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Women's Health Highlight

Skin cancer in women of color: Epidemiology, pathogenesis and clinical manifestations



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ABSTRACT

Malignant melanoma and nonmelanoma skin cancers (NMSC), which include basal cell carcinoma and squamous cell carcinoma, account for 40% of all neoplasms in white patients, making these cancers the most common malignancy in the United States. Given the large number of NMSC cases in white patients, there is a correspondingly large body of literature addressing various aspects of epidemiology, pathogenesis, and treatment. The incidence of both malignant melanoma and NMSC is well established and remains significantly lower in patients with skin of color (SoC) when compared with white patients. Although there is a lower incidence of skin cancer in SoC, there is often a poorer prognosis among this group. There is even more limited data focusing on women of color, making an accurate determination of incidence and mortality difficult. This gender disparity causes decreased skin cancer awareness and index of suspicion among patients and providers, hindering appropriate evaluation and care. Therefore, there is a need for an increased understanding of skin cancer in women of color. In the traditional sense, SoC refers to people of African, Asian, Native American, Middle Eastern, and Hispanic backgrounds. Patients in these ethnic groups have richly pigmented skin that is usually categorized as Fitzpatrick types III through VI and thus have notable differences in skin disease and presentation compared with fair-skinned individuals. We present this review of skin cancer in women of color to give a reasonably comprehensive representation of the literature to advance our understanding and knowledge in this unique population.

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Introduction

Malignant melanoma (MM) and nonmelanoma skin cancers (NMSC), which include basal cell carcinoma (BCC) and squamous cell carcinoma (SCC), account for 40% of all neoplasms in white patients, making these the most common malignancy in the United States (Dadzie et al., 2014). Given the large number of NMSC cases in white patients, there is a correspondingly large body of literature addressing various aspects of epidemiology, pathogenesis, and treatment. However, these aspects can vary considerably across race, ethnicity, and gender, and there is scarce literature addressing these differences in skin of color (SoC; Ridky, 2007). The incidence of both MM and NMSC is well established and remains significantly lower in individuals with SoC compared with white patients, yet the prognosis and survival rates are often worse among this group (Kailas et al., 2016). Furthermore, patients with SoC are more likely to present with more aggressive skin cancers, thicker tumors, and metastases on initial presentation (Kaufman and Alexis, 2017).

There is even more limited data focusing on women of color, making accurate determination of incidence and mortality difficult. Additionally, recent evidence has shown that there may be a link between socioeconomic status and the development of skin cancer. A study conducted by Hausauer et al. (2011) examining the incidence of MM among younger women found higher rates of MM among those with a higher socioeconomic status, which is likely due to the fact that women in this demographic are more likely to engage in outdoor activities, including playing sports like golf and tennis, travel to beach destinations, and gardening, that increase their ultraviolet (UV) exposure. This is important to address because many women with SoC have experienced changing socioeconomic status.

These variables, combined with the gender disparity, have decreased skin cancer awareness and index of suspicion among patients and providers, hindering appropriate evaluation and care. Therefore, there is a need for an increase in knowledge and understanding of skin cancer in women of color (Halder and Bridgeman-Shah, 1995).

In the traditional sense, SoC refers to people of African, Asian, Native American, Middle Eastern, and Hispanic backgrounds (Kunda and Patterson, 2013). Patients in these racial and ethnic groups have richly pigmented skin that is usually categorized as Fitzpatrick skin types III through VI and thus have notable differences in skin disease and presentation compared with Caucasian individuals (Taylor, 2002). Although it is impossible to present a completely comprehensive synopsis on this very broad topic, we present this review of NMSC and MM in women of color to give a reasonably comprehensive representation of the literature to advance our understanding and knowledge in this unique population.

