – review & editing. **J. Leonard Lichtenfeld:** Conceptualization, Writing – review & editing.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Conclusion: These findings suggest that awareness of the potential for ALM in patients of all races and ethnicities could be balanced with an understanding of the rarity of the disease and the potential for the development of other melanoma types in racial and ethnic minority groups.

Keywords

Acral lentiginous melanoma; Melanoma; Skin cancer; Surveillance; Sun safety; Prevention

1. Introduction

Although melanoma incidence rates have received considerable attention in peer-reviewed literature (Centers for Disease Control and Prevention, 2019; Holman et al., 2018; Paulson et al., 2020), less focus has been given specifically to acral lentiginous melanoma (ALM). ALM is a histological melanoma subtype that typically occurs on the palms of the hands, soles of the feet, and nail beds (Basurto-Lozada et al., 2021). The etiology of ALM is not well-understood. Current evidence suggests that exposure to ultraviolet radiation (UV) does not play the important causal role that it does for other melanomas (Basurto-Lozada et al., 2021). Mechanical stress or trauma, and certain genetic factors, may be involved in the development of ALM (Basurto-Lozada et al., 2021).

Information about ALM in the popular and peer-reviewed media often suggests that it is more common among racial and ethnic minority groups and the most common type of melanoma among Black persons (Mitchell, 2021; Adamson, 2022; Skin Cancer Foundation, 2020; De Vere et al., 2023). However, previous surveillance data suggested that incidence rates may not vary greatly across racial and ethnic groups (Bradford et al., 2009; Wang et al., 2016). The purpose of the current study is to examine the most recently available national data on ALM incidence rates compared to all other types of melanoma in the United States during 2010–2019 by sex, race and ethnicity, and tumor stage.

2. Methods

We included data from the Centers for Disease Control and Prevention's National Program of Cancer Registries (NPCR) and the National Cancer Institute's Surveillance, Epidemiology, and End Results (SEER) Program (National Program of Cancer Registries and Surveillance, Epidemiology, and End Results Program SEER*Stat Database: U.S, 2022) that met United States Cancer Statistics (USCS) publication criteria for diagnosis years 2010–2019 (Centers for Disease Control and Prevention, 2022) and covered 99% of the US population. This study was exempt from CDC Institutional Review Board approval because it was a secondary analysis of publicly available anonymized data. We used SEER*Stat (National Cancer Institute, 2022) version 8.3.9.2 to calculate age-adjusted rates and rate ratios for ALM—defined as cases with ICD-O-3 histology code 8744 and malignant ICD-O-3 behavior code—by sex, race, and ethnicity (Non-Hispanic White; Non-Hispanic Black; Non-Hispanic American Indian/Alaska Native [AI/AN]; Non-Hispanic Asian/Pacific Islander [API]; Hispanic White; and Hispanic Black, AI/AN, and API), tumor stage, and year of diagnosis (2010–2019). We generated the same statistics for all other malignant melanomas (ICD-O-3 histology codes 8720–8743, 8745–8790) for comparison. We used

mutually exclusive race and ethnicity group definitions. Rates presented are per 1,000,000 persons, age-adjusted to the 2000 US population standard using 19 age groups (Census P25–1130), and 95% confidence intervals (CI) were calculated using the Tiwari modification in SEER*Stat. Statistics based on 6 or fewer cases were suppressed to preserve stability and protect patient confidentiality. Rate ratio significance is detected at $p < .05$.

3. Results

Table 1 shows case counts, incidence rates, and rate ratios among men and women by race and ethnicity for ALM and all other melanoma types. For both ALM and all other melanomas, non-Hispanic White persons had substantially higher total case counts compared to other racial and ethnic groups. Among men and women combined, the incidence rate for ALM was significantly lower among non-Hispanic Black persons (1.8 per 1,000,000); non-Hispanic API persons (1.7 per 1,000,000); and Hispanic Black, AI/AN, and API persons (1.5 per 1,000,000). Incidence was significantly higher among Hispanic White persons (2.8 per 1,000,000) compared to non-Hispanic White persons (2.3 per 1,000,000). Among Hispanic Black, AI/AN, and API persons who were diagnosed with ALM, 62% were Black persons, 23% were API persons, and 14% were AI/AN persons. There were no statistically significant differences in ALM incidence rates among non-Hispanic AI/AN persons (2.4 per 1,000,000) compared to non-Hispanic White persons (2.3 per 1,000,000). Similar patterns were observed when the analyses were limited to only men or only women and when we used non-mutually exclusive racial and ethnic groups (i.e., the racial categories of White, Black, AI/AN, and API persons included both Hispanic and non-Hispanic persons). For all other melanoma types, incidence rates were significantly higher among non-Hispanic White persons compared to persons in each of the other racial and ethnic categories.

