

Judging a Book by Its Cover

How Inclusive Are Cover Designs of Popular Medical Books?

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Abstract

Popular medical books disseminate information widely. Publishers attract readers partly by the cover art, but how inclusive are such book designs? Here, we analyze popular medical books published in the past five years and available on [Amazon.com](https://www.amazon.com), determining the proportion of those with typographical covers and those with cover illustrations containing photographic images of one or more people. For the latter, we recorded the race of those depicted. We also analyzed medical images from three major stock photo companies. We determined that the majority of recent book covers are typographical, whereas older books are more likely to have photographic covers, and those covers were more likely to depict Whites only. Stock photographs, in contrast, significantly overrepresented Whites as both doctors and as patients. Physicians who write popular medical books should take steps to ensure that their publisher will create a book design that is inclusive of all members of society.

Introduction

In George Eliot's (Mary Ann Evans) novel *The Mill on the Floss*, Maggie Tulliver is found reading Daniel Defoe's *History of the Devil*. Maggie's father defends her, saying, "It seems one mustn't judge by th'outside." The idea that we should not judge a book by its cover is now commonplace. Publishers know full well, however, that cover designs do indeed sell books.

A standard publishing strategy for a well-known author is to display the author's photo on the front cover. Sandra Lee, the dermatologist known to millions of TV viewers as Dr. Pimple Popper, is on the cover of her co-written book *Put Your Best Face Forward: The Ultimate Guide to Skin Care from Acne to Anti-Aging*. Another common strategy for medical books is an all-type jacket; these have the disadvantage of being impersonal, but whose strength is the same as its weakness: no patient group is excluded.¹

Understanding from previous studies that public confidence in medical professionals is influenced by scrub color and the presence of a white coat,^{2,34} we endeavored to extend existing research on perceived gender bias and anti-racism by establishing data sets related to race and cover illustrations in popular medical books. As such, this work relates to a previous study that explored buying habits based on authors' race, gender, and age,⁵ and one that explores publishers' possible gender bias based on the percentage of female authors and perceived gender-biased pricing strategies,⁶ and an article that explored editorial efforts to foster anti-racism in family medicine journals.⁷

Method

- 1 Arthur Conan Doyle, a former ophthalmologist, wrote a collection of medically themed short stories that were published in 1894 under the title *Round the Red Lamp: Being Facts and Fantasies of Medical Life*. He wrote to the publisher, Algernon Methuen, on June 4, 1894, enclosing a hand-drawn version of a cover design, complete with a red lamp (the sign of a general practitioner in England). His previous success as the author of the Sherlock Holmes stories meant that he got the cover he wanted.
- 2 Xun H, Chen J, Sun AH, et al. "Public Perceptions of Physician Attire and Professionalism in the US." *JAMA Network Open* | *Medical Education*, July 30, 2021, doi:10.1001/jamanetworkopen.2021.17779
- 3 Hribar C, Chandran A, Piazza M, et al. "Association Between Patient Perception of Surgeons and Color of Scrub Attire" *JAMA Surg*. Published online January 11, 2023. doi:10.1001/jamasurg.2022.5837
- 4 The cover design for Atul Gawande's book *Better: A Surgeon's Notes on Performance* (New York: Picador, 2008) is a case in point.
- 5 Weinberg DB and Kapelner A. "Do book consumers discriminate against Black, female, or young authors?" *PLoS One*. 2022 Jun 13; 17(6): e0267537.
- 6 Weinberg DB and Kapelner A. "Comparing gender discrimination and inequality in indie and traditional publishing." *PLoS One*. 2018 Apr 9; 13(4):e0195298. doi: 10.1371/journal.pone.0195298
- 7 Schrager S, Bowman M, and Richardson C. "Family Medicine editors collaborate towards antiracist publishing." *Learned Publishing* 2023 Jan; 36(1): 68–72.