Basal cell carcinoma

BCC is the most common type of NMSC reported, representing 80% of all skin cancers (Hogue and Harvey, 2019). The main risk factor for BCC among all racial and ethnic groups is UV exposure (Almahroos and Kurban, 2004; Bradford, 2009; Zanetti et al., 2006). Other risk factors linked to the development of BCC include,

but are not limited to, albinism, sunburns at any age, HIV infection, arsenic ingestion, radiation therapy, and immunosuppression. In addition, there are important risk factors for the development of BCC in patients with SoC, specifically chronic inflammation from scars and burns (Table 1). Clinically, BCC in individuals with SoC presents similarly between some racial and ethnic groups as an asymptomatic papule or nodule with translucency and central ulceration (Fig. 1). However, of note, when BCC presents in individuals with SoC, lesions present with pigmentation in >50% of cases compared with 5% in Caucasian subjects. In addition, the classic pearly or translucent rolled borders and telangiectasias may be difficult to appreciate, making diagnosis difficult (Agbai et al., 2014; Bradford, 2009). Although the overall anatomic distribution and presentation of BCC is similar among all racial and ethnic skin types, some important differences exist between genders, which can further influence diagnosis and mortality (Bradford, 2009).

African Americans

The incidence of NMSC, including BCC and SCC, in African Americans (AAs) is 2% (Agbai et al., 2014; Kailas et al., 2016). In contrast with other ethnicities where BCC is the most common NMSC, BCC is the second most common skin cancer in AAs (Agbai et al., 2014). Many studies have found that BCC is more prevalent in AA women than AA men. Similar to their male counterparts, BCC in AA women most commonly presents in the seventh decade of life (Abreo and Sanusi, 1991; Halder and Bridgeman-Shah, 1995).

AAs have a lower risk of developing BCC in sun-exposed regions. However, more recently, the literature has highlighted that AAs have a similar risk of developing BCC in non-sun-exposed regions compared with Caucasian individuals. This is consistent with the argument that factors other than UV light may be involved in the development of BCC in individuals with SoC. Although BCC in AAs most commonly occurs on the head and neck for both men and women, lesions are less likely to occur on the nose, trunk, and scalp in women (Armstrong and Kricger, 2001; Halder and Ara, 2003).

Providers should have a heightened index of suspicion of BCC presenting in more unusual, non-sun-exposed areas, such as the anus and vulva of AA women (Halder and Bridgeman-Shah, 1995; Bradford, 2009). In addition, there have been even more complex presentations of BCC unique to AA women, specifically BCC coexisting with a blue nevus, emphasizing the need for aggressive clinical surveillance in AAs, especially AA women (Higgins et al., 2018). Furthermore, AA women with a history of NMSC (including BCC and SCC) may have a higher risk of reporting a second malignancy than women in other racial and ethnic groups (Gloster and Neal, 2006).

Hispanics

There is very limited literature discussing the clinical features and demographics of BCC in Hispanics, especially Hispanic women, when compared with their counterparts with SoC. The incidence of NMSC in Hispanics is 5% overall, and Hispanics are six times more likely to present with BCC than SCC (Agbai et al., 2014; Hoy, 1996; Kailas et al., 2016). Hispanics are also more likely to be diagnosed with multiple BCC tumors than a singular SCC lesion (Higgins et al.,

Table 1

Features of basal cell carcinoma, squamous cell carcinoma, and melanoma in SoC with specifications for women of color.

