

RESEARCH ARTICLE

Observation of art enhances medical students' cultural and gender awareness, recognition, and clinical empathy

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Abstract

Background: As patient populations become more diverse, cultural and gender competency are increasingly important for clinicians to learn and practice. Cultural and gender competency in the doctor–patient interaction may reduce healthcare inequities perpetuated by structural and personal racism and sexism. Here, we assessed whether a medical humanities elective involving observation of fine art for premedical (post-baccalaureate) and first- and second-year preclinical medical students could enhance their cultural and gender awareness.

Methods: Over three cohort years of the elective, we assessed students' written responses to artworks for culture and gender references. We also surveyed students when they were in clinical rotations or practice regarding the perceived impact of the elective on their clinical skills.

Results: Medical and premedical students recognise, note, and interpret a variety of details regarding the culture and gender of people depicted in the artworks. Of the 93 student responses to the art pieces that we analysed (three years of the elective; five to six sessions per year; 2–8 students per session), 66% (62) of their responses noted culture and 73% (68) noted gender details. In the retrospective survey, most students agreed or strongly agreed that the art observation elective improved their awareness of their patients' cultures and gender and their empathy towards their patients.

Conclusion: This study suggests that electives involving art observation may enhance medical and premedical students' cultural and gender awareness and competency in the doctor–patient relationship. In the long term, increased cultural and gender competency by clinicians could mitigate ongoing healthcare inequities due to structural and personal biases.

Keywords: art observation, medical education, cultural competency, gender competency

Introduction

Cultural and gender competency reflects the ability of a clinician to communicate with and treat patients of diverse cultures and genders appropriately and empathetically. As patient populations become more diverse, these skills are increasingly important for clinicians [1]. Effective cultural and gender competency in the doctor–patient relationship is known to reduce healthcare inequities that are perpetuated by structural and personal racism and sexism [1–5]. However, medical educators have yet to determine the best

pedagogical approach to teaching cultural and gender competency — which are inherently interdisciplinary skills — to medical students in their preclinical years [1–5]. Existing approaches in medical schools include role play, inter-professional education workshops, case-based studies, and presentations on diverse representation in science and clinical courses [1]. Here, we explore whether medical students' cultural and gender competency might be enhanced by a humanities approach that allows students to independently reflect on diverse aspects of identity [6, 7].

One type of humanities activity increasingly offered in medical schools involves students observing — and discussing their observations of — people in fine art paintings and other art forms [8–10]. Previous research studies demonstrated that art observation electives and experiences strengthened medical students' ability to observe details in artistic and clinical images, make visual diagnoses, recognise emotions, and tolerate ambiguity [11–21]. A few reports showed that art observation also positively impacted teamwork and empathy of medical students and/or residents [13, 14, 16, 17, 20]. However, whether medical students observed and interpreted details related to culture and gender in the artwork was not addressed. In addition, whether the cultural and gender awareness that the students gain from observation of art impacts their cultural and gender competency in the clinic has not been formally studied. This paper begins to address these questions with a mixed method study of medical and premedical students in an Art of Observation (AOO).

Methods**Ethics approval**

Approval for this study was obtained from the Institutional Research Board at Touro University California. This study was exempted from formal review. Informed consent was obtained from students via email before analysing their written responses to the artworks.

Elective description

The AOO elective at the College of Osteopathic Medicine, Touro University California was offered to first-year medical and premedical (post-baccalaureate) students in the spring semester via an email advertisement. Of the 134 students in the first year and 50 students in the premedical class, 8–12 students chose to enrol in the elective each year. Over the three cohort years that encompass this particular study

(2017, 2018, and 2020), a total of 28 students enrolled in the AOO elective (2017: 10 students; 2018: 8 students; 2020: 10 students).

The AOO elective comprised six sessions. In 2017 and 2018, three of these sessions were held on the university campus (sessions 1, 3, and 5), and three took place at museums in San Francisco and California (session 2: DeYoung Museum; session 4: Palace of Legion of Honor Museum; session 6: San Francisco Museum of Modern Art). In 2020, sessions 1–4 were held on campus and at museums as in 2017 and 2018. However, due to pandemic restrictions implemented in March 2020, session 5 was not held and session 6 was held virtually on Zoom.