Table A.1 shows incidence rates and rate ratios for ALM and all other melanomas by stage and by race and ethnicity. Incidence rates for localized ALM were significantly lower among non-Hispanic Black persons (1.1 per 1,000,000), non-Hispanic API persons (1.1 per 1,000,000), and Hispanic Black, AI/AN, and API persons (0.9 per 1,000,000) compared to non-Hispanic White persons (1.6 per 1,000,000). Incidence rates for regional and distant stage ALM were significantly higher among Hispanic White persons (0.9 and 0.2 per 1,000,000 respectively) compared to non-Hispanic White persons (0.6 and 0.1 per 1,000,000 respectively). No other statistically significant differences in ALM incidence rates by tumor stage were observed across racial and ethnic groups. For all other melanomas, incidence rates were consistently significantly higher among non-Hispanic White persons compared to each of the other racial and ethnic groups, regardless of tumor stage.

Fig. 1 illustrates trends in incidence rates for ALM (Fig. 1a) and all other melanoma types (Fig. 1b) by race and ethnicity during 2010–2019. Data for non-Hispanic AI/AN persons and Hispanic Black, AI/AN, and API persons were suppressed in Fig. 1 because of small annual ALM case counts (< 6 cases in some years). For ALM, there were no statistically significant changes in incidence rates among any of the included racial and ethnic groups except for Hispanic White persons. Among Hispanic White persons, there was a statistically significant increase in ALM incidence rates, with an annual percent change (APC) from 2010 to 2019

of 2.40 (95% CI: 0.45, 4.38). For all other melanoma types during 2010–2019, there was a statistically significant increase in the incidence rates among non-Hispanic White persons (APC = 1.69; 95% CI: 0.92, 2.47) and a statistically significant decrease in the incidence rates among non-Hispanic Black persons (APC = −2.22; 95% CI: −3.99, −0.43).

Fig. A.1 shows the percentage of melanomas that were ALM versus other melanoma types by race and ethnicity. Across all racial and ethnic groups, most melanoma cases were non-acral melanomas. The percentage of melanomas that were ALM ranged from 0.8% among non-Hispanic White persons to 19.1% among Hispanic Black, AI/AN, and API persons.

4. Discussion

Findings indicate that ALM comprises a small proportion of all melanomas diagnosed in the United States, across all racial and ethnic groups. Additionally, incidence rates are similar across all racial and ethnic groups and only slightly higher among Hispanic and non-Hispanic White populations. This pattern is different than what is observed for non-acral melanomas, for which incidence rates are substantially higher among non-Hispanic White persons compared to other racial and ethnic groups. Findings also demonstrate the rarity of ALM among people of all races and ethnicities relative to other cancer types. For example, incidence rates for prostate cancer among men range from 58.8 per 100,000 among non-Hispanic API men to 182.0 per 100,000 among non-Hispanic Black men (Cronin et al., 2022). And incidence rates for female breast cancer range from 98.7 per 100,000 among Hispanic women to 134.7 per 100,000 among non-Hispanic White women (Cronin et al., 2022). Whereas, our findings indicate that incidence rates for ALM range from 1.3 per 1,000,000 (i.e., 0.13 per 100,000) among Hispanic Black, AI/AN, API women to 3.5 per 1,000,000 (i.e., 0.35 per 100,000) among non-Hispanic AI/AN men.

Peer-reviewed publications continue to perpetuate the idea that ALM is the predominant type of melanoma among Black people and tend to imply that other racial and ethnic groups are not at risk for ALM (De Vere et al., 2023). However, our findings indicate very different patterns in ALM incidence. Future messaging about ALM could be revised to better align with this latest national data on incidence, avoid overstating the risk of ALM, and clarify that ALM occurs in people of all racial and ethnic groups.

