MedEdPORTAL® The AAMC Journal of Teaching and Learning Resources

Original Publication

Open Access

Using Visual Arts Education and Reflective Practice to Increase Empathy and Perspective Taking in Medical Students

Sina Rezaei, MD, Andrew Childress, PhD*, Bhavika Kaul, MD, Kelly Magill Rosales, PhD, Alana Newell, PhD, Stacey Rose, MD

*Corresponding author: andrew.childress@bcm.edu

Abstract

Introduction: Empathy is a critical competency for health care providers. However, empathy levels in medical students and residents have been shown to paradoxically decrease during training. Arts and humanities education and reflective practice may reduce burnout and promote empathy during medical school. **Methods:** We developed and implemented an art education elective for medical students focusing on observation and reflective practice and measured its impact on empathy. Between 2017 and 2022, first-year medical students were offered an annual, 4-week elective led by art educators that featured visualization exercises and discussions on the role of bias and perspective in art interpretation. Curriculum effectiveness and impact on empathy were measured using the validated Interpersonal Reactivity Index (IRI) and self-assessments. **Results:** One hundred twenty-eight students participated in the elective over a 5-year period; 89 (70%) completed assessments. Students reported improvements in empathic communication, recognition of bias, and observation skills. IRI data demonstrated a significant increase in perspective taking (19.0 vs. 20.2; $p < .0125$). **Discussion:** Participation in the elective was associated with self-reported improvements in visual observation, awareness of bias, and empathetic communication. IRI results showed that participants also demonstrated improved perspective taking. Since perspective taking is a cognitive component of empathy, we have provided some empirical evidence that arts education in medical school can promote empathic attitudes and skills.

Keywords

Arts Education, Empathy, Reflective Practice, Communication Skills, Humanities (Art, Literature, Music)

Educational Objectives

By the end of this activity, learners will be able to:

1. Discuss strategies for visual analysis through accurate and detailed descriptions of art.
2. Describe strategies for dealing with bias and evaluating diverse interpretations.
3. Demonstrate empathetic communication in the discussion of the human body.

Introduction

Empathy is a critical competency for health care providers.[1] The beneficial impacts of empathy in the care of patients are well documented.[2] When patients feel heard and supported, they are more likely to adhere to treatment recommendations, leading to better health outcomes.[3] Conversely, emotional detachment has been associated with negative consequences for both patients and health care providers.[4] Despite the importance of empathy in promoting high-quality patient care,[5] empathy levels in medical students and residents have paradoxically been shown to decrease during training.[6,7] Contributing factors include emotional exhaustion, poor social support, high workload, and the hidden curriculum of medical training.[6-10]

The incorporation of humanities into medical education has been recommended as a means of reducing burnout, increasing tolerance for ambiguity, and enhancing empathy.[11-14] Several medical schools have incorporated visual art instruction, often in collaboration with local art museums. A recent review of such programs found evidence for the development of observation skills but insufficient data to demonstrate that art education for medical students promotes empathy or cultural sensitivity, despite anecdotal reports of such effects.[15]

Reflective practices are also increasingly integrated into medical education to cultivate compassion and empathy.[16,17] Reflective exercises have been associated with improved empathy in

Citation:
Rezaei S, Childress A, Kaul B, Magill Rosales K, Newell A, Rose S. Using visual arts education and reflective practice to increase empathy and perspective taking in medical students. *MedEdPORTAL*. 2023;19:11346. https://doi.org/10.15766/mep_2374-8265.11346

medical trainees, as measured by self-perception, patient feedback, and third-party observation.[18] Such findings align with Gibbs' reflective cycle framework, which encourages structured reflection about workplace situations using elements of description, feelings, evaluation, conclusions, and action.[19] While not specific to the medical profession, the reflective cycle provides a conceptual model for reflective practice among medical trainees since reflection on feelings or emotions may improve the capacity for empathy.[20] The incorporation of reflective practice with visual art observation is an area of increasing interest in medical education.[21,22]

Reflective practice has been recommended as one strategy to address implicit bias in health professions education.[23] Prior work has identified connections among reflective practice, mitigation of implicit bias, and the development of empathy.[24] Art education has the potential for fostering reflective practice and enhancing learner awareness of bias, especially when educators intentionally select artworks that highlight bias and pair observation with structured discussion of the artwork to facilitate reflective practice (Appendix A).