In each session, students observed 3–4 art pieces, including portraits of women, men, and children from various ethnic and sociocultural backgrounds (Supplementary Table 1, available online only). Art pieces were selected by the instructor/facilitator on the basis of the detail they contained, the diversity of people portrayed, and the range of genres (eg, collages, paintings, sculptures) and time periods they represented. One artwork was selected because it included a depiction (self-portrait) of a medical issue known as the tetralogy of Fallot (Dick Ket, *Self-portrait*, 1932).

Students silently observed each artwork for 3–5 minutes and wrote down their observations and interpretations (Supplementary Table 1). The only instructions they were given was to try to differentiate between observation and interpretation. Each silent observation period was followed by a verbal discussion, during which students shared their written notes about the artwork. During the discussion, the instructor loosely applied the Visual Thinking Strategies (www.vtshome.org) pedagogical approach by asking students to explain what specific details in the art pieces led to or supported their particular interpretation.

Assessing student observations of art for cultural and gender references

The written observations of students to the artworks were de-identified and retrospectively analysed for details and interpretations relevant to culture and gender. Notes related to ethnicity, nationality, age, economic status, social class, or generation were counted as “culture”. Details that acknowledged the subject’s gender or physical or postural features that implied characteristics associated with a specific gender were scored as “gender”. Other details that were recorded but not scored included details related to art techniques, such as colour, depth, and composition; other physical features of people depicted in the artwork (including asymmetries in features); clothing type and condition; and emotions expressed by characters in the art pieces.

To quantify the students’ written observations for culture and gender, we determined: (1) the percentage of students that acknowledged any detail related to culture or gender in a piece of art (awareness), and (2) the proportion of details related to culture or gender observed in a piece of art per

student (details). Both scores were averaged over the three paintings presented in each of the elective’s sessions, and over the corresponding sessions, in each of the three years of this study [Table 1, Supplementary Figure 1 (available online only)]. An average was then taken of the awareness and details scores under both “culture” and “gender” across all the previously averaged sessions. As attendance was voluntary, many students did not attend all the sessions; so, each session had a different number of students (Table 1).

Feedback from students who had taken the elective in their clinical years of study

Retrospective feedback was also solicited from students 2–5 years after they had taken the AOO elective, while they were

Table 1. Breakdown of awareness and details score by year and session

Year	Session number					
	1	2	3	4	5	6
Number of students						
2017	5	7	7	6	8	7
2018	8	4	5	2	3	2
2020	4	3	8	6		8
Total	17	14	20	14	11	17
Awareness						
% Students noting culture details						
2017	11	50	22	56	43	71
2018	71	92	87	83	10	10
2020	50	33	75	67		100
Average	46	58	61	69	71	90
% Students noting gender details						
2017	11	13	40	56	76	81
2018	88	76	80	83	78	100
2020	75	75	96	89		96
Average	58	54	82	76	77	92
Details						
% Culture details out of all details noted						
2017	3	13	7	15	22	23
2018	18	43	27	32	27	29
2020	7	7	20	18		27
Average	10	21	18	22	25	26
% Gender details out of all details noted						
2017	2	2	8	10	16	15
2018	20	12	5	8	18	13
2020	17	18	13	15		13
Average	13	11	9	11	17	14

on clinical rotations (third and fourth year of medical school) or in clinical residencies. An anonymous survey was developed (Table 2) and emailed to the 28 students who had previously taken the elective; 18 responses were obtained. The survey consisted of seven statements regarding the students' perceptions of how the AOO elective had impacted their ability to deal with the medical curriculum, awareness of patients' cultural and gender identity, and empathy with their patients.

Students were asked to rate each criterion on the survey on a 5-point Likert scale generated using Qualtrics software. (www.qualtrics.com)

Table 2. Survey sent to students who had previously taken the elective when they were in clinical practice.

Survey statements:
1) This elective helped you with your medical school curriculum.
2) This elective helped you balance your medical school curriculum.
3) This elective helped you improve your observation skills.
4) This elective changed your outlook on how you view patients.
5) This elective helped you empathize and sympathize with patients.
6) This elective helped you be aware of patients' races and cultures.
7) This elective helped you be aware of patients' genders.

Results

Students recognise and note cultural and gender details in fine art portraits and sculptures

In the AOO elective, students were presented with fine art portraits and sculptures by established (museum collected) artists of various time periods, genres, and styles that depicted people of diverse cultures and genders. Examples of artworks shown in the elective include the collage *The Conjur Woman*, 1964, by Romare Beardon, the painting *Portrait of Jan Six* by Rembrandt van Rijn, 1654, and the sculpture *Wood Figure*, West Papua New Guinea, North Coast, Doyo village, 18th–19th century, along with two additional artworks presented to the students ([Supplementary Table 1](#)).