Despite of the rarity of the disease, awareness of ALM may still be particularly important in the context of other conditions that can affect skin health. For example, ALM among persons with diabetes may be misdiagnosed as foot sores (Nwabudike et al., 2021), and misdiagnosis and delayed diagnosis of ALM are associated with poorer survival (Basurto-Lozada et al., 2021). Furthermore, previous research suggests that ALM is associated with a worse prognosis than other forms of melanoma, and Black persons have the poorest survival rates compared to other racial and ethnic groups (Huang et al., 2020). Sun-safety messages that clinicians provide to their patients could reiterate that UV-related melanomas are more common than ALM, even among racial and ethnic minority groups—a finding that suggests sun-safety practices may have health benefits for persons from racial and ethnic minority groups.

The findings also indicate that ALM incidence rates have increased significantly among Hispanic White persons. This contrasts with trends observed for other racial and ethnic groups, for which there were no significant increases. Furthermore, the results of the analysis of ALM incidence rates by stage suggest that Hispanic White persons may be at higher risk for later stage at diagnosis compared to other racial and ethnic groups, possibly pointing to delays in diagnosis within this demographic group. Future research could seek to better understand the etiology of and risk factors for ALM and examine potential reasons for the observed increase and later stage at diagnosis among Hispanic White persons.

4.1. Study limitations and strengths

A limitation of this study is the potential for underreporting or delayed reporting of melanoma cases diagnosed in outpatient settings (Svoboda et al., 2018). Another limitation is that we were unable to examine mortality rates for ALM because mortality data from CDC's National Vital Statistics System do not include cancer histology codes. Additionally, the study is limited to the most recent years of data available which only go through 2019. Strengths of this study include that it is the first to use USCS to examine ALM incidence rates by race and ethnicity. And the national coverage provided by USCS allows examination of rare cancer sites and differences across groups.

5. Conclusions

National data indicate that, across all racial and ethnic groups, ALM makes up a minority of melanoma cases in the United States. Awareness of the potential for ALM in persons of all races and ethnicities could be balanced with an understanding of the rarity of the disease. Clinicians can also be educated on the potential for other types of melanoma types to develop in racial and ethnic minority groups.

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Data availability

Data will be made available on request.

Appendix A.: Appendix

Table A.1

US[a] Incidence Rates and Rate Ratios for Acral Lentiginous Melanoma and Other Melanomas by Tumor Stage and Race and Ethnicity, 2010–2019.