Basal cell carcinoma	
Frequency	<ul style="list-style-type: none"> ● Most common type of nonmelanoma skin cancer, 80% of all skin cancers ● Most common skin cancer in Hispanic and Asian women ● Second most common type of cancer in AA women
Clinical presentation	<ul style="list-style-type: none"> ● Present with pigmentation in > 50% of cases of SoC ● Asymptomatic papule or nodule with translucency and central ulceration ● Pearly or translucent rolled borders and telangiectasias ● Often pigmented with a black, pearly appearance ● Brown to glossy black appearance with pigmentation in Asians
Anatomic distribution	<ul style="list-style-type: none"> ● Head and neck most commonly affected ● Nose, trunk, and scalp in AA women ● Can be found in the anogenital region in women with SoC
Risk factors	<ul style="list-style-type: none"> ● Most significant risk factor is ultraviolet exposure ● Scars ● Sunburns ● Albinism ● Exposure to radiation therapy ● HIV infection ● Immunosuppression
Squamous cell carcinoma	
Frequency	<ul style="list-style-type: none"> ● Approximately 20% of all skin cancers ● Most common type of skin cancer in AA women ● Second most common type of cancer in Hispanic and Asian women ● AA women are twice as affected by Bowen's disease (squamous cell carcinoma in situ) than AA men
Clinical presentation	<ul style="list-style-type: none"> ● Scaling, indurated, well-circumscribed papule or plaque ● Ill-defined, rough, pink patches that may bleed or ulcerate ● Chronic nonhealing sores and/or scars
Anatomic distribution	<ul style="list-style-type: none"> ● Commonly found in non-sun-exposed areas, including the lower extremities and anogenital region in SoC ● Commonly found in the arms, scalp, and lip regions in AA women
Risk factors	<ul style="list-style-type: none"> ● Chronic irritation, inflammation, or scarring to the skin ● Nonhealing ulcers ● Trauma ● Radiation ● Sun exposure is a significant risk factor for Asian women
Melanoma	
Frequency	<ul style="list-style-type: none"> ● Sixth most common type of skin cancer in all women ● Third most common skin cancer in women with SoC ● Acral lentiginous melanoma most common type of melanoma in AA and Asian women ● Highest mortality in patients with SoC
Clinical presentation	<ul style="list-style-type: none"> ● Irregularly shaped, dark macule or patch arising from pigmented nevi; may rapidly change ● Pigmented band on the nail plate that rapidly expands ● Often metastasizes early and spreads to other regions of the body ● Acral lentiginous melanoma, often found on the palms, soles, and nail beds ● Positive Hutchinson sign
Anatomic distribution	<ul style="list-style-type: none"> ● Commonly found on non-sun-exposed areas, such as plantar, palmar, subungual skin and mucous membranes ● 30%–40% of melanoma cases found in the plantar foot in SoC
Risk factors	<ul style="list-style-type: none"> ● Not well defined in SoC ● Ultraviolet exposure appears to be less of a risk factor

AA, African American; SoC, skin of color.

2018). The incidence of BCC in Hispanic women is reported to range from 35.3 to 50.3 (per 100,000) and is increasing (Armstrong and Kricke, 2001; Harris et al., 2001; Hoy, 1996). However, Hispanic women are less likely to present with BCC than Hispanic men, and their overall incidence is 5 to 10 times lower than non-Hispanic white individuals regardless of gender (Agbai et al., 2014; Halder and Ara, 2003). BCC commonly presents as pigmented lesions in Hispanics, often leading to a misdiagnosis. Thus, it is important to have a high index of suspicion when evaluating a pigmented lesion in a Hispanic woman.

Asians

The incidence of skin cancer in Asians is 4%. BCC is the most common skin cancer in Asians, and its incidence is increasing.

BCC in Asians most commonly appears in those age ≥ 60 years (Gloster and Neal, 2006; Sng et al., 2009). BCC in Asians has been described as presenting with a brown to glossy black appearance, and it presents with pigmentation in most cases (60%; Agbai et al., 2014; Bradford, 2009; Chuang et al., 1993). Similar to other ethnic groups, this may make a diagnosis of BCC difficult in Asians. Studies have shown that Asians with lighter skin tones are twice as likely to be diagnosed with BCC (Gloster and Neal, 2006).

