



Diversity Gaps in Clinical Practice Guidelines for Cutaneous Malignancies: A Focus on Melanoma, Basal Cell Carcinoma, and Squamous Cell Carcinoma

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Key words: Clinical Practice Guidelines, Skin Neoplasms, Melanoma, Basal Cell Carcinoma, Squamous Cell Carcinoma

Citation: Chau CA, Lin S, Granovsky R, Sidky L, Lee E, Cobos GA. Diversity Gaps in Clinical Practice Guidelines for Cutaneous Malignancies: A Focus on Melanoma, Basal Cell Carcinoma, and Squamous Cell Carcinoma. *Dermatol Pract Concept.* 2025;15(2):5219. DOI: <https://doi.org/10.5826/dpc.1502a5219>

Accepted: December 17, 2024; **Published:** April 2025

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Funding: None.

Competing Interests: None.

Authorship: All authors have contributed significantly to this publication.

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Introduction

The lack of diversity in dermatology research samples is well documented. An analysis revealed that 61% of United States dermatology guidelines did not include skin of color keywords [1]. No research has examined diversity in the research informing the American Academy of Dermatology (AAD) cutaneous malignancy guidelines. This study evaluated patient diversity in the studies supporting the AAD treatment guidelines for cutaneous squamous cell carcinoma (cSCC), basal cell carcinoma (BCC), and melanoma.

Case Presentation

References supporting treatment recommendations were extracted from the AAD melanoma, BCC, and cSCC clinical guidelines. From each reference, publication year, study design, allocation model, clinical trial phase, study location(s), sample size, sex, age, race, and ethnicity data, if available, were recorded. References that precluded access to the abstract and body were excluded (N=4). Analysis was conducted using R 4.1.2 (R Foundation for Statistical Computing, Vienna, Austria).

Table 1. Patient Characteristics Reported in the Treatment-Related References.

| | Melanoma (N=125) | cSCC (N=43) | BCC (N=80) |
|---|--------------------|---------------------|-----------------------|
| Sample size, median (IQR) | 212 (58.5 – 677.5) | 151 (41.5 – 613.5) | 124.5 (42.5 – 301.25) |
| Percentage of female participants, median (IQR) | 42.7 (38.1 – 53.1) | 39.3 (24.7 – 46.5) | 38.7 (32.9 – 46.9) |
| Age range, median (IQR) | 64.25 (52 – 71) | 59 (39 – 70) | 57 (44 – 67) |
| Mean age, median (IQR) | 65 (56.65 – 69.25) | 66 (62.7 – 70.075) | 66 (62.1 – 68) |
| Median age, median (IQR) | 59 (52 – 68.25) | 68 (66.5 – 75.5) | 66.5 (62 – 68.625) |
| Race/Ethnicity percentage of participants, median (IQR) | 12 (9.6) | 9 (20.9) | 24 (30.0) |
| White | 99.6 (98.2 – 100) | 97.9 (92.9 – 100.0) | 100 (97.3 – 100) |
| Black | 0 (0 – 0) | 0 (0 – 0) | 0 (0 – 0) |
| Asian | 0 (0 – 0.05) | 0 (0 – 0) | 0 (0 – 0) |
| Hispanic or Latino | 0 (0 – 0.2) | 0 (0 – 2.5) | 0 (0 – 0) |
| American Indian or Alaska Native | 0 (0 – 0) | 0 (0 – 0) | 0 (0 – 0) |
| Native Hawaiian or Pacific Islander | 0 (0 – 0) | 0 (0 – 0) | 0 (0 – 0) |
| More than one race | 0 (0 – 0) | 0 (0 – 0) | 0 (0 – 0) |
| Unknown | 0 (0 – 0) | 0 (0 – 0) | 0 (0 – 0) |

N=number of references with patient level data.

The guidelines for melanoma, cSCC, and BCC contained 147, 59, and 94 treatment-related references, respectively. Experimental designs (N=109, 36.3%) and retrospective chart reviews (N=91, 30.3%) were the most cited. North America (N=99, 33.0%) and Europe (N=89, 29.7%) were the most frequent study locations. Only 5.3% of studies reported patients from South America, Asia, or Africa (Table S1). Only 45/248 (18.1%) references with patient-level data (melanoma: 9.6%, cSCC: 20.9%, BCC: 30.0%) reported race and/or ethnicity (Table 1). White/Caucasian was the most reported race, with 25/45 references (55.6%) reporting exclusively white samples. Population-based cohorts of melanoma, cSCC, and BCC cases had 96.5%, 90.0%, and 90.0% white patients, respectively [2,3]. The BCC references reported higher percentages of white patients compared to the population-based cohort ($P=0.002$, Wilcoxon signed-rank test). Of 45 studies reporting race and/or ethnicity, 23 (51.1%), 18 (40.0%), and 9 (20.0%) had study sites in North America, Europe, and Australia/Oceania, respectively. The distribution of study locations in the race-reporting references was not different from the overall distribution of study locations (Fisher’s exact test, $P=0.9029$).

Conclusion

Our study highlights the lack of diversity reported in the patient populations of research informing cutaneous malignancy treatment guidelines. Over 50% of race-reporting references had exclusively white patients. While white populations have the highest skin cancer risk, skin of color

patients have a higher mortality rate, often due to delayed detection [4]. Therefore, skin of color representation in treatment-related research is essential, despite white predominance in cases. Only 18.1% of studies with patient-level data reported race or ethnicity, corroborating the issue of racial and ethnic underreporting in dermatology research. An evaluation of the AAD atopic dermatitis guideline references also demonstrated racial underreporting and underrepresentation [5]. Limitations include potential data collection inconsistencies between researchers and exclusion of studies published after the guidelines (2017/2018). Additionally, only 18.1% of studies reported race and/or ethnicity, limiting the generalizability of the claim of limited diversity. Some studies may not have reported race or ethnicity due to population homogeneity or sensitivity of the topic. Nonetheless, race and ethnicity remain underreported. Improving diversity and including South America, Africa, and Asia in research is imperative for developing treatment guidelines that apply to all patients.

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