Acral lentiginous melanoma	Localized stage			Regional stage			Distant stage			Unknown stage		
Race and Ethnicity[b]	**Rate[c] (95% CI[d])**	**Rate ratio (95% CI[d])**	***P* value**	**Rate[c] (95% CI[d])**	**Rate ratio (95% CI[d])**	***P* value**	**Rate[c] (95% CI[d])**	**Rate ratio (95% CI[d])**	***P* value**	**Rate[c] (95% CI[d])**	**Rate ratio (95% CI[d])**	***P* value**
Non-Hispanic white	1.6 (1.6, 1.7)	1.00		0.6 (0.5, 0.6)	1.00		0.1 (0.1, 0.1)	1.00		0.1 (0.1, 0.1)	1.00	
Non-Hispanic black	1.1 (1.0, 1.3)	0.70 (0.62, 0.77)	<0.0001	0.5 (0.4, 0.6)	0.88 (0.74, 1.03)	0.12	0.1 (0.1, 0.1)	1.03 (0.69, 1.48)	0.93	0.1 (0.0, 0.1)	1.05 (0.63, 1.65)	0.92
Non-Hispanic AI/AN	1.4 (0.9, 2.0)	0.85 (0.56, 1.24)	0.45	0.8 (0.4, 1.2)	1.36 (0.78, 2.18)	0.28	e	f	f	e	f	f
Non-Hispanic API	1.1 (0.9, 1.2)	0.65 (0.55, 0.76)	<0.0001	0.5 (0.4, 0.6)	0.85 (0.66, 1.06)	0.16	0.1 (0.1, 0.2)	1.13 (0.65, 1.83)	0.71	e	f	f
Hispanic white	1.6 (1.5, 1.8)	1.00 (0.90, 1.10)	0.98	0.9 (0.8, 1.0)	1.60 (1.40, 1.83)	<0.0001	0.2 (0.1, 0.2)	1.60 (1.14, 2.19)	0.01	0.1 (0.0, 0.1)	1.26 (0.77, 1.95)	0.37
Hispanic black, AI/AN, API	0.9 (0.6, 1.4)	0.55 (0.33, 0.83)	0.003	0.5 (0.3, 0.9)	0.90 (0.47, 1.54)	0.77	e	f	f	e	f	f
Other melanomas	**Localized stage**			**Regional stage**			**Distant stage**			**Unknown stage**		
Race and Ethnicity[b]	**Rate[c] (95% CI[d])**	**Rate ratio (95% CI[d])**	***P* value**	**Rate[c] (95% CI[d])**	**Rate ratio (95% CI[d])**	***P* value**	**Rate[c] (95% CI[d])**	**Rate ratio (95% CI[d])**	***P* value**	**Rate[c] (95% CI[d])**	**Rate ratio (95% CI[d])**	***P* value**
Non-Hispanic white	220.5 (219.9, 221.1)	1.00		25.7 (25.5, 25.9)	1.00		13.2 (13.1, 13.4)	1.00		23.0 (22.8, 23.2)	1.00	
Non-Hispanic black	3.9 (3.6, 4.1)	0.02 (0.02, 0.02)	<0.0001	1.5 (1.4, 1.7)	0.06 (0.05, 0.06)	<0.0001	1.5 (1.4, 1.7)	0.12 (0.11, 0.13)	<0.0001	1.3 (1.2, 1.4)	0.06 (0.05, 0.06)	<0.0001
Non-Hispanic AI/AN	55.1 (52.0, 58.3)	0.25 (0.24, 0.26)	<0.0001	9.9 (8.6, 11.3)	0.38 (0.33, 0.44)	<0.0001	5.8 (4.8, 6.8)	0.43 (0.36, 0.52)	<0.0001	11.7 (10.3, 13.3)	0.51 (0.45, 0.58)	<0.0001
Non-Hispanic API	7.5 (7.1, 7.9)	0.03 (0.03, 0.04)	<0.0001	1.8 (1.6, 2.0)	0.07 (0.06, 0.08)	<0.0001	1.3 (1.1, 1.5)	0.10 (0.09, 0.11)	<0.0001	1.0 (0.9, 1.2)	0.05 (0.04, 0.05)	<0.0001
Hispanic white	28.7 (28.1, 29.3)	0.13 (0.13, 0.13)	<0.0001	6.5 (6.2, 6.7)	0.25 (0.24, 0.26)	<0.0001	4.3 (4.1, 4.5)	0.32 (0.31, 0.34)	<0.0001	5.0 (4.8, 5.3)	0.22 (0.21, 0.23)	<0.0001
Hispanic black, AI/AN, API	2.4 (1.8, 3.1)	0.01 (0.01, 0.01)	<0.0001	1.6 (1.2, 2.2)	0.06 (0.05, 0.09)	<0.0001	1.0 (0.6, 1.4)	0.07 (0.05, 0.11)	<0.0001	0.6 (0.2, 0.4)	0.03 (0.02, 0.04)	<0.0001

Abbreviations: AI/AN, American Indian/Alaska native; API, Asian Pacific islander; CI, confidence interval.

[a] US excludes Nevada data for not meeting United States Cancer statistics publication criteria and covers 99% of the US population, 2010–2019.

[b]Racial and ethnic groups are mutually exclusive.

[c]Rates are per 1,000,000 and age-adjusted to the 2000 US population standard using 19 age groups (census P25–1130).

[d]Confidence intervals are 95% for rates and ratios and were calculated using the Tiwari modification in SEER*stat.

