

Anogenital skin of color images are underrepresented in dermatology, gynecology, and urology educational textbooks

Keywords: education, genital disease, skin of color, textbooks, vulvar disease

Dear Editors,

Anogenital conditions are an underserved area in dermatology.¹ Many neoplastic and inflammatory dermatoses affect genital skin, but studies have shown that even in high-risk skin cancer clinics, genitalia is often excluded from skin examinations.¹ This is particularly relevant for skin of color (SOC) patients, where melanoma (and squamous cell carcinoma in organ transplant patients) more frequently involves the anogenital region.^{2,3} Genital melanomas are associated with more aggressive disease courses and racial disparities exist in melanoma diagnosis and outcome.⁴

Medical textbooks with representative clinical images are some of the main resources residents and students use to obtain information on the diagnosis and treatment of anogenital conditions. Studies have shown that SOC is underrepresented in educational resources, which contributes to racial disparities in the diagnosis and management of SOC patients.⁵ We sought to evaluate anogenital images and representation of SOC in commonly used dermatology, gynecology, and urology residency textbooks. We included a genital dermatology atlas to supplement the textbooks.

We evaluated anogenital SOC images in 9 educational textbooks commonly utilized by dermatology, gynecology, and urology residents, as well as in a genital dermatology atlas (Tables 1 and 2). We used 14 textbooks (5 dermatology, 4 urology, 4 gynecology, and 1 genital atlas), but excluded 3 urology and 1 gynecology textbooks, which did not contain clinical images or color images. All photographs were classified as light (Fitzpatrick skin types [FST] I–IV), dark (V or VI), or indeterminate when the classification was not possible.⁵ Duplicate, black-and-white, and inconclusive images were excluded. Supplementary online images were included. All images were reviewed independently by 2 authors, with discrepancies resolved by senior authors. Images were categorized by diagnosis and site.

Our analysis revealed a total of 1,973 anogenital images, classified as FST I–IV or V–VI. Overall, anogenital images in SOC were underrepresented in educational textbooks, with 17% of anogenital images depicting SOC, 22% in dermatology texts, and 12% in gynecology and urology texts. Sexually

transmitted infections (STIs) were overrepresented in SOC overall. While 90 images represented STIs in light skin and 95 in dark skin, 29% of total dark skin images were STIs compared to 5% of light skin images (Table 1). One image of anogenital melanoma was identified in dark skin.

Overall, anogenital images in SOC patients are lacking in key educational resources utilized by dermatology, gynecology, and urology. STIs were overrepresented in SOC images, including a genital dermatology atlas. Such findings may create implicit bias in learners and lead to an erroneous diagnosis of STIs in SOC patients with anogenital inflammatory or neoplastic dermatoses. While our study includes the classification of skin color in anogenital skin conditions, we were not able to further assess racial representation. Additional limitations included FST as a surrogate marker for ethnic representation, as FST was originally developed to assess response to ultraviolet light and is not an accurate representation of race/ethnicity.

Increased efforts to expand SOC images in medical textbooks should also focus on the inclusion of SOC anogenital images, with a particular emphasis on noninfectious genital conditions including inflammatory dermatoses as well as pigmented lesions.

What is known about this subject with respect to women and their families?

- Skin of color images are underrepresented in dermatology textbooks.
- Anogenital skin conditions are commonly seen by dermatology, urology, and gynecology providers, and to date, there has not been a comprehensive review of anogenital images in educational textbooks and representation of skin of color.

What is new in this article with respect to women and their families?

- Anogenital images in the skin of color patients are underrepresented in educational resources from each field.
- Sexually transmitted infections are overrepresented in the skin of color anogenital images (29% of dark skin images compared to 5% of light skin images were sexually transmitted infections).
- Future efforts should focus on the inclusion of noninfectious genital conditions in skin of color patients, including inflammatory dermatoses as well as pigmented lesions.

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Table 1

Total anogenital images in educational resources by Fitzpatrick skin type (FST) I–V (light skin) and FST V–VI (dark skin) and separated by sexually transmitted infection diagnosis in light and dark skin

| Educational resource (edition) | Textbook field | Light skin images n (%) | Dark skin images n (%) | Light skin STI n (% of total light skin) | Dark skin STI n (% of total dark skin) |
|--|----------------|-------------------------|------------------------|--|--|
| Genital Dermatology Atlas and Manual, Edwards & Lynch (3rd ed) | Dermatology | 380 (81) | 90 (19) | 29 (5) | 26 (28) |
| Dermatology, Bologna (4th ed) | Dermatology | 128 (82) | 28 (18) | 19 (16) | 8 (29) |
| Andrew's Diseases of the Skin Clinical Atlas, James (13th ed) | Dermatology | 103 (62) | 64 (38) | 16 (16) | 24 (38) |
| Dermatology: An Illustrated Colour Text, Gawkrödger & Arden-Jones (6th ed) | Dermatology | 26 (100) | 0 | 3 (12) | 0 |
| Dermatology: Illustrated Study Guide and Comprehensive Board Review, Jain (2nd ed) | Dermatology | 18 (64) | 10 (36) | 5 (27) | 6 (60) |
| Atlas Pelvic Anatomy and Gyn Surgery, Baggish & Karram (5th ed) | Gynecology | 646 (92) | 57 (8) | 7 (1) | 13 (23) |
| Dermatology Secrets Plus, Fitzpatrick and Morelli (4th ed) | Dermatology | 26 (76) | 8 (24) | 3 (12) | 3 (38) |
| Te Linde's Operative Gynecology, Handa & Van Le (12th ed) | Gynecology | 4 (80) | 1 (20) | 0 | 0 |
| Williams Gynecology, Hoffman (4th ed) | Gynecology | 37 (52) | 34 (48) | 2 (5) | 6 (18) |
| Campbell Walsh Wein Urology, Partin (12th ed) | Urology | 279 (89) | 34 (11) | 6 (2) | 8 (24) |
| Total | | 1,647 (83) | 326 (17) | 90 (5) | 94 (29) |

STI, sexually transmitted infection.

Table 2

Summary of most common anogenital conditions in non-SOC and SOC

| Top 5 diseases | FST I–IV (n) | FST V–VI (n) | Unknown |
|-----------------------------|--------------|--------------|-------------|
| Across all texts | | | |
| 1. Lichen planus | 20 | 3 | 1 |
| 2. Lichen sclerosus | 34 | 2 | 2 |
| 3. Lichen simplex chronicus | 16 | 6 | 0 |
| 4. Psoriasis | 32 | 0 | 3 |
| 5. Squamous cell carcinoma | 13 | 2 | 2 |
| Total | 115 | 13 | 8 |
| Percent | 84.5 | 0.09 | 0.05 |

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