One study of Filipino-Hawaiians in Hawaii found the incidence rate of BCC in Asian women and men to be 7.3 and 16.7 (per 100,000), respectively, and studies from China show the incidence rate of BCC in Asian women and men to be 5.8 and 6.4 (per 100,000), respectively (Chuang et al., 1993). The higher incidences in Asians closer to the equator are consistent with the thought that UV exposure is the main risk factor of developing BCC among

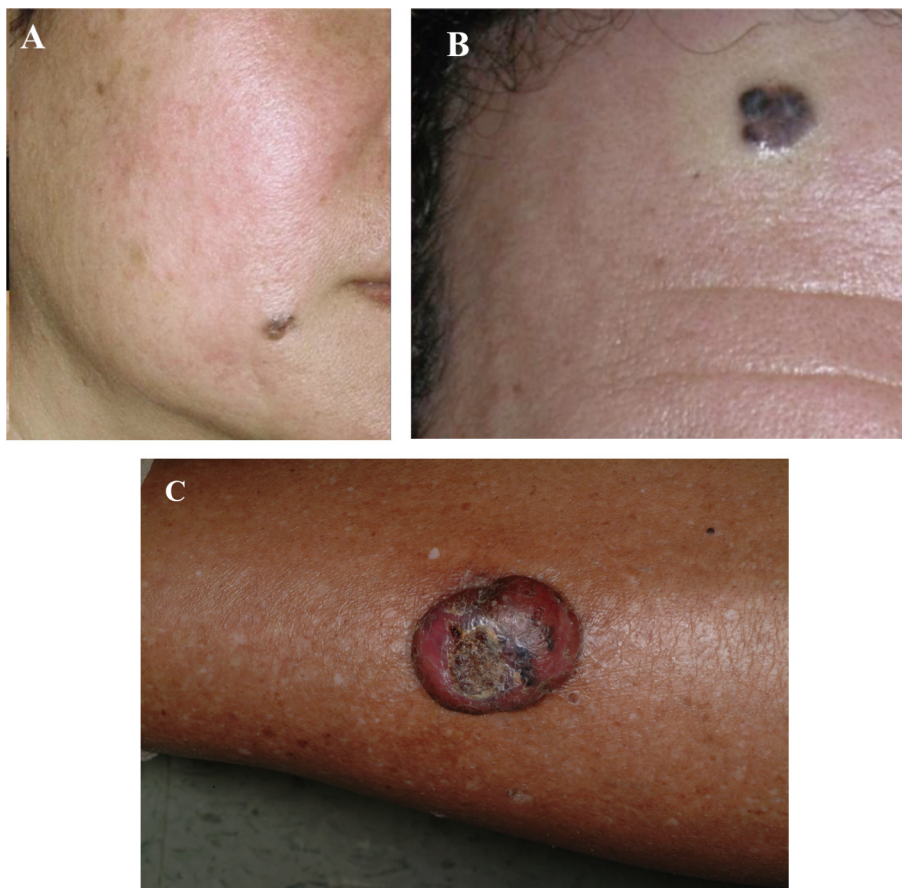


Fig. 1. Basal cell carcinomas in skin of color. Pigmented basal cell carcinoma (A) in a middle-aged Asian woman (right cheek) and (B) in a middle-aged Hispanic man (right forehead), courtesy of Agbai et al. (2014). (C) Pigmented basal cell carcinoma in a middle-aged African American woman (lower leg). Courtesy of Valerie Callender MD, Glenn Dale, MD.

Asians (Agbai et al., 2014). Previous literature indicates that BCC tends to present in an equal distribution between Asian women and men (Gloster and Neal, 2006). However, a study conducted by Loh et al. (2016) found that Asian women are at higher risk of developing NMSC than Asian men, specifically BCC, which is the most common type of NMSC among Asians. An interesting study conducted by Sng et al. (2009) in Singapore found that >50% of NMSC deaths occurred among Asian women age ≥ 85 years compared with Asian men age ≥ 75 years, with BCC being the most common type of skin cancer.