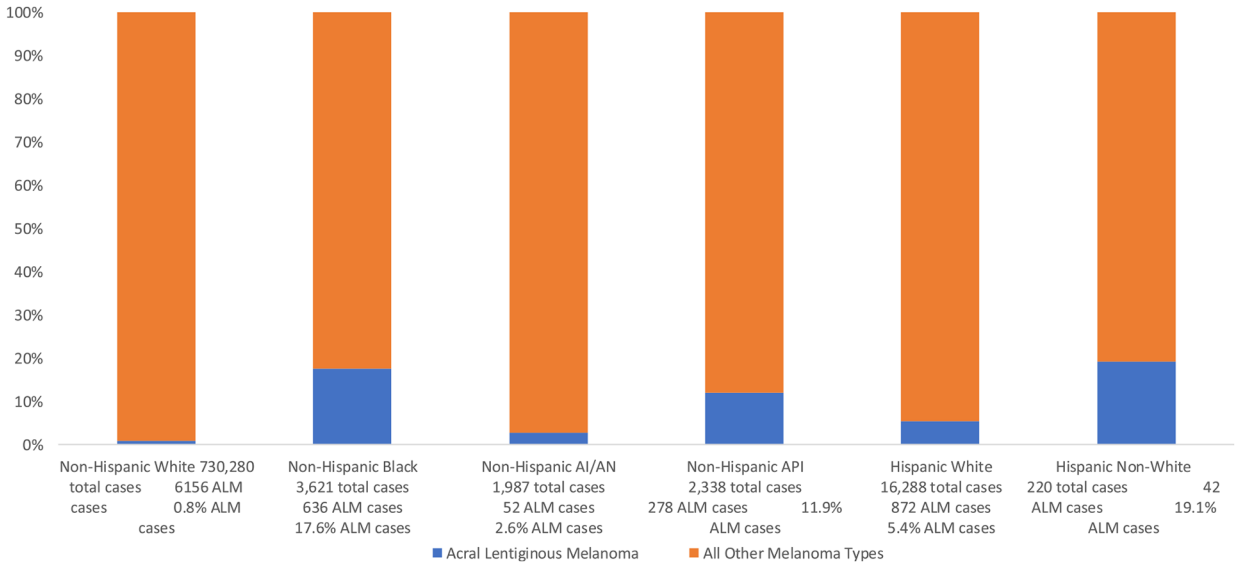

Fig. A.1.

US[a] Percentage of Acral Lentiginous Melanoma vs Other Melanomas, Race and Ethnicity, 2010–2019.

Abbreviations: AI/AN, American Indian/Alaska native; ALM, acral lentiginous melanoma; API, Asian Pacific islander

[a]United States excludes Nevada data for not meeting United States Cancer Statistics publication criteria and covers 99% of the US population, 2010–2019.

[b]Hispanic Non-White includes Hispanic Black, AI/AN, and API.

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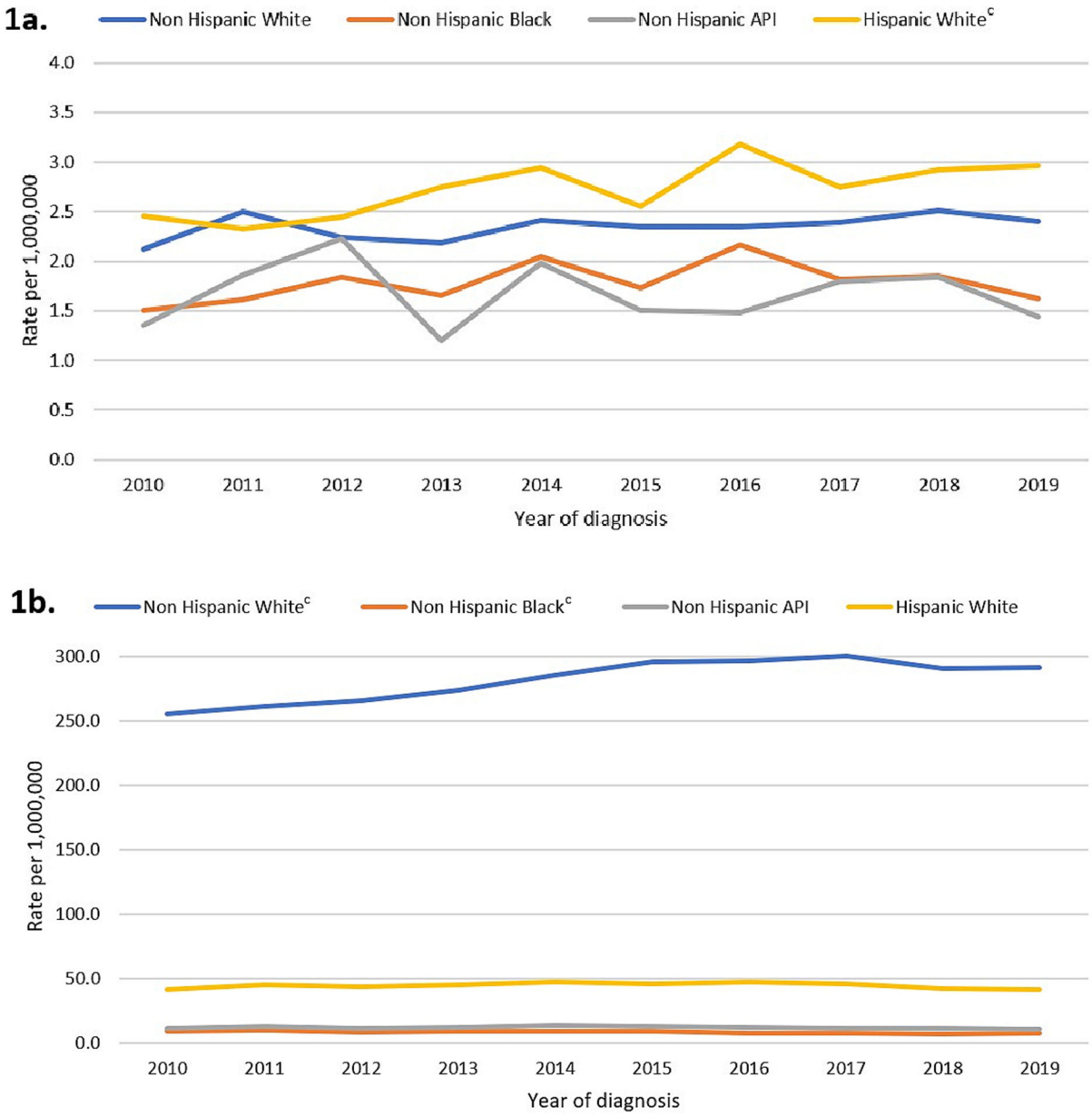