To date, there has been only one visual arts education publication in *MedEdPORTAL*.[13] Residents who participated in this faculty-led session reported improvement in patient communication skills and in viewing art as a wellness activity. Empathy was not explicitly taught or assessed. Similarly, while some publications cite the connection between art education and improved visual diagnosis,[25,26] educators lack clear guidance on the optimal instructional modalities to promote empathy.[15,27] Given the importance of empathy as a clinical competency and the increasing integration of reflective practice into medical education curricula, medical schools need additional instructional tools to promote empathy.

We developed and implemented an elective for first-year medical students incorporating visual arts instruction and reflective practice, with the goal of enhancing empathy by encouraging learners to improve their visual analysis skills and identify how emotions and biases influence observations. We evaluated the impact of the curriculum using both quantitative and qualitative measurements, including the Interpersonal Reactivity Index (IRI),[28] a validated assessment of both cognitive and affective empathy, and a student self-assessment survey. By presenting our pedagogical methods and outcomes here, we hope to provide additional insight into how arts education and reflective practice can be used to promote the cognitive, affective, and communicative aspects of empathy among medical trainees.

Methods

Learners

We offered the Art of the Human Body elective to first-year Baylor College of Medicine (BCM) medical students annually between 2017 and 2022. Over the 4-week course, students met weekly for 2 hours at the Museum of Fine Arts, Houston (MFAH), and were taught by BCM faculty and MFAH learning and interpretation staff.

Curriculum Development

BCM faculty met with MFAH staff to create learning objectives and a course syllabus (Appendix B) with the goal of enhancing students' visual observation and empathic communication skills. Based on the learning objectives, we developed a series of four sessions. In-person sessions are described in Appendices B and C. Due to pandemic-related restrictions on in-person visits, we developed a virtual version of the course (Appendices D-G) that aligned with our overall course objectives. We adapted some activities to fit the virtual environment and added new ones more conducive to online engagement. During the first session (Appendix D), we provided instruction in visual observation principles, such as noticing color, shape, line, and texture. The second session (Appendix E) allowed students to apply skills in visual observation through drawing exercises. Sessions three (Appendix F) and four (Appendix G) focused on bias and empathy, including didactic content (on the components of empathy—emotional, cognitive, and motivational)[29] and art interpretation exercises to facilitate reflective practice and dialogue with other students regarding their perspectives.

Curriculum Implementation

For each session, students met at the museum. Following a brief didactic session, we divided the students into groups and traveled with them to different areas of the museum to view selected works of art (as relevant for the session topic) and to participate in designated session activities. MFAH staff and BCM faculty co-led the session activities, including small-group discussions, drawing exercises, and large-group debriefings. Faculty used facilitation techniques to encourage students to share their perspectives and to make connections to clinical practice and their own professional identities. Overall, we designed the curriculum to provide multiple opportunities for students to develop observation and communication skills, reflect on ambiguity, identify biases, and recognize empathic responses as they observed and interpreted works of art.

Notably, we transitioned the course to an online format in 2021 due to the COVID-19 pandemic. We conducted the reflection and

discussion aspects of each course session virtually using Zoom conferencing technology.

Evaluation

Grading for the elective was pass-fail, based on mandatory attendance. To assess changes in empathy, students voluntarily completed the IRI (Appendix H) in the first and final classes and a student self-assessment survey (Appendix I) following the final class. Evaluation methods were approved by the BCM Institutional Review Board.

The IRI—a validated questionnaire measuring four components of empathy: perspective taking, fantasy, empathic concern, and personal distress[30]—had 28 questions, seven per subscale. Questions were scored on a 5-point Likert scale (0 = *does not describe me well,* 4 = *describes me very well*). Subscale scores for each empathy component were obtained by summing the points of the respective questions.

The IRI's subscales allowed investigators to measure cognitive empathy (perspective taking and fantasy) separately from affective empathy (empathic concern and personal distress). Perspective taking measured the "tendency to spontaneously adopt the psychological point of view of others" while fantasy assessed students' "tendencies to transpose themselves imaginatively into the feelings and actions of fictitious characters."[28] Empathic concern quantified "other-oriented feelings of sympathy and concern for unfortunate others."[28] Personal distress assessed "self-oriented feelings of personal anxiety and unease in tense interpersonal settings."[28]

The student self-assessment survey included two sections. The first consisted of a questionnaire using a 7-point Likert scale (1 = *strongly disagree,* 7 = *strongly agree*) to score three statements about how well the course addressed empathy, raised awareness of biases, and offered strategies to deal with ambiguity. The second section solicited free-text responses to questions related to empathy.