In response to the artworks, the students' writings encompassed a wide range of subjects, details, and interpretations, including some relating to culture and gender ([Supplementary Table 1](#)).

As a first example of a culture-related comment, in response to the painting *Market Woman*, one student wrote: "Clothes, race, and basket implies working class". In response to this same painting, another student made a gender-related comment, writing simply: "Woman carrying a basket full of vegetables..."

In response to the sculpture *Wood Figure*, one student wrote a gender-related comment: "male genitalia".

In response to the painting *Portrait of Jan Six*, several students made culture-related comments, writing: "appears to be of higher social standing"; "Dutch?"; and "somewhat older".

While observing another portrait not shown here, a different student noted cultural details but also included a gender pronoun: "Some of her looks part of Western society but the rest of her shows an African or Fijian ancestry."

In response to another piece of artwork not shown here, a student noted cultural details and identified gender, while also interpreting an emotional expression: "Based on the subjects' elaborate headpiece, earrings, facial piercings and pipe, I believe the subject is Native American... The man appears to be in his mid-30s and has a neutral [but] somewhat stern expression on his face..."

Medical students recognise culture and gender in art pieces throughout the elective

To quantitatively assess students' recognition of culture and gender in people in artistic images in the AOO elective, we also scored students' written responses to the artworks for statements relating to culture or gender, as explained in the Methods section. After scoring their written responses, we then calculated the percentage of students who made any culture or gender-related observations on each art piece in each session (awareness score), and the proportion of culture and gender details to all details noted (details score) for each piece of art in each session. The awareness and details scores were averaged over the three art pieces observed in each of the six sessions and over the same sessions in each year (three years included). An average of the six averaged awareness and details scores was then calculated.

These metrics showed that students recognise culture and gender in the artwork throughout the elective ([Supplementary Figure 1](#); Table 1). On average, throughout the three years of this study, 3.6 (66%) students noted culture details, and 3.9 (73%) students noted gender details in each art piece. In addition, on average, 2.9 (20%) and 1.8 (12%) of all details noted were culture- and gender-related, respectively. These average percentages were determined by calculating the percentage of students noting culture and gender, or the percentage of all details noted that were culture- or gender-related in each session ([Supplementary Figure 1](#); Table 1), and then determining averages over all six sessions for each of these measures.

Students also showed an increase in their recognition of culture and gender throughout the elective ([Supplementary Figure 1](#); Table 1). Between the first and last sessions of the AOO elective, there was a 49% and 59% increase in the average percentage of students who identified culture and gender (awareness scores), respectively, in the artworks. Between the first and sixth session of the elective, there was also a 160% increase in the mean proportion of cultural details to all details, and an 8% increase in average proportion of gender details out of all details noticed by students (details scores). These percentage changes were calculated by taking the difference between the average

percentage of students that identified culture or gender — or the average percentage of culture or gender-related details noted in session 6 — from the analogous average percentage values in session 1, then dividing by the average percentage values in session 1, and then multiplying by 100 (Supplementary Figure 1; Table 1).

Art observation enhances students' cultural and gender recognition and empathy in the clinic

We also sought to determine whether observation of art would impact medical and premedical students' cultural and gender competency in a doctor–patient interaction. We emailed a Likert-type survey to former students from the AOO elective, now in clinical rotations or in residencies (Table 2). The responses obtained were as follows: 15 (83.3%) of the 18 students that responded to the survey agreed or strongly agreed that the elective had improved their awareness of their patients' culture, and 14 (77.8%) agreed or strongly agreed that participating in the elective had improved awareness of their patients' gender (Supplementary Figures 2A, B, available online only). A similarly large percentage of students (14, 77.8%) agreed or strongly agreed that the AOO elective increased their ability to empathise with their patients (Supplementary Figure 2C, available online only).

To check whether students would answer any question on the survey positively, we also asked whether the elective helped the students with their medical school (science) curriculum. Only 9 of 18 (50%) students agreed or strongly agreed that the elective helped them with their medical curriculum (Supplementary Figure 2D, available online only).

Overall, this survey data showed that medical students who had completed the AOO elective 2–5 years earlier specifically perceived it as having helped them with awareness of their patients' culture and gender and enhanced their ability to empathise with them.