Fig. 1.

US[a] Trends in Incidence[b] for Acral Lentiginous Melanoma (Fig. 1a) and Other Melanomas (Fig. 1b), Race and Ethnicity, 2010–2019. Abbreviations: AI/AN, American Indian/Alaska Native; API, Asian Pacific Islander.

Note: Trends for non-Hispanic AI/AN and Hispanic non-White groups are suppressed due to years where <6 cases of acral lentiginous melanoma occurred.

[a] United States excludes Nevada data for not meeting United States Cancer Statistics publication criteria and covers 99% of the US population, 2010–2019.

[b] Rates are per 1,000,000 and age-adjusted to the 2000 US population standard using 19 age groups (Census P25–1130).

[c] The annual percent change in incidence rates is statistically significant at $P < .05$.

Table 1

US[a] Incidence Rates and Rate Ratios for Acral Lentiginous Melanoma and Other Melanomas by Sex, Race, and Ethnicity, 2010–2019.

Acral lentiginous melanoma among men and women				
Race and Ethnicity[b]	**Case count**	**Rate[c] (95% CI[d])**	**Rate ratio (95% CI[d])**	***P* value**
Non-Hispanic White	6156	2.3 (2.3, 2.4)	1.00	
Non-Hispanic Black	636	1.8 (1.7, 1.9)	0.76 (0.70, 0.83)	<0.0001
Non-Hispanic AI/AN	52	2.4 (1.7, 3.1)	1.01 (0.74, 1.34)	0.62
Non-Hispanic API	278	1.7 (1.5, 1.9)	0.71 (0.62, 0.80)	<0.0001
Hispanic White	872	2.8 (2.6, 2.9)	1.17 (1.09, 1.26)	<0.0001
Hispanic Black, AI/AN, API	42	1.5 (1.0, 2.1)	0.64 (0.45, 0.88)	0.005
Acral lentiginous melanoma among men only				
Race and Ethnicity[b]	**Case count**	**Rate[c] (95% CI[d])**	**Rate ratio (95% CI[d])**	***P*-value**
Non-Hispanic White	2902	2.4 (2.3, 2.5)	1.00	
Non-Hispanic Black	284	1.9 (1.6, 2.1)	0.79 (0.69, 0.89)	0.0002
Non-Hispanic AI/AN	33	3.5 (2.4, 5.0)	1.49 (0.99, 2.13)	0.056
Non-Hispanic API	137	1.9 (1.6, 2.3)	0.80 (0.67, 0.96)	0.013
Hispanic White	416	3.0 (2.7, 3.3)	1.27 (1.14, 1.42)	<0.0001
Hispanic Black, AI/AN, API	22	1.8 (1.1, 2.8)	0.76 (0.44, 1.19)	0.246
Acral lentiginous melanoma among women only				
Race and Ethnicity[b]	**Case count**	**Rate[c] (95% CI[d])**	**Rate ratio (95% CI[d])**	**P-value**
Non-Hispanic White	3254	2.4 (2.3, 2.5)	1.00	
Non-Hispanic Black	352	1.7 (1.6, 1.9)	0.73 (0.65, 0.82)	<0.0001
Non-Hispanic AI/AN	19	1.5 (0.9, 2.4)	0.64 (0.38, 1.01)	0.058
Non-Hispanic API	141	1.5 (1.3, 1.8)	0.63 (0.53, 0.75)	<0.0001