Data Analysis

Single-factor analysis of variance tests showed no statistically significant difference within the pretest and posttest scores on the IRI from the different years' cohorts, which allowed us to pool the data from the 5 years and use a paired, two-tailed *t* test to compare the combined pretest and posttest data. Given that the IRI tested four separate components of empathy, Bonferroni corrections were applied, setting statistical significance set at $p < .0125$ rather than .05.

We analyzed the Likert-scale data from the student self-assessment survey using descriptive statistics, while the qualitative data were analyzed using thematic content analysis. Three independent coders read the transcripts and coded them using a tentative coding scheme.[31] After reviewing the initial data, we revised the coding scheme with newly discovered categories and recoded the transcripts to confirm interrater agreement. Finally, we analyzed the coded data for identification of themes that emerged as significant to the students as a group.

Results

A total of 128 students enrolled in the course from 2017 to 2022. Due to the pandemic, we did not offer the course in 2020. Thus, between 2017 and 2022, we offered the course five times. Of those enrolled, 89 completed the IRI for a response rate of 70% (Table 1). Incomplete surveys were excluded. The pretests and posttests were pooled across the 5 years, and IRI subscale scores were compared before and after taking the art course (Figure 1). There was no statistically significant change in the fantasy, empathic concern, and personal distress subscales. Perspective taking, however, had a statistically significant mean increase from 19.0 ($SD = 4.3$) to 20.2 ($SD = 4.5$), $t(88) = 2.61$, $p < .0125$.

The student self-assessment survey had a completion rate of 100% in 2017, 66% in 2018, 96% in 2019, and 90% in 2021. Overall, student feedback was very positive. All three surveyed fields (empathy, bias, and ambiguity) received at least 80% positive scores (5-7 on the Likert scale) each year (Figure 2). The percentage of *strongly agree* responses (score of 7) increased each year for all three categories, suggesting that the course may have become more effective at achieving its goals and objectives as it matured.

Thematic Analysis

Analysis of qualitative comments revealed insights into the value of observation, development of empathy, awareness of bias, and pedagogical approaches that students found most helpful for reaching their medical and nonmedical goals, as summarized below and in Table 2.

Table 1. Completed Pre/Post Intervention Interpersonal Reactivity Index Surveys 2017-2022

Year	No. Enrolled	No. Completed	%
2017	30	30	100
2018	33	29	88
2019	27	8	30
2021	10	8	80
2022	28	14	50

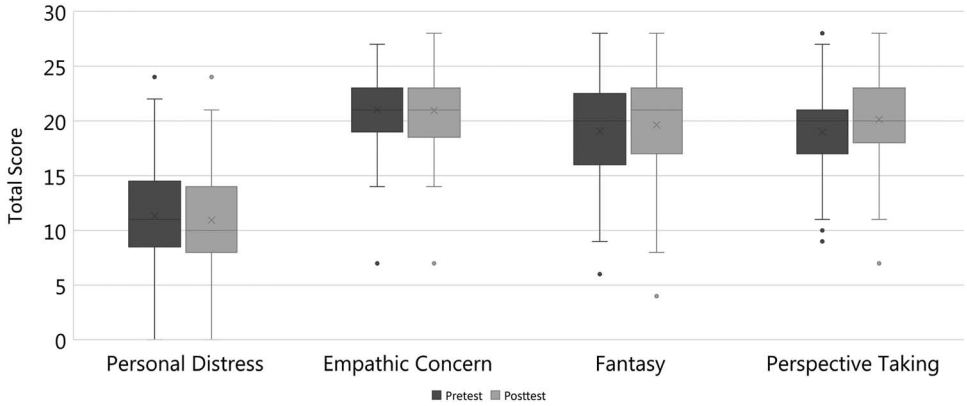

Figure 1. Box plot analysis of pooled pre/post Interpersonal Reactivity Index subscale scores before and after 2017-2022 courses. *N* = 89. The horizontal line in each box is the median, and the X in each box is the mean. Colored circles indicate outliers.

Students across all years noted that observation was a critical skill that could be consciously improved through facilitated experiences in art interpretation and drawing exercises, particularly uninterrupted contour drawing. Through observation, students learned to recognize situational ambiguity and the need for further inquiry. The effectiveness of taking time to closely observe art also served as a reminder to slow down when observing patients. Holistic observation required taking time, trying on different perspectives, and avoiding hasty conclusions.