Discussion

Our findings show that the premedical and medical students who observed artworks of various genres, styles, and time periods in the AOO elective recognised and noted cultural and gender details in the people depicted in the art pieces. They may also show increased recognition of culture and gender details at the end of the elective, compared to the beginning. These findings build upon previous research studies that described various art observation electives and experiences in different medical education contexts and showed that they positively impacted the students' visual observation, interpretation and diagnostic skills [11–21]. Here, I describe three of these prior studies on medical electives that involve art observation and then compare and contrast our study on the impacts of the Touro AOO elective with these prior studies.

In the first medical elective on art observation to be studied in the United States, first-year Yale University medical

students examined and described portraits and landscapes at the Yale Center for British Art. In a post-test exercise, 30 of these students who observed a piece of art for 10 minutes and then described it to other students demonstrated significantly greater identification of visual diagnostic features in photographs of patients with medical disorders than students in the control group [11].

Another report from the same time period described a three-session programme in which eight students from Weill Cornell Medical College (first-year, second-year, and fourth-year) visited the Frick Art Museum in New York and examined paintings of people by artists of the 16th–19th centuries [12]. The students examined the portraits in pairs and then described the portraits to the whole group. In a post-test versus pretest description of photographs of patients, Weill medical students who participated in the art sessions demonstrated increased precision of observation and increased the extent of their interpretations of the patient photographs [12].

In a later study, 110 third-year medical students from the Robert Wood Johnson Medical School participated in a mandatory three-hour art observation exercise just prior to the start of their clerkships (rotations). This exercise involved a large group discussion about eight fine art images, guided by a student researcher [18]. These researchers found that after the art observation exercise, students provided more concrete details to support their descriptions of patient photographs and decreased the use of subjective terminology [18].

Our research on the impact of the AOO elective on Touro medical students both extends and differs from these prior reports from other schools. We examined students' written responses to artworks in each session of a six-session AOO elective. In contrast, these prior studies used shorter durations (1–3 sessions) [11, 12, 18]. In the future, it may be more feasible for us to also study the effects of shorter-term interventions. Additionally, the number of students studied in prior studies varied. Studies focusing on an activity with voluntary enrolment had a smaller number of students [11, 12], and those studying a required observation activity had larger numbers of students [18]. In order for us to increase the numbers of student subjects, choosing a required art observation activity may be helpful.

In our elective, we presented a range of art modalities, including paintings, sculptures, and photographs, but all of them were representations of people. In these prior electives, the facilitators solely presented paintings to the students, but the paintings included landscapes [11] and non-representational images [12], in addition to people. Given that all these electives positively impacted medical students' observation skills, the type of artworks presented may not be as relevant as the time spent observing them. In addition, in the elective for the Touro medical students, the facilitator (TE) encouraged the students to differentiate between

observation and interpretation, similar to the study by Bardes, Gillers, and Herman [12]. The facilitator also loosely applied the VTS pedagogy by asking students what detail in the image led them to a particular conclusion, similar to the Jasani and Saks study [18]. Finally, whereas these prior studies assessed students' skills in observing general or disease-specific details in people, our paper is the first to focus on and analyse observation and interpretation of details specific to culture and gender.

Observation of art enhances medical students cultural and gender awareness and empathy in the clinic

We also showed that medical and premedical students perceived that participating in the AOO elective strongly and positively impacted their patient interaction skills when they were in clinical practice. In the retrospective survey, Touro medical students supported statements that participation in the elective increased their awareness of patients' cultures and genders, and enhanced their ability to empathise with them. While this was not specified in the survey, "being aware of their patients' culture and gender" may imply that the students are beginning to see their patients as individual, whole people, and not merely as diseases.

A previous essay written by one of us on *ekphrasis* (detailed description of visual art in literature) and empathy discusses a scene in the *Aeneid* in which Aeneas is brought to tears while examining a painting depicting the losses of the Trojan war [25]. When looking at these pictures, the Trojan Aeneas assumes that they express empathy for his people's suffering (in the famous *sunt lacrima rerum*: "There are tears for things and mortal things touch the mind"). Although his assumption is not compatible with the context of the pictures, placed in the temple built for Aeneas's enemy, the goddess Juno, in Cartago, the text suggests that art and its access to human suffering has the power to elicit empathy across the barriers of national and political hostility [25]. In a somewhat analogous manner, Touro students who regularly observed people in fine art in AOO electives may establish a foundation to bridge the gap between themselves and their patients, who represent a variety of cultures and genders, both like and different from their own [7].