Hispanic White	456	2.6 (2.4, 2.9)	1.10 (0.99, 1.21)	0.085
Hispanic Black, AI/AN, API	20	1.3 (0.8, 2.0)	0.55 (0.32, 0.85)	0.006
All other melanoma types among men and women				
Race and Ethnicity[b]	**Case count**	**Rate[c] (95% CI[d])**	**Rate ratio (95% CI[d])**	**P-value**
Non-Hispanic White	724,124	282.4 (281.8, 283.1)	1.00	
Non-Hispanic Black	2985	8.2 (7.9, 8.5)	0.03 (0.03, 0.03)	<0.0001
Non-Hispanic AI/AN	1935	82.4 (78.6, 86.3)	0.29 (0.28, 0.31)	<0.0001
Non-Hispanic API	2060	11.6 (11.1, 12.1)	0.04 (0.04, 0.04)	<0.0001
Hispanic White	15,416	44.4 (43.7, 45.2)	0.16 (0.16, 0.16)	<0.0001
Hispanic Black, AI/AN, API	178	5.6 (4.7, 6.6)	0.02 (0.02, 0.02)	<0.0001
All other melanoma types among men only				
Race and Ethnicity[b]	**Case count**	**Rate[c] (95% CI[d])**	**Rate ratio (95% CI[d])**	**P-value**
Non-Hispanic White	432,584	352.0 (351.0, 353.1)	1.00	
Non-Hispanic Black	1384	9.1 (8.6, 9.6)	0.03 (0.02, 0.03)	<0.0001
Non-Hispanic AI/AN	1046	99.3 (92.9, 106.0)	0.28 (0.26, 0.30)	<0.0001

Non-Hispanic API	1028	13.2 (12.4, 14.1)	0.04 (0.04, 0.04)	<0.0001
Hispanic White	7040	47.8 (46.7, 49.1)	0.14 (0.13, 0.14)	<0.0001
Hispanic Black, AI/AN, API	101	7.4 (5.8, 9.3)	0.02 (0.02, 0.03)	<0.0001
All other melanoma types among women only				
Race and Ethnicity[b]	**Case count**	**Rate[c] (95% CI[d])**	**Rate ratio (95% CI[d])**	**P-value**
Non-Hispanic White	291,540	230.6 (229.7, 231.5)	1.00	
Non-Hispanic Black	1601	7.6 (7.2, 8.0)	0.03 (0.03, 0.04)	<0.0001
Non-Hispanic AI/AN	889	70.7 (66.0, 75.7)	0.31 (0.29, 0.33)	<0.0001
Non-Hispanic API	1032	10.5 (9.8, 11.1)	0.05 (0.04, 0.05)	<0.0001
Hispanic White	8376	43.6 (42.6, 44.5)	0.19 (0.19, 0.19)	<0.0001
Hispanic Black, AI/AN, API	77	4.3 (3.3, 5.5)	0.02 (0.01, 0.02)	<0.0001

Abbreviations: AI/AN, American Indian/Alaska Native; API, Asian Pacific Islander; CI, confidence interval.

[a] US excludes Nevada data for not meeting United States Cancer statistics publication criteria and covers 99% of the US population, 2010–2019.

[b] Racial and ethnic groups are mutually exclusive.

[c] Rates are per 1,000,000 and age-adjusted to the 2000 US population standard using 19 age groups (census P25–1130).

[d] Confidence intervals are 95% for rates and ratios and were calculated using the Tiwari modification in SEER*stat.