When describing how they might use empathy in clinical situations, students noted that taking time to closely reflect and observe would likely lead to more empathic responses to the feelings of others.

The theme of bias emerged as a barrier to perspective taking and empathy. Students observed that bias involved adhering too closely to their first impressions or assumptions. Some students saw bias as a personal failing that precluded learning the actual

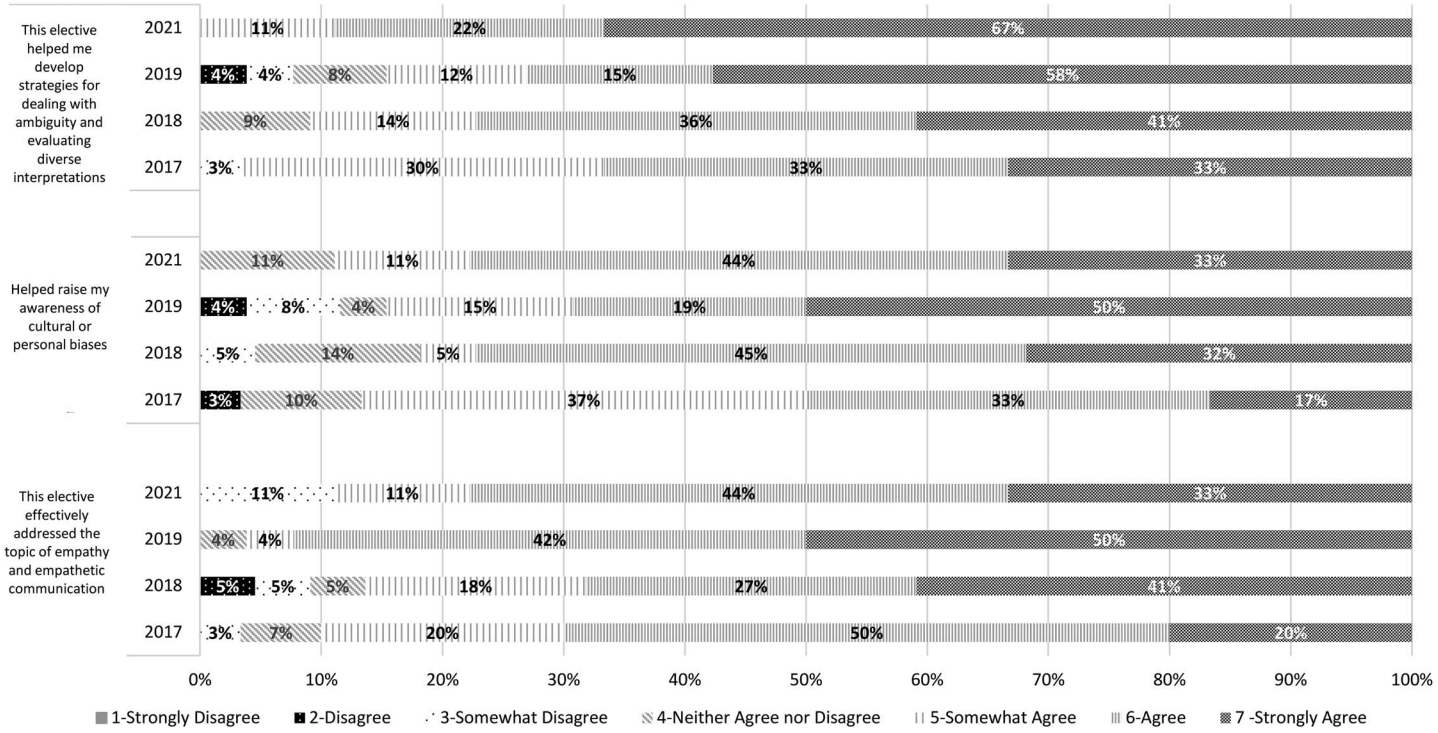

Figure 2. Data visualization of the 7-point Likert scale for the student self-assessment survey.