A previous paper by faculty at the University of Cincinnati College of Medicine described an AOO elective they taught to second-year medical students. Similar to our study, they assessed the elective's impact when students had matriculated into clinical rotations [22]. These students felt that the AOO elective had enhanced their self-reflection and communication skills in the clinic and reduced their biases against patients [22]. Taken together with our findings, this suggests that having medical students observe art during their preclinical years continues to positively impact them, and may enhance their cultural and gender competency when they matriculate into clinical practice.

This study underscores the importance of the humanities in medical education and practice, as highlighted by research in

this growing field. Observation of art – as described here in the AOO elective – facilitates the comprehension of diverse narratives and viewpoints, fostering a deeper understanding of human experiences [23]. Embracing ambiguity and the multifaceted nature of human experience enhances doctors' ability to navigate unresolved situations in their practice, and helps them to empathize with individuals of different cultures and genders. Exposure to artistic works also provides a platform for meaningful discussions that might otherwise be challenging, especially in multicultural settings [23].

A different type of medical humanities activity, reflective writing based on personal observations or readings of literature, also offers students an avenue for expression that transcends the clinical documentation they will encounter as physicians. This form of writing allows for exploration of various facets of their experiences and equips them with a nuanced vocabulary to process their professional responsibilities [23].

However, while art can offer insights into the lives of others, it is essential to acknowledge the limitations of this knowledge. Acquiring cultural understanding through art should not lead to presumptions about a patient's inner experiences. Empathy must be accompanied by an acknowledgement of the patient's unique perspective and the recognition of their individual experiences [24].

Limitations of our study

There are several aspects of our research design and execution that could be improved upon in future studies. First, art pieces presented to the students were all selected by the instructor, leading to an inherent selection bias. Having students select the art pieces would likely have resulted in more diverse types of art genres and diverse people being represented.

Secondly, the survey sent out after the elective lacked both negatively framed questions and open-ended qualitative questions. The lack of open-ended questions limited the depth of our understanding of the impact of the AOO elective on the students. We also did not document the students' own sociocultural backgrounds, which were diverse and varied, and likely would have provided additional insight into their observations of people of different cultures and genders in the art pieces.

A relatively small number of students made up this study; we could have strengthened our findings by enrolling a larger number of students in the AOO elective and/or by studying an art observation activity with mandatory attendance.

Another limitation is that we did not assess how students enrolled in the AOO elective performed compared to the rest of the students in their respective medical and premedical cohorts who did not enrol in the elective. Therefore, we do not know if the students who chose to

enrol in the elective were particularly strong or weak at culture and gender recognition, as compared to the rest of the students who did not enrol.

We also did not assess whether the medical students enrolled in the elective improved their recognition of cultural and gender details in clinical images — such as photographs of patients — after taking the AOO elective.

Conclusion

Our study supports the idea that observation and discussion of fine art paintings by medical students provides a space for them to note and recognise cultural and gender details in people. Medical students also perceived that the AOO elective increased their awareness of their patients' diverse cultures and genders and enhanced their empathy with patients of diverse cultures and genders in the clinic. In the long term, electives of this type may help medical students and practitioners lessen the impact of structural and personal racism and sexism in the doctor–patient relationship, leading to more equitable and just healthcare for all patients.