To identify paperback covers to include in the study, we used two distinct sources. First, we undertook a “broad coverage” approach. To do so, we went to [Amazon.com](https://www.amazon.com)—the leading online seller of books, accounting for approximately 50% of book sales in the United States per year. There, we searched for books in the category, “Health, Fitness, and Dieting” in the subsection “Diseases and Physical Ailments.” These were further narrowed to those titles published in paperback (as these are intended to be popular) and priced under US \$40. We then selected those books written by medical doctors (MD or DO) published within the past five years. The resulting list comprised 186 titles. Each cover was recorded as either being typographical or having a photograph of one or more people on the cover. For photographic covers, we assessed and recorded the race of those depicted. This has inherent problems because we assign race and gender without consulting the depicted persons, and it adds a strong element of subjectivity to the process. It does reflect, though, the process used in allocating race and gender in the second source of data.

This second set of data came from medical images available from three major stock photo companies: Shutterstock,⁸ Alamy,⁹ and Istock.¹⁰ All three license images from their collections for use not only in medical books, but any form of medical literature. Image collections can be searched for photographs containing one person only, of one race, or a specific gender. Therefore, we used the stock photo company’s description of the photographic subject (unlike book covers, where we had to make judgment calls). For the stock photos, we searched for “physician” and “surgeons operating.” We also searched for four illnesses that are more common in communities that are poor and underserved: heart disease, COVID, diabetes, and tuberculosis.

Results

Of the 186 titles found through Amazon, 146 (78.5%) are typographical. Of those with illustrations, 12 (6.5%) are an author photo; 14 (7.5%) are photos of a single person, not the author; and 14 (7.5%) are group photos.

For the 40 covers that employ photographs as part of the cover design, the demographic breakdown of subjects is shown in Table 1. We report the covers as either being of an author, a group shot, or a solo person who is not the author—intended to represent the potential reader of the book.

8 www.shutterstock.com

9 www.alamy.com

10 www.istock.com

Author (White)	8
Author (Non-White)	4
Author (total)	12 (30.0%)
Group photo (White)	2
Group photo (African American)	1
Group photo (Multiracial)	11
Group photo (Total)	14 (35.0%)
Solo (White)	10
Solo (indeterminate)	4
Solo (Total)	14 (35.0%)

Table 1: Demographic breakdown of illustrations used on popular medical books on Amazon.

To determine whether cover designs are changing over time, we divided the 186 titles into two halves (“newer” and “older”) for the purposes of comparison. The higher-level data are displayed in Table 2.

Type	Total	Typographical	Author Photo	Group Shot	Solo Shot
Older	93	72 (77.4%)	6 (6.5%)	4 (4.3%)	11 (11.8%)
Newer	93	74 (79.6%)	6 (6.5%)	10 (10.8%)	3 (3.2%)

Table 2: Changes in cover illustrations over time of popular medical books on Amazon.

For the illustrated covers, the demographic breakdown is shown in Table 3.

Type of photo or image used	Older	Newer
Author (White)	2	6
Author (Non-White)	4	0
Author (Total)	6 (28.6%)	6 (31.6%)
Group Shot (White)	1	1
Group Shot (African American)	0	1
Group Shot (Multiracial)	3	8
Group Shot (Total)	4 (19.0%)	10 (52.6%)
Solo Shot (White)	8	2
Solo shot (Indeterminable)	3	1
Solo Shot (Total)	11 (52.4%)	3 (15.8%)
Total	21	19

Table 3: Illustrated cover breakdown.

For the three stock photo companies, we used their search function capabilities to look for photographs that contained just one subject. Many of the photographs returned for the search “physicians” were also included in the results for a search for “surgeons.” As a consequence, we report the data for the “physicians” search, but also for the search “surgeons operating.”

Table 4 contains the reported data.

Search Term	Company	Total Photos	African American	Native American	Women
“Physicians”	Shutterstock	321424	8077(2.5%)	238(0.07%)	178857 (55.7%)
“Physicians”	Alamy	5296	111 (2.1%)	2 (0.04%)	1708 (32.3%)
“Physicians”	Istock	458052	31953 (7.0%)	126 (0.03%)	76342 (16.7%)

Search Term	Company	Total Photos	African American	Native American	Women
"Surgeons Operating"	Shutterstock	16158	99 (0.61%)	3 (0.02%)	7432 (46%)
"Surgeons Operating"	Alamy	867	11 (1.27%)	0	148 (17.1%)
"Surgeons Operating"	Istock	29417	2006 (6.8%)	17 (0.06%)	17014 (57.8%)

Table 4: Demographics of physicians' and surgeons' photographs available from stock photo companies.