Squamous cell carcinoma

Among all skin types, SCC makes up 20% of skin cancers (Halder and Bridgeman-Shah, 1995). SCC has clinical presentations from scaling, indurated, well-circumscribed papules or plaques to ill-defined, rough, pink patches that may bleed or ulcerate (Fig. 2). In contrast with Caucasians, in individuals with SoC, UV light is not the primary risk factor of developing SCC. Instead, factors that produce chronic irritation to the skin, such as nonhealing ulcers, trauma, and radiation, are some of the greatest risk factors associated with the development of SCC (Table 1). Of note, SCC in non-sun-exposed areas and those that arise from previous scars are more likely to be aggressive than those that develop in sun-exposed areas (Hogue and Harvey, 2019). Nonhealing ulcers should always be biopsied to rule out SCC in individuals with SoC (Sng et al., 2009).

In addition, immunocompromised states also increase the risk of developing SCC in minorities. SCC in individuals with SoC is

more likely to present in non-sun-exposed areas, such as the anogenital region and lower extremities. This may lead to a delay in diagnosis and treatment, ultimately leading to an increased mortality in these populations. Furthermore, SCC in patients with SoC may be more aggressive, which may also contribute to the disparity in mortality rates (Agbai et al., 2014).



Fig. 2. Squamous cell carcinoma in skin of color in a middle-aged African-American patient (scalp). Photograph courtesy of Valerie Callender, MD.

African Americans

As mentioned previously, SCC is the most common skin cancer in AAs and may occur up to 20% more often than BCCs in AAs (Bradford, 2009; Gloster and Neal, 2006). Interestingly, chronic inflammatory and scarring processes are the greatest predisposing factors to the development of SCC in AAs, accounting for approximately 20% to 40% of cases. The majority of SCC cases in AAs present in non-sun-exposed areas with atypical presentations and increased potential for metastasis, leading to a delay in diagnosis and treatment (Higgins et al., 2018). Furthermore, these tumors, especially those arising from scars, tend to be more aggressive and contribute to increased mortality (Halder and Ara, 2003).

Overall, SCC in AAs most commonly present during the fifth decade of life. Of note, SCC in AA women occurs in a higher proportion on the arms and legs when compared with AA men (Fig. 2; Armstrong and Kricker, 2001; Bang et al., 1987; Mora and Pernicaro, 1981). Another study found that the scalp and lips were more likely to be involved in AA women. Chronic irritation from scars and trauma are the greatest risk factors for the development of SCC on the scalp and lower extremities (Agbai et al., 2014; Halder and Ara, 2003).

Bowen's disease (SCC in situ) presents in AA women twice more often than in AA men. Similar to BCC, Bowen's disease is more likely to present with hyperpigmentation in AAs. In addition, Bowen's disease is also more commonly present in non-sun-exposed areas in AA women. Importantly, in contrast to BCCs, AAs who present with SCC have been found to be associated with increased morbidity (Agbai et al., 2014; Gloster and Neal, 2006; Halder and Ara, 2003).

Hispanics

SCC is the second most common skin cancer in Hispanics. When diagnosed in Hispanic patients, SCC is more likely to result in metastasis or death (Baum and Duarte, 2015). SCC less commonly presents in Hispanic women compared with Hispanic men, and the incidence of SCC in Hispanic women ranges from 12.0 to 13.8 (per 100,000; Armstrong and Kricker, 2001; Harris et al., 2001; Hoy, 1996). One study conducted by Pritchett et al. (2016) confirmed that human papillomavirus (HPV) infection was a major risk factor for Hispanic patients. The study found that 66.7% of Hispanic patients with SCC had a history of HPV, including subtypes 16 and 18 located in the groin (Pritchett et al., 2016). However, of note, HPV is not a risk factor specific to the Hispanic community. A study conducted by Merrill et al. (2016) found that HPV infection may have contributed to the exponential increase in incidence for cutaneous MM, specifically for individuals of European ancestry.

Asians

There is very limited literature discussing the clinical features and demographics of SCC in Asian women, especially when compared with their counterparts with SoC. As in Hispanics, SCC is the second most common skin malignancy in Asians (Bradford, 2009). A case-control study conducted by Chen and Jin (2016) in Taiwan found that cumulative sun exposure was found to be more closely related to an increased risk of SCC in Asian women, whereas sun exposure at an early age showed more relevance to SCC risk in Asian men.