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References

- Kripalani S, Bussey-Jones J, Katz MG, Genao I. A prescription for cultural competence in medical education. *J Gen Intern Med*. 2006; 21(10):1116–20. <https://doi.org/10.1111/j.1525-1497.2006.00557.x>
- Verdonk P, Benschop Y, de Haes H, Lagro-Janssen T. From gender bias to gender awareness in medical education. *Adv Health Sci Educ*. 2008; 14(1):135–52. <https://doi.org/10.1007/s10459-008-9100-z>
- Sorensen J, Norredam M, Dogra N, Essink-Bot ML, Suurmond J, Krasnik A. Enhancing cultural competence in medical education. *Int J Med Educ*. 2017; 8:28–30. <https://doi.org/10.5116/ijme.587a.0333>
- Lu P, Tsai J, Tseng S. Clinical teachers' perspectives on cultural competence in medical education. *Med Educ*. 2014; 48(2): 204–14. <https://doi.org/10.1111/medu.12305>
- Yang HC. Education first: Promoting LGBT+ friendly healthcare with a competency-based course and game-based teaching. *Int J Environ Res Public Health*. 2019; 17(1):107. <https://doi.org/10.3390/ijerph17010107>
- Wolters FJ, Wijnen-Meier M. The role of poetry and prose in medical education: The pen as mighty as the scalpel. *Perspect Med Educ*. 2012; 1:43–50. <https://doi.org/10.1007/S40037-012-0008-1>
- Mininberg DT, Thompson N, Fins JJ. The art of death and dying: Medical education in the Metropolitan Museum of Art's Egyptian art galleries. *Acad Med*. 2004; 7(6):578–9. <https://doi.org/10.1097/00001888-200406000-00016>
- Mukunda N, Moghbeli N, Rizzo A, Niepold S, Bassett B, DeLisier H. Visual art instruction in medical education: A narrative review. *Med Educ Online*. 2019; 24(1):1558657. <https://doi.org/10.1080/10872981.2018.1558657>
- Rana J, Pop S, Burgin S. Using art to improve visual diagnosis: A review. *Clin Teach*. 2020; 17(2):136–43. <https://doi.org/10.1111/tct.13130>
- Alkhaifi M, Clayton A, Kangasjarvi E, Kishibe T, Simpson JS. Visual art-based training in undergraduate medical education: A systematic review. *Med Teach*. 2022; 44(5):500–9. <https://doi.org/10.1080/0142159X.2021.2004304>
- Dolev JC, Friedlaender LK, Braverman IM. Use of fine art to enhance visual diagnostic skills. *JAMA*. 2001; 286(9):1020–1. <https://doi.org/10.1001/jama.286.9.1019>
- Bardes CL, Gillers D, Herman AE. Learning to look: Developing clinical observation skills at an art museum. *Med Educ*. 2011; 35(12): 1157–61. <https://doi.org/10.1046/j.1365-2923.2001.01088.x>
- Reilly JM, Ring J, Duke L. Visual thinking strategies: A new role for art in medical education. *Fam Med*. 2005; 37(2):250–2.
- Shapiro J, Rucker L, Beck J. Training the clinical eye and mind: using the arts to develop medical students' observational and pattern recognition skills. *Med Educ*. 2006; 40(3):263–8. <https://doi.org/10.1111/j.1365-2929.2006.02389.x>
- Naghshineh S, Hafler JP, Miller AR, Blanco MA, Lipsitz SR, Dubroff RP, Khoshbin S, Katz JT. Formal art observation training improves medical students' visual diagnostic skills. *J Gen Intern Med*. 2008; 23(7):991–7. <https://doi.org/10.1007/s11606-008-0667-0>
- Schaff PB, Isken S, Tager RM. From contemporary art to core clinical skills: Observation, interpretation and meaning making in a complex environment. *Acad Med*. 2011; 86(10): 1272–6. <https://doi.org/10.1097/ACM.0b013e31822c161d>
- Klugman CM, Peel J, Beckmann-Mendez D. Art rounds: Teaching interprofessional students visual thinking strategies at one school. *Acad Med*. 2011; 86(10):1266–71. <https://doi.org/10.1097/ACM.0b013e31822c1427>
- Jasani SK, Saks NS. Utilizing visual art to enhance the clinical observation skills of medical students. *Med Teach*. 2013; 35(7):1327–31. <https://doi.org/10.3109/0142159X.2013.770131>
- Huang JT, Reynolds SD, DiGiovanni Evans B. Fine arts curriculum improves observational skills of dermatology trainees: A pilot study. *BJD*. 2016; 175(4):815–17. <https://doi.org/10.1111/bjd.14616>
- Zazulak J, Sanaee M, Frolic A, Knibb N, Tesluk E, Hughes E, Grierson LEM. The art of medicine: Arts-based training in observation and mindfulness for fostering the empathic response in medical residents. *Med Humanit*. 2017; 43(3):192–8. <https://doi.org/10.1136/medhum-2016-011180>
- Gurwin J, Revere K, Niepold S, Bassett B, Mitchell R, Davidson S. A randomized controlled study of art observation training to improve medical student ophthalmology skills. *Ophthalmology*. 2018; 125(1): 8–14. DOI: 10.1016/j.ophtha.2017.06.031
- Elder NC, Tobias B, Lucero-Criswell A, Goldenhar L. The art of