Table 2. Sample Student Comments From the Student Self-Assessment Survey

	Sample Student Comments			
Theme	**2021**	**2019**	**2018**	**2017**
Observation	"It is one thing to glance at artwork and another entirely to look closely at a work and break down its components to better understand it. In the same way, we must look closely and break down the information that patients give us."	"This course has definitely encouraged me to take a second to look at things closely. Often, when you're busy, you can pass over details that you would've noticed if you had taken the time. This can be crucial to understanding the patient's experience more closely and hopefully being more empathetic."	"The most interesting thing I learned dealt with ambiguity and the importance of observation in realizing when something is ambiguous—otherwise one doesn't know what questions to ask."	"This course has taught me the importance of taking a moment to observe first in order to reduce or lessen the effects initial biases may have in a patient interaction. It also definitely improved my ability to lead empathic conversations."
Bias	"I constantly evaluated art from my own perspective and realized that led me to misinterpreting things constantly. While this is normal it is beneficial to be aware of this and be as unbiased as possible."	"This was more effective than vignettes we got on the costs of bias as it was demonstrative."	"The course helped me become more aware of my biases and hone my observation skills. I enjoyed the discourse between my classmates."	"This course taught me that the more you look and listen, the more you learn. And the curve for this is exponential. I think the course will allow me to be more aware of my patients and biases so I can confront them."
Empathy	"The exercises we did definitely helped me gain a better understanding of how it can apply to all different situations as opposed to simply just happiness and sadness."	"Definitely, a big part of medicine is understanding other points of view. Art has a great way of stimulating empathy in a way that's also fun and interesting. Bias also becomes really apparent in hearing the way that other people look at art."	"While I have always appreciated the role of bias and empathy in health care professions, the museum elective provided me the opportunity to practice these skills of empathy in real conversations with real people."	"When you fully focus on something rather than let your preconceived notions influence an image or depiction it can be more realistic. Empathy is so powerful and allows us to interpret so many different things from one object or image."
Pedagogy	"One of my main goals/favorite parts of the course was having to communicate my interpretations of the artwork. It felt very clumsy early on but I do think it improved over the last month. I'm glad to have engaged the humanities side of my brain again... it's certainly been a while."	"I think it might be nice to have a little more direct relation to medical practice. So maybe having a physician talk about a topic/goal for the class that day and then breaking into smaller groups out in the museum."	"I feel like I learned how to let go of my high expectations for understanding things entirely. Especially blind contour drawings. The course highlighted the nuances in the human condition which may impact my ability to care as a provider."	"My goal at the beginning was to improve my observational skills so that I could notice the small details of the artwork and the intention behind it. I think the exercises with partners or small groups facilitated the development of these skills and I think more of that can be incorporated as well as more staff opinion on the piece."

story. Others noted that focused observation or awareness of others' perspectives could mitigate bias and that overcoming bias involved awareness of one's own assumptions and consideration of alternative viewpoints through communication. Small-group discussions aided understanding of bias and awareness of alternative perspectives. Other students valued the experience of learning to appreciate art and saw any effect on empathy or bias as an indirect benefit.

In 2021, the course briefly shifted to the virtual environment. Educators used videoconferences and virtual whiteboards to create interactive spaces online. Students were asked to comment on the benefits and limitations of the virtual versus in-person experience. They appreciated the ability to search online for information during the session and having more access to artworks. The technology allowed them to change perspectives (e.g., zooming in on an artwork) that would not be possible in person. However, they found that viewing the artwork through a computer screen limited their ability to appreciate different dimensions, particularly the texture of the artworks, and their ability to experience the artworks' presence. They also noted a lack of freedom to wander around and absorb the atmosphere of the museum. Group discussions came less naturally and were not as engaging as students had anticipated. In-person classes resumed in 2022.

Discussion

We designed this elective to help medical students improve visual observation skills and use reflective practice to identify implicit biases that can affect those observations as a means to improve empathy. The curriculum development drew from existing literature regarding art education to improve observation skills and the use of reflective practice to promote empathy. Curriculum development was enhanced by a collaboration

between art education experts at MFAH and BCM faculty trained in clinical medicine and humanities and ethics. The curriculum was designed to engage students with multiple learning styles and preferences; for instance, activities included individual drawing practices and reading assignments, think-pair-share exercises (working with one other student), and small- and large-group discussions. The prompts for reflective practice were also designed to promote thinking about bias and to foster consideration of diverse perspectives. Notably, our curriculum explicitly included instruction in empathy, including defining and distinguishing emotional, cognitive, and motivational empathy. This direct focus on teaching and evaluation of empathy distinguishes our approach from other medical school art education tools available in the literature.

Another unique element of our curricular intervention was the use of the IRI as an evaluation tool, so that we could better understand the impact of the curriculum upon the cultivation of empathy. We found a significant improvement in perspective taking, one of the four subcomponents of empathy. Students' responses on the student self-assessment survey showed four common themes: (1) observation skills could be improved, (2) close observation and awareness of different perspectives improved empathy, (3) bias was a barrier to empathy, and (4) overcoming bias involved awareness of one's own assumptions and consideration of alternative viewpoints. These themes correspond closely with the increase in perspective taking measured by the IRI.