Melanoma

Cutaneous MM is the sixth most common cancer among women in the United States, with 95% of cases affecting white

patients and the remainder affecting populations with SoC (U.S. Cancer Statistics Working Group, 2016). Among those with SoC, MM is the third most common skin cancer. MM is associated with the highest mortality rate of all skin cancers across all races and ethnicities (Baum and Duarte, 2015). In Caucasians, the incidence tends to increase with age, peaking after 40 years of age and affecting men more than women, but the same cannot be said about minority populations, where the incidence of MM is much lower, peaks at an older age, and is generally seen more often in women than men (Shoo and Kashani-Sabet, 2009). There is an inverse relationship between the development of MM and the degree of skin pigmentation on sun-exposed skin, consistent with the fact that Caucasians are more susceptible to MM than Hispanics and Asians, with AAs being the least susceptible (Taylor, 2002).

The number of MM cases is far less among non-white individuals, but evidence shows that this population is more likely to present with thicker and more advanced stage MM and a poorer prognosis compared with their white counterparts (Wu et al., 2011). MM most commonly presents as an irregularly shaped dark macule or patch that can rapidly spread to other parts of the body (Fig. 3; Agbai et al., 2014). It is well established that intermittent intense sunlight exposure is a major risk factor for developing MM, along with several host factors, including numerous or dysplastic nevi, light hair and skin complexion, and the tendency to freckle (Agbai et al., 2014; Beitner et al., 1990; Gandini et al., 2005). This is in contrast to the development of MM in non-white individuals, in whom risk factors have not been well defined but appear to be less related to UV light exposure, as evidenced by the higher rates of distribution on non-sun-exposed areas, including plantar, palmar, and subungual skin and mucous membranes (Table 1). In individuals with SoC, 30% to 40% of MM cases are located in the plantar foot, making this area the most common location for the development of MM (Agbai et al., 2014). Of note, although UV exposure plays less of a role in the development of skin cancer in individuals with SoC, there is evidence that DNA damage in darker skin tones still occurs (Tadokoro et al., 2003).

African Americans

The annual age-adjusted incidence of MM in AA women is approximately 0.7 per 100,000 (Cress and Holly, 1997). Although the incidence in Caucasian women and men differs, many reports have found narrow incidence rates between AA women and men (0.7 and 1.0 per 100,000, respectively; Baum and Duarte, 2015; Kabigting et al., 2009; Taylor, 2002). Of note, acral lentiginous MM is the most common type of MM in AA patients, with a poor prognosis and <50% 5-year survival rate (Stevens et al., 1990). Compared with Caucasian women, there is an increase in mortality in AA women with MM (Bradford, 2009). In addition, AA women present with more noncutaneous lesions compared with AA men. These lesions have a decreased median survival time compared with cutaneous MM lesions. However, in comparison with AA men with cutaneous lesions, AA women have an increased survival (171 months in women vs. 37 months in men; Bellows et al., 2001). Hu et al. (2004) demonstrated a positive correlation between UV index and MM in AA men, but the same association was not found in AA women. Furthermore, Pennello et al. (2000) studied the association between surface UV B radiation levels and MM and found that a 50% increase in UV B radiation significantly increased the age-adjusted risk of mortality from MM among AA men but not AA women.

Hispanics

Among all patients with SoC, Hispanic women have the highest likelihood of developing MM. The annual age-adjusted incidence of MM among Hispanic women is 3 per 100,000 (Bradford et al.,



Fig. 3. Melanoma in skin of color in a (A) middle-aged African-American woman (right fourth toe), (B) Hispanic woman (left fifth toe), (C) Asian woman (side of left leg): Photographs courtesy of Agbai et al. (2014). (D) Melanoma in an African American woman (lower hip, courtesy of DiAnne Davis, MD, Dallas TX).