- observation: Impact of a family medicine and art museum partnership on student education. *Fam Med*. 2006; 38(6):393–8.
23. Charon R. Reading, writing and doctoring: Literature and medicine. *AJMS*. 2000; 319(5):285–91. [https://doi.org/10.1016/S0002-9629\(15\)40754-2](https://doi.org/10.1016/S0002-9629(15)40754-2)
24. Garden R. The problem of empathy: Medicine and the humanities. *New Literary History*. 2007 Summer; 38(3):551–67. <https://doi.org/10.1353/nlh.2007.0037>
25. Amir A. Sunt lacrimae rerum: Ekphrasis and empathy in three encounters between a text and a picture. *Word & Image*. 2009. 25 (3): 232–42. <https://doi.org/10.1080/02666280802628080>

RESEARCH ARTICLE

Global disparities and data transparency in editorial boards of prominent Internal medicine journals including allied super specialities: A wake-up call

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Abstract

Background: Global healthcare research suffers from inequalities, favouring high-income countries, which hampers fair healthcare access. Low and lower-middle-income nations face limited participation and editorial bias, posing concerns for research integrity. Potential reasons for this pattern might be the overrepresentation of researchers from the Global North on editorial boards, disparities in the quality of scientific research, lack of support for local research initiatives, and challenges posed by language barriers. The aim of this study was to assess data transparency and representation patterns of low- and lower-middle-income nations on Editorial Boards of prominent Internal Medicine journals.

Methods: The top 50 journals in the "Internal medicine including allied super specialities" subject category were selected based on SCImago journal ranking, journal impact factor, literature research and journal citation report. We examined the editorial boards of these journals using the World Bank Income Criteria.

Results: Out of 2406 editorial board members of leading journals, only 5(0.21%) were from low-income countries (LICs), while lower-middle-income countries (LMICs) and upper-middle-income countries (UMICs) constituted 64(2.67%) and 176(7.31%), respectively. High-income countries (HICs) dominated editorial boards, with 2161(89.8%) representation.

Conclusion: Editorial boards of top Internal Medicine and allied super-specialty journals lack adequate representation from low and lower-middle-income countries. This deficiency has significant implications, affecting knowledge production, policy development, and the overall progress of science and research on a global scale. Urgent measures are required to establish a fair and inclusive scholarly publishing system that caters to researchers from all regions.

Keywords: global disparity, editorial board, LICs, research ethics, internal medicine, global north

Introduction

Countries are categorised by income into high-income countries (HICs), upper-middle-income countries (UMICs),

lower-middle-income countries (LMICs) and low-income countries (LICs), according to the World Bank's income criteria [1]. Global disparities in healthcare research have been a longstanding concern, as HICs frequently dominate the field, often overshadowing the contributions from LICs and LMICs. This power imbalance not only perpetuates inequalities but also hinders the development of effective healthcare solutions tailored to the unique needs of less privileged regions. LICs and LMICs encounter a number of obstacles as they strive to make substantial contributions to worldwide healthcare research endeavours.

In recent years, the scientific contribution from LICs and LMICs to indexed publications has remained limited. A study by Aluede et al [2] found that out of 3,964 publications analysed, only 7% included authors from LICs and LMICs, with the vast majority coming from industrialised and emerging-market economies. Notably, while Sub-Saharan Africa contributed only 0.4% of all articles overall, it accounted for 5.6% of the 265 articles that included authors from LICs and LMICs, underscoring the limited collaboration occurring specifically within LICs and LMICs. In a cross-sectional, survey-based study, Rohra [3] surveyed corresponding authors of pharmacology papers and reported that 584 (30.4% of the 1,919 papers) originated from Least Developed Countries (LDCs), with a 64.5% author response rate. Approximately half of LDC papers were in low-impact factor journals, showing a weak negative correlation ($r = -0.236$) between journal impact factor and LDC representation. Another study by Saxena et al [4] showed similar results. This imbalance in representation has led to a situation reminiscent of global North colonisation, where researchers from HICs dominate major decision-making processes, often leaving their counterparts from LICs and LMICs without the platform they rightfully deserve. This issue raises important concerns, as it inadvertently excludes a substantial portion of the global population residing in these nations. Notably, five of the world's ten most populous countries, including India, Indonesia, Pakistan, Nigeria, and Bangladesh, fall into the category of LICs and LMICs, as noted by Hamadeh et al [5]. This disparity