While medical students often are drawn to humanities-based learning opportunities, they also feel compelled to constantly build clinically relevant skills. We found it challenging to deliver clinically relevant content without diluting the intrinsic value of being exposed to the arts and humanities and sharing these experiences with peers. We struggled to balance making explicit connections to medicine for students to consider and allowing them to make these connections on their own. Ultimately, we found that using reflective practice as part of our pedagogy provided a useful framework for developing clinically relevant skills like visual observation, awareness of bias, and empathetic communication as well as less clinically relevant skills like art appreciation and wellness behaviors.

Our curricular design and evaluation approaches have several limitations. Since the elective was offered only to first-year students in the spring semester, it is unclear whether our model will lead to greater improvement in traits like empathy over the long term. Next, although we used standardized educational methods, the museum's art collections rotated, which may have introduced variation in students' experiences across iterations of the course. In addition, our curriculum involved a museum–medical school partnership, which may not be widely available. While there is no substitute for subject matter expertise, medical school faculty with art backgrounds may still find this resource helpful in developing strategies for teaching and evaluation of arts education to cultivate empathy. For instance, if collaboration with museum educators is not feasible, medical school faculty can adapt our instructional approach using a virtual museum environment, engaging learners in observation and reflection based on viewing works of art available online.

In terms of our evaluation approach, there are a few additional limitations. First, students self-selected into this elective, and several noted prior exposure to humanities courses. Selection bias may have attenuated the IRI results. The use of pre- and postcourse assessments may have mitigated this impact; however, students who electively enrolled in the art course may have responded more positively to art education than others in their class. Second, we were not able to assess all learning objectives—namely, we did not directly evaluate students' skills in visual analysis. Rather, we prioritized assessment of skills related to bias and empathy since the connection between art education and improved skills in visual analysis was already well established. Finally, although we only noted a statistically significant change in IRI scores on perspective taking, our relatively small sample size may have been underpowered to appreciate differences in the other subscales. These challenges are similar to those other institutions have faced by primarily relying on single-institution enrollment with small cohorts lacking controls.

Throughout the implementation of this educational initiative, there were several lessons learned that may prove valuable to other educators. Although the instructional methods can be implemented in the absence of a museum collaboration, we found the collaboration with MFAH to be highly beneficial for curriculum development and refinement. For instance, the art educators helped to select works of art that would stimulate conversation regarding bias and diverse perspectives. The collaboration was also fruitful in ensuring that learners appreciated the clinical relevance of arts and humanities education. Some student feedback indicated that including multiple types of learning activities—ranging from individual to large group—helped to maximize learner engagement across a variety of learning styles. We also found it useful to engage learners across multiple sessions (rather than in a single

encounter). Although not directly measured, we suspect this approach helped to encourage open discussions as students developed more comfort in sharing reflections with their peers. Although the course was adaptable to a virtual learning environment, learner evaluations suggested a preference for the richness of in-person sessions.

Moving forward, we aim to use visual observation and reflective practice to situate conversations about racial disparities in medicine, in keeping with national efforts to expand diversity, equity, and inclusion initiatives across medical education. For example, we plan to facilitate discussions of empathy and bias using modern art produced by members of historically marginalized populations. Additionally, we hope to incorporate our pedagogical approach longitudinally so that all medical students have a chance to practice these skills. We aim to integrate artistic representations of organ systems, anatomy, and pathophysiology into relevant sections of the medical school curriculum to stimulate thinking about cultural representations of the human body.

In summary, the Art of the Human Body elective was associated with improvement in the perspective-taking component of empathy as measured by a validated assessment tool (the IRI). Our methodologies, including both active learning pedagogies as applied to art observation and reflective practice with consideration of bias, ambiguity, and multiple perspectives in relation to art interpretation and clinical experience, should prove useful to other medical educators interested in adopting these tools for their own curricula.

Appendices

A. Example of a Facilitated Learning Session.docx

B. Schedule and Syllabus.docx

C. Art and Medicine Teaching Techniques.docx

D. Session 1.pptx

E. Session 2.pptx

F. Session 3.pptx

G. Session 4.pptx

H. IRI.docx

I. Self-Assessment Survey.docx

All appendices are peer reviewed as integral parts of the Original Publication.