2009). Similar to AAs, the incidence difference of MM between Hispanic men and women is quite narrow (Baum and Duarte, 2015). The California Cancer Registry reported incidence rates of 3.0 for Hispanic women compared with 2.8 for Hispanic men (per 100,000; Kabigting et al., 2009; Taylor, 2002). Although uncommon, when found, MM is associated with a thicker tumor and more advanced staging, leading to a lower survival rate among Hispanics. The 5-year survival rate for Hispanic women is 86.5% compared with 86.8% in Hispanic men (Baum and Duarte, 2015). In addition, Hispanic women age <55 years tend to have higher rates of MM than Hispanic men, with the highest proportion of MM located on the lower extremities and hips (Higgins et al., 2019).

A study by Cockburn et al. (2006) found that both Hispanic women and men in California had a larger proportion of thick (>1.5 mm) rather than thin (<0.75 mm) MM lesions compared with non-Hispanic white individuals and that the rate of increase of thick tumors over time was more pronounced than thin or moderate tumors in non-Hispanic white subjects. In particular, there was an 8.9% per year increase in incidence of thick tumors versus a 0.7% increase in thin tumors among Hispanic women (Cockburn et al., 2006). A study by Bergfelt et al. (1989) found a similar anatomic distribution of MM between New Mexico Hispanics and non-Hispanic Caucasians for both women and men, whereas Puerto Rican residents of both genders had a higher tendency to develop MM on the legs, similar to AAs. This is theorized to be related to a genetic predilection based on the fact that Spaniards who migrated to Puerto Rico had more miscegenation with Black individuals from Africa than those who migrated to the mainland (Bergfelt et al., 1989).

Asians

Consistent with other patients with SoC, the incidence of MM among Asian women and men is quite similar. The most recent U.S. Cancer Statistics melanoma incidence and mortality review found that the overall incidence of MM in Asians is 1.3 per

100,000. Asian women had a rate of 1.2 compared with 1.5 for Asian men. Wu et al. (2011) found that Asian women age <40 years have a higher incidence of MM compared with Asian men; however, the rates were higher in Asian men in older age groups. A recent study conducted by Chen and Jin (2016) among Asians in East Asia found that the age standardized mortality rate had increased significantly throughout four regions of East Asia for MM over recent decades, with women contributing greater annual percentage changes in Korea (7.4%), Japan (2.6%), and Hong Kong (2.4%).

As in AAs, acral lentiginous MM is the most common type of MM found in Asians, with a poor prognosis and 5- and 10-year survival rates of 80.3% and 67.5%, respectively. Interestingly, approximately 7.5% of all MM in Asians are found in the oral cavity, 60% of which develop from pigmented oral lesions (Agbai et al., 2014).

Conclusion

Although MM and NMSC are less prevalent in populations with SoC, they often present with advanced staging and poorer prognosis when diagnosed. This outcome is even more prominent in women with SoC, resulting in heightened morbidity and mortality rates and raising public health concerns. There are limited data on overall trends, sunscreen recommendations, and skin cancer awareness for women with SoC, which highlights the racial and gender disparities in educational awareness and interventions for these patients. Our paper discusses imperative information regarding women in AA, Hispanic, and Asian communities; however, the data are scarce and additional research is necessary, not only for these groups, but for other groups with SoC not mentioned, including Native American, Alaska Native, Pacific Islander, and Arab and Middle Eastern populations.

However, improving data collection is just one key to addressing the barriers that contribute to skin cancer in women with SoC. Patients with SoC are well known to be less likely to practice

Table 2

Photoprotection recommendations for patients with skin of color.

Patients with skin of color should perform regular skin self-examinations from head to toe monthly, paying special attention to the palms, soles, mucous membranes, subungual skin, groin, and perianal, checking for abnormal moles, lumps, sores, or any changes in scars, burns, or overall area of the skin

Avoid the highest intensity of UV exposure, which occurs between the hours of 10:00 a.m. and 4:00p.m.