We analyzed photographs that are intended to portray patients with a number of common illnesses. The reported stock photo company demographics are in Table 5.

Search Term	Company	Total Photos	African American	Native American	Women
"Heart disease patients"	Shutterstock	11,300	114 (1.01%)	1 (0.01%)	6673 (59%)
"Heart disease patients"	Alamy	2449	20 (0.82%)	0	688 (28%)
"Heart disease patients"	Istock	1437	728 (50.7%)	1 (0.07%)	704 (49%)
"COVID patients"	Shutterstock	69569	1469 (2.11%)	77 (0.11%)	40562 (58.3%)
"COVID patients"	Alamy	22490	936 (4.16%)	0	9008 (40.1%)
"COVID patients"	Istock	38745	2894 (7.5%)	5 (0.01%)	23013 (59.4%)
"Diabetes patient"					
"COVID patients"	Shutterstock	6702	139 (2.1%)	5 (0.08%)	4581 (68.4%)
"COVID patients"	Alamy	2113	47 (2.2%)	0	974 (46.1%)
"COVID patients"	Istock	6227	156 (2.5%)	8 (0.1%)	3769 (60.5%)
"Tuberculosis patient"	Shutterstock	1112	37 (3.3%)	0	621 (55.9%)

Search Term	Company	Total Photos	African American	Native American	Women
"Tuberculosis patient"	Alamy	253	4 (1.5%)	0	47 (18.6%)
"Tuberculosis patient"	Istock	421	8 (1.9%)	0	121 (28.8%)

Table 5: Demographic analysis of images of patients with four common diseases.

Discussion

For books on Amazon published in the past five years, cover designs have remained constant, in the sense that most were, and still are, typographical. While all-type covers might not be inviting or particularly reader friendly, they do not exclude potential readers. In addition, the number of covers that feature author photos remains constant, though the percentage of these in which the author is White is relatively high. Whether this reflects an implicit preference by publishers to publish books by those authors, a tendency to put photos of White authors on book covers, or neither, is difficult to determine. It may also be that White authors have greater access and support during the book-writing process, and as a consequence are overrepresented as authors. The major overall shift, though, has been to go from photographs of individuals who are not authors to group shots. In particular, the change has been essentially due to replacing images of solo Whites with multiracial groups. This strongly suggests, then, that publishers are aware of the previous lack of inclusivity of non-White patient groups on book covers and have altered book designs accordingly.

The images provided by stock photo companies are more problematic. Photographers enter into arrangements with these companies to license the photographs on their behalf, but this practice seemingly has led to the demographics being greatly at odds with actual data.

Recent data from the Association of American Medical Colleges (AAMC) reveal that women, African Americans, and Native Americans constitute 37.1%,¹¹ 5.73%, and 0.30%¹² respectively of all physicians

11 According to the AAMC, in 2021, 351,117 physicians were women. This is out of nearly 946,790 physicians total. [2022 Physician Specialty Data Report Executive Summary | AAMC](#)

12 [2022 Physician Specialty Data Report Executive Summary | AAMC](#)

currently practicing in the United States. Across the three stock photo companies, those percentages were 32.7%, 5.11%, and 0.05%. Thus, all three groups are underrepresented by stock photo companies, and are statistically significant as indicated by chi-square tests ($p < 0.05$).¹³

For simplicity, we compare the data for “surgeons operating” with the AAMC data for general surgeons.¹⁴ Stock photo images were 53% women and 4.6% African American, while images of Native American surgeons constituted only 0.04% of those available. Women were statistically significantly overrepresented ($p < 0.05$), but African American and Native American surgeons were underrepresented ($p < 0.05$). This suggests that there is a dearth of images portraying African American and Native American surgeons, which may have implications for attracting young members of those communities into surgical professions.