Sina Rezaei, MD: Fourth-Year Resident, Department of Ophthalmology, Henry Ford Hospital

Andrew Childress, PhD: Assistant Professor, Center for Medical Ethics and Health Policy, Baylor College of Medicine; ORCID: https://orcid.org/0000-0002-4587-6941

Bhavika Kaul, MD: Assistant Professor, Department of Medicine, University of California, San Francisco, School of Medicine

Kelly Magill Rosales, PhD: University Programs Specialist, Museum of Fine Arts, Houston

Alana Newell, PhD: Assistant Professor, Center for Educational Outreach, Baylor College of Medicine

Stacey Rose, MD: Associate Professor, Department of Internal Medicine, and Associate Director, Center for Professionalism, Baylor College of Medicine

Acknowledgments

We thank Dr. Ashok Balasubramanyam for assisting with curriculum development and coteaching the course from 2014 to 2017. We thank Sharonya Shetty for assistance with data analysis.

Disclosures

None to report.

Funding/Support

This program was initially developed with a seed grant from the Dean's Office, with later funding through a grant from the Baylor College of Medicine Center for Professionalism. We thank Dr. Stephen Greenberg for providing Dr. Bhavika Kaul with the initial funding to develop this course, which helped establish the partnership between Baylor College of Medicine and the Museum of Fine Arts, Houston.

Prior Presentations

Childress A, Rezaei S, Kaul B, Magill Rosales K, Newell A, Rose S. Using visual arts education and reflective practice to increase empathy in medical students. Presented virtually at: Baylor College of Medicine 2020 Academy of Distinguished Educators Annual Showcase of Educational Scholarship; September 2020.

Ethical Approval

The Baylor College of Medicine Institutional Review Board approved this project.

References

1. *Physician Competency Reference Set (PCRS)*. American Association of Medical Colleges; date unknown. Accessed August 4, 2023. https://www.aamc.org/what-we-do/mission-areas/medical-education/curriculum-inventory/establish-your-ci/physician-competency-reference-set
2. Guidi C, Traversa C. Empathy in patient care: from "clinical empathy" to "empathic concern." *Med Health Care Philos*.

