Bridging the gap in skin cancer research for Australians with skin of colour

Australian skin cancer registries need to sensitively capture data on race and ethnicity to improve skin cancer outcomes for people with skin of colour

Race and ethnicity are terms often used interchangeably that describe two social constructs. Race can be defined as a classification of groups of people based on distinct physical features, whereas ethnicity can be defined as a group of people with similar national, cultural and ancestral origin.[1] Skin of colour is a phrase that has been commonly used for over a decade in the United States and elsewhere to describe diverse populations with skin that is darker than skin of European ancestry.[2] People with Southeast Asian, Arabian, African and Indigenous Australian ethnicity are some examples of populations included in this group.

The incidence and mortality rate of melanoma in Australia's population is among the highest in the world.[3,4] The heavy disease burden of melanoma can be explained by factors such as Australia's high ambient ultraviolet radiation, a culture that promotes leisure in the sun, and its predominantly fair-skinned (skin phototype I and II) population.[5] However, 7.6 million migrants live in Australia, making it one of the most ethnically diverse countries in the world.[6] Moreover, the extent to which Australians with skin of colour are affected by melanoma and keratinocyte skin cancer in Australia remains elusive. Recording skin phototype, immigration status and country of birth, alongside racial and ethnic background (which we have termed "SIRE data") in skin cancer registries will be advantageous in many ways.

First, it will help identify learning needs among health practitioners. Registries in the United States show that skin cancer in patients with skin of colour often presents at more advanced stages of disease and this is associated with an increased risk in mortality compared with patients of European ancestry (Box).[7,8] Advanced presentation of skin cancer has also been identified in Australia's Indigenous population as well as New Zealand's Māori and Pacific population.[9,10]

Despite multiple genetic and social factors, including barriers in accessing health care services, impacting on patient outcomes, it is clear that the clinical differences in skin cancers in people with skin of colour can lead to missed or delayed diagnosis. This results in poorer clinical outcomes in people with skin of colour,[8] including increased risk of distant organ metastasis and premature mortality.[11] A study conducted in 2018 reported that 25% of Australian dermatologists were not entirely confident in treating medical conditions in patients with skin of colour.[12]

Second, recording history and examination findings; macroscopic, dermoscopic and histological images of lesions; treatment plans and outcomes that capture SIRE data in Australian registries will provide a rich database from which we can educate medical professionals and medical students. Over time, education of skin cancer in patients with skin of colour should lead to early recognition, timely intervention, and individually tailored treatment that optimises health care outcomes in this group.

Only 4–18% of the images in dermatology textbooks illustrate richly pigmented skin.[10] This issue is not unique to dermatology. A study evaluating 4146 images in clinical textbooks found that less than 5% of the images included dark skin tones.[9] Under-representation of skin of colour images in dermatology textbooks (skin phototypes V–VI) also contributes to poorer skin cancer outcomes in people with skin of colour.[10] Thus, it is important for medical students and doctors alike to have access to resources that show different skin conditions and pathologies in darker skin types.

Finally, the application of artificial intelligence (AI) in dermatology, particularly in skin cancer classification, has the potential to revolutionise the Australian

An advanced basal cell carcinoma on the right jaw in skin of colour

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health care system through improved access to care and an increase in clinician accuracy. Inherently, dermatology encourages the collection of large image datasets, which power the training of these AI models. However, without capturing SIRE data, most of these skin cancer images datasets will not accurately reflect skin cancer features in the skin of colour population. Furthermore, fewer images of skin cancer in skin of colour will create a bias when AI models are then applied to darker skin phototypes (III–VI). This will lead to an inevitable decrease in the performance of the models when assessing these skin types.[13]

In Australia, there is no population-based cancer registry in any state or territory that captures all aspects of SIRE data. The data collected vary between cancer registries and although no registry collects skin phototype, the South Australian population-based cancer registry is the only registry that collects race, and the Australian Cancer Database (national registry) primarily collects country of birth and Indigenous status. The discrepancy in data collection among the population-based cancer registries makes it impossible for the national registry to collate SIRE data.

SIRE data must be collected ethically with informed consent obtained and patients provided with the opportunity to not disclose information if they prefer. Responses should enable the selection of multiple options for patients identifying with more than one ethnicity and race. It is important that the purpose for recording these data is clearly explained to patients, and concerns about altered care, discrimination, and privacy of information are acknowledged and addressed.[14]

We have identified an opportunity to bridge the gap that exists in Australian skin cancer registry data. We propose that SIRE data should be sensitively and uniformly obtained and recorded in our skin cancer registries going forward. Success in collecting SIRE data begins with Australian primary care centres and dermatologists. Collecting SIRE data will help us address knowledge gaps and improve community awareness of skin cancer among patients with skin of colour. It also provides much needed quality material for medical education and addresses potential AI biases in skin cancer classification which serve to improve skin cancer outcomes for people with skin of colour in Australia.

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1 Flanagin A, Frey T, Christiansen SL; AMA Manual of Style Committee. Updated guidance on the reporting of race and ethnicity in medical and science journals. *JAMA*. 2021; 326: 621-627.

2 Taylor SC. Skin of color: biology, structure, function, and implications for dermatologic disease. *J Am Acad Dermatol* 2002; 46 (Suppl): S41-S62.

3 Smithers BM, Saw RPM, Gyorki DE, et al. Contemporary management of locoregionally advanced melanoma in Australia and New Zealand and the role of adjuvant systemic therapy. *ANZ J Surg* 2021; 91 (Suppl): 3-13.

4 Arnold M, Singh D, Laversanne M, et al. Global burden of cutaneous melanoma in 2020 and projections to 2040. *JAMA Dermatol* 2022; 158: 495-503.

5 Elliott TM, Whiteman DC, Olsen CM, Gordon LG. Estimated healthcare costs of melanoma in Australia over 3 years post-diagnosis. *Appl Health Econ Health Policy* 2017; 15: 805-816.

6 Australian Bureau of Statistics. Migration, Australia — reference period: 2019–20 financial year. Canberra: ABS, 2021. https://www.abs.gov.au/statistics/people/population/migration-australia/latest-release (viewed Dec 2022).

7 Dawes SM, Tsai S, Gittleman H, et al. Racial disparities in melanoma survival. *J Am Acad Dermatol* 2016; 75: 983-991.

8 Higgins S, Nazemi A, Chow M, Wysong A. Review of nonmelanoma skin cancer in African Americans, Hispanics, and Asians. *Dermatol Surg* 2018; 44: 903-910.

9 Louie P, Wilkes R. Representations of race and skin tone in medical textbook imagery. *Soc Sci Med* 2018; 202: 38-42.

10 Adelekun A, Onyekaba G, Lipoff JB. Skin color in dermatology textbooks: an updated evaluation and analysis. *J Am Acad Dermatol* 2021; 84: 194-196.

11 Anaba E. Cutaneous malignant melanoma in skin of color individuals. *Nigerian Journal of Medicine* 2021; 30: 1.

12 Rodrigues MA, Ross AL, Gilmore S, Daniel BS. Australian dermatologists' perspective on skin of colour: results of a national survey. *Australas J Dermatol* 2018; 59: e23-e30.

13 Aggarwal P. Performance of artificial intelligence imaging models in detecting dermatological manifestations in higher Fitzpatrick skin color classifications. *JMIR Dermatol* 2021; 4: e31697.

14 Petkovic J, Duench SL, Welch V, et al. Potential harms associated with routine collection of patient sociodemographic information: a rapid review. *Health Expect* 2019; 22: 114-129. ■