Use daily broad-spectrum sunscreen of at least sun protection factor 30 with active mineral ingredients, such as micronized titanium oxide, zinc oxide, and iron oxide, that are not absorbed through the skin and are less likely to leave a greasy or white cast on the skin.

Sunscreen should be applied liberally 30 minutes before going outside and every 2 hours while outdoors.

Practice sun-protective behaviors:

- Seek shade when possible; especially between the hours of 10:00 a.m. and 4:00p.m.
- Wear sun-protective clothing
- Wear wide brimmed hat to cover the face and neck
- Wear shoes that cover the entire foot
- Wear sunglasses with UV absorbing lenses

Avoid tanning beds, tanning lamps, UV lamps, and LED lights

- In particular, for women who wear acrylic or gel nails that require UV or LED exposure to cure

Consider oral vitamin D supplementation from vitamins or sources, such as oily fish and fortified products, and cereals for nutrition as opposed to long-term sun exposure

LED, light emitting diode; UV, ultraviolet; SPF.

Table 3

Recommendations for physicians when treating SoC.

When conducting skin examinations on patients with SoC, dermatologists should assess areas of higher risk, including examination of the oral cavity, gums, nails, palms, soles, groin, and perianal areas

Remember to examine areas that patients commonly miss applying sunscreen, such as the ears, lips, scalp, hairline, hands, fingernails, and eyelid regions

Pigmented lesions in mucous membranes and brown to black streaks under the nails (i.e., melanonychia) should be monitored regularly with photo documentation to assess for and prevent malignant transformation

Thorough examination of the patient's fingernails, toenails, and surrounding skin is of utmost importance to assess for any pigment extending from the nail plate onto surrounding skin (i.e., Hutchinson's sign)

Tattoos should be thoroughly examined and monitored for any evidence of suspicious lesions arising under or within the tattoo ink

Scars should also be thoroughly examined for any evidence of suspicious lesions

A thorough examination of the scalp is essential for patients with SoC to assess for any lesions of concern:

- Consider having patients come with their hair in its most natural form
- Consider having patients come with their hair wet
- Encourage patients, while they are getting their hair done, to ask their stylist to take pictures of any lesions they notice on the scalp

Remind patients to remove their nail polish, acrylic nails, and gel nail polish before their skin examination appointment to effectively examine the nails

Have makeup wipes or remover/cleanser on hand to have patients remove makeup before their skin examination

For patients with a history of skin cancer or patients with abnormal moles, lumps, and chronic scarring, more frequent skin examinations by dermatologists are appropriate

Recommend a 7000–10,000 IU daily supplement for patients with SoC who have a confirmed vitamin D deficiency of <20 ng/mL, with a maintenance dose of vitamin D3 of 1000–2000 IU daily. Recheck laboratory test values to ensure adequate absorption

IU, international unit; SoC, skin of color.

sun-protective behaviors, which is likely due to the common misconception that these communities are considered at a lower risk of developing skin cancer. Many patients with SoC perceive their race and/or ethnicity to have a higher protection from UV exposure, which requires the increased need for targeted messages that are relevant to these racial and ethnic groups (Table 2).

It is also important to note that providing dermatologic care should not be a one-size-fits-all approach. Due to the vast differences among racial and ethnic groups, physicians who treat SoC should be aware of specific recommendations to ensure quality care (Table 3). We should also acknowledge the significant differences that contribute to women with SoC having higher rates and more severe cases of skin cancer, which may be attributed to gender bias. Overall, there are many unknowns when discussing and treating skin cancer in patients with SoC, specifically in women with SoC. It is imperative that we build the foundation of knowledge to better understand the nuances that often lead to rates of underdiagnosis or misdiagnosis in these populations. Women with SoC should receive robust clinical examinations and educational resources to address the alarming skin cancer disparities.

Conflicts of interest

None.

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None.

Study approval

N/A.

Appendix A. Supplementary data

For patient information on skin cancer in women, please click on Supplemental Material to bring you to the Patient Page. Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ijwd.2021.01.017>.

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