2021;24(4):573-585. https://doi.org/10.1007/s11019-021-10033-4

3. Hojat M, Louis DZ, Markham FW, Wender R, Rabinowitz C, Gonnella JS. Physicians' empathy and clinical outcomes for diabetic patients. *Acad Med*. 2011;86(3):359-364. https://doi.org/10.1097/ACM.0b013e3182086fe1
4. Ekman E, Krasner M. Empathy in medicine: neuroscience, education and challenges. *Med Teach*. 2017;39(2):164-173. https://doi.org/10.1080/0142159X.2016.1248925
5. Mercer SW, Reynolds WJ. Empathy and quality of care. *Br J Gen Prac*. 2002;52(suppl):S9-S12.
6. Hojat M, Vergare MJ, Maxwell K, et al. The devil is in the third year: a longitudinal study of erosion of empathy in medical school. *Acad Med*. 2009;84(9):1182-1191. https://doi.org/10.1097/ACM.0b013e3181b17e55
7. Neumann M, Edelhäuser F, Tauschel D, et al. Empathy decline and its reasons: a systematic review of studies with medical students and residents. *Acad Med*. 2011;86(8):996-1009. https://doi.org/10.1097/ACM.0b013e318221e615
8. Ahrweiler F, Neumann M, Goldblatt H, Hahn EG, Scheffer C. Determinants of physician empathy during medical education: hypothetical conclusions from an exploratory qualitative survey of practicing physicians. *BMC Med Educ*. 2014;14:122. https://doi.org/10.1186/1472-6920-14-122
9. Thomas MR, Dyrbye LN, Huntington JL, et al. How do distress and well-being relate to medical student empathy? A multicenter study. *J Gen Intern Med*. 2007;22(2):177-183. https://doi.org/10.1007/s11606-006-0039-6
10. Eikeland HL, Ørnes K, Finset A, Pedersen R. The physician's role and empathy—a qualitative study of third year medical students. *BMC Med Educ*. 2014;14:165. https://doi.org/10.1186/1472-6920-14-165
11. Haidet P, Jarecke J, Adams NE, et al. A guiding framework to maximise the power of the arts in medical education: a systematic review and metasynthesis. *Med Educ*. 2016;50(3): 320-331. https://doi.org/10.1111/medu.12925
12. Graham J, Benson LM, Swanson J, Potyk D, Daratha K, Roberts K. Medical humanities coursework is associated with greater measured empathy in medical students. *Am J Med*. 2016;129(12):1334-1337. https://doi.org/10.1016/j.amjmed.2016.08.005
13. Kumar AM, Lee GH, Stevens LA, Kwong BY, Nord KM, Bailey EE. Using visual arts education in dermatology to benefit resident wellness and clinical communication. *MedEdPORTAL*. 2021;17; 11133. https://doi.org/10.15766/mep_2374-8265.11133
14. Bentwich ME, Gilbey P. More than visual literacy: art and the enhancement of tolerance for ambiguity and empathy. *BMC Med Educ*. 2017;17:200. https://doi.org/10.1186/s12909-017-1028-7
15. Mukunda N, Moghbeli N, Rizzo A, Niepold S, Bassett B, DeLisser HM. Visual art instruction in medical education: a narrative review. *Med Educ Online*. 2019;24(1):1558657. https://doi.org/10.1080/10872981.2018.1558657
16. Mann K, Gordon J, MacLeod A. Reflection and reflective practice in health professions education: a systematic review. *Adv Health Sci Educ Theory Pract*. 2009;14(4):595-621. https://doi.org/10.1007/s10459-007-9090-2
17. Sandars J. The use of reflection in medical education: AMEE Guide no. 44. *Med Teach*. 2009;31(8):685-695. https://doi.org/10.1080/01421590903050374
18. Patel S, Pelletier-Bui A, Smith S, et al. Curricula for empathy and compassion training in medical education: a systematic review. *PLoS One*. 2019;14(8):e0221412. https://doi.org/10.1371/journal.pone.0221412
19. Gibbs G. *Learning by Doing: A Guide to Teaching and Learning Methods*. Geography Discipline Network; 2001.
20. Halpern J. What is clinical empathy? *J Gen Intern Med*. 2003; 18(8):670-674. https://doi.org/10.1046/j.1525-1497.2003.21017.x
21. Kelly-Hedrick M, Chugh N, Zahra FS, Stephens M, Chisolm MS. Art museum-based teaching: visual thinking strategies. *Acad Med*. 2022;97(8):1249. https://doi.org/10.1097/ACM.0000000000004600
22. Gowda D, Dubroff R, Willieme A, Swan-Sein A, Capello C. Art as sanctuary: a four-year mixed-methods evaluation of a visual art course addressing uncertainty through reflection. *Acad Med*. 2018;93(11)(suppl):S8-S13. https://doi.org/10.1097/ACM.0000000000002379
23. Sukhera J, Watling C. A framework for integrating implicit bias recognition into health professions education. *Acad Med*. 2018;93(1):35-40. https://doi.org/10.1097/ACM.0000000000001819
24. Schwartz BD, Horst A, Fisher JA, Michels N, Van Winkle LJ. Fostering empathy, implicit bias mitigation, and compassionate behavior in a medical humanities course. *Int J Environ Res Public Health*. 2020;17(7):2169. https://doi.org/10.3390/ijerph17072169
25. Jasani SK, Saks NS. Utilizing visual art to enhance the clinical observation skills of medical students. *Med Teach*. 2013;35(7): e1327-e1331. https://doi.org/10.3109/0142159X.2013.770131
26. 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):1272-1276. https://doi.org/10.1097/ACM.0b013e31822c161d
27. Dalia Y, Milam EC, Rieder EA. Art in medical education: a review. *J Grad Med Educ*. 2020;12(6):686-695. https://doi.org/10.4300/JGME-D-20-00093.1
28. Davis MH. Measuring individual differences in empathy: evidence for a multidimensional approach. *J Pers Soc Psychol*.

1983;44(1):113-126. https://doi.org/10.1037/0022-3514.44.1.113

29. Zaki J. *The War for Kindness: Building Empathy in a Fractured World*. Crown; 2019:178-182.
30. Davis MH. A multidimensional approach to individual differences in empathy. In: *JSAS Catalog of Selected Documents in Psychology*. Vol 10. American Psychological Association; 1980:85-103.
31. Vaismoradi M, Turunen H, Bondas T. Content analysis and thematic analysis: implications for conducting a qualitative descriptive study. *Nurs Health Sci*. 2013;15(3):398-405. https://doi.org/10.1111/nhs.12048

Received: December 6, 2022
Accepted: June 13, 2023
Published: September 22, 2023