Data also shows that African Americans and Native Americans constitute 8.5% and 0.21% of all COVID-19 patients,¹⁵ whereas the stock photo company images are 4.05 and 0.06%. A standard chi-square test shows that these differences are statistically significant ($p < 0.05$), with stock images underrepresenting the African American and Native American communities. This underrepresentation of African Americans is more concerning, given the stark difference in healthcare outcomes between Black and White populations.¹⁶

The Center for Disease Control (CDC) data show that African Americans and Native Americans constitute 12.1% and 14.5% of all diabetes patients,¹⁷ compared to 2.3% and 0.09% of stock images. Given that type 2 diabetes is more than twice as prevalent in Native American populations as compared to non-white Hispanics,¹⁸ the lack of availability of suitable medical images is troubling.

13 For more on statistical significance, p values, and confidence levels, see for example Keith Gregson *Understanding Mathematics, Second edition* (Baltimore: Johns Hopkins University Press, 2010).

14 <https://www.aamc.org/data-reports/workforce/data/active-physicians-sex-specialty-2021>

15 [Disparities in COVID-19 Outcomes by Race, Ethnicity, and Socioeconomic Status: A Systematic Review and Meta-analysis | Infectious Diseases | JAMA Network Open | JAMA Network](#)

16 Brandon, WP. “Assessing Black America’s experience during the COVID-19 Plague.” *Journal of Health Care for the Poor and Underserved*. 2022 Aug 22; 33(3): 1715–1718.

17 [By the Numbers: Diabetes in America | Diabetes | CDC](#)

18 Carlson AE, Aronson B, Unzen M, et al. “Apathy and Type 2 Diabetes among American Indians: Exploring the Protective Effects of Traditional Cultural Involvement.” *Journal of Health Care for the Poor and Underserved* 2017 May; 28(2): 770–783

For tuberculosis patients, the CDC reports 18% and 1%, compared to 2.75% and 0%, respectively, of all stock images.¹⁹ Data from the CDC also shows that African Americans and Native Americans constitute 22.6% and 15.5% of all heart disease patients,²⁰ compared to 5.7% and 0.013% in stock photo images.

If publishers of medical literature seek photographs to reflect the ethnicity of the groups affected by these illnesses, they will be hard-pressed to find them in stock photo companies. African and Native Americans are clearly excluded from the medical literature, and their underrepresentation is statistically significant ($p < 0.05$).

Conclusion and Prospects

Medical illustrations serve a variety of purposes, often to appeal to a specific readership or viewership. Our research shows that, in terms of cover illustrations, the book industry has—over the past five years—kept the percentage of typographical covers and author photographs approximately constant. There has been a marked shift, though, away from photographs of a single patient (typically white) and towards multiracial group photographs, in a step towards inclusivity, but also to appeal to a broader readership.

Currently, images from stock photo companies do not reflect the racial or gender makeup of physicians and surgeons. They also significantly underrepresent African and Native Americans among patients with those diseases that particularly affect both groups. Stock-photo companies, though, are part of a multi-billion-dollar industry, and change in current practices will not come easily.

This present study is, in many ways, a first step in looking at diversity, equity, and inclusion regarding university press book publishing, and certainly additional studies are required. It also constitutes, and is limited by being, a retrospective study, using only a subset of freely available cover illustrations. The data suggests, though, a recent and encouraging movement towards typographical designs on medical books, which obviates the difficulties outlined here.

Authors, though, have a voice and, arguably, a responsibility. For example, in contract negotiations for a book that a publisher believes will generate sales, the publisher might grant authors (or their agents) consultation rights over cover

19 [Trends 2021 | Data & Statistics | TB | CDC](#)

20 [Heart Disease Facts | cdc.gov](#)

design. Indeed, there is readily available language for publishing contracts that guarantees an author either consultation or approval rights over some aspect of the final book.²¹ The existence of standard contractual wording suggests that there is a need for it; that asking for, say, input on cover design is not unknown in the publishing world. Authors can raise their voices, and university presses in particular, may well be attentive listeners.

21 Roy S. Kaufman *Publishing Forms and Contracts* (Oxford: Oxford University Press, 2008), page 136 (clauses L and M).