Engaging Medical Students with Art: What’s the Value?

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Abstract

This pilot study investigated the perspectives of medical students around their experiences of creative art workshops, which were offered to them as part of an innovative rural interprofessional cultural health training program. In semi-structured interviews we explored the students’ impressions of the workshops and the role art played for them in life and in medicine, including how creating art influenced students' perceptions of wellbeing, ethics and professionalism in medicine.

We found that students with previous art experience enjoyed art making more and made fewer negative judgments, of themselves as the creators of art and of the role of art in medical education, than students who had not privately engaged in creative arts activities. ‘Art-experienced’ students also more readily regarded the concept of ‘wellbeing’ as a core responsibility of practicing medicine than ‘art-inexperienced’ students, and described art engagement as a transformative activity that could refine ethical sensitivity.

Our findings suggest that art making programs can provide an important extension to traditional medical humanities curricula. Designed and facilitated well, active creative engagement can cultivate empathy, professionalism, and professional identity. We recommend further research that explores the predictive value of medical students’ art experience for the development of these qualities.

Keywords: Medical students’ perspectives; professional identity; medical humanities; art and medicine; ethical practice; professional medical practice; wellbeing; rural; Australia

Introduction

Over the centuries, the idea that medicine is an art, and that a doctor is – or should be – a kind of artist, has been often repeated. Medicine, said William Osler, is a science of uncertainty and an art of probability (LaCombe and Elpern, 2010). ‘The art and science of medicine are complementary. For successful practice, a doctor has to be an artist armed with basic scientific knowledge in medicine,’ as Panda put it (Panda, 2006). Calls for the
implementation of ‘medical humanities’ programs over the past 40 years have often been framed by this rhetoric of medicine-as-art, and by a longing to celebrate and develop the ‘art of medicine’. Can engaging with the creative arts support this objective? Medical humanities programs have expanded in medical schools around the world, and the creative arts have been slowly gaining a more prominent place within these. For example, it is increasingly popular to take medical students on field trips to art galleries; (Bardes, Gillers and Herman, 2001; Schaff, Isken and Tager, 2011) medical students also not infrequently read play-scripts, novels, poems and short stories. But not all forms of creative art are integrated equally in medical education. Attending live music or theatre performances seems less common, and the avant-garde and community arts are also rare, (Brodzinski and Munt, 2009; Bolaki, 2016) except for works that explore illness experiences.

Opportunities in medical humanities curricula for students to be artists have only developed more recently (Mukunda et al., 2019) and mostly in the form of practicing ‘narrative medicine’ alongside access to extracurricular performance activities (Katz and Khoshbin, 2014; McLean, 2014; Acai et al., 2016; Jones, Kittendorf and Kumagai, 2017; Dalton et al., 2020). Active participation in art might be especially useful in medical education for several reasons: First, medical students are frequently accomplished in music, drawing or painting and may have achieved highly in these areas during secondary schooling. This is a resource that could be more effectively used during medical school. Second, making art can be more profoundly affective than consuming it (Aung, 2010; Watson, 2011; Delhousie University Medical Humanities Program, 2017). And thirdly, since art engagement has been linked to resilience and positive mental health outcomes (Brett-MacLean, 2007), cultivating medical students’ art practices has potential to prevent mental ill-health, a not insignificant risk for young doctors (Scott et al., 2017).

Rationales given for art activities as components of medical humanities curricula vary in the degree to which they emphasise instrumental outcomes or affective experiences (Chiavaroli, Huang and Monrouxe, 2018). Some studies have found improvements in close observation and capacity for visual discrimination in medical students who visit art galleries (Bardes, Gillers and Herman, 2001; Braverman, 2011). Some anticipate improvements in patient communication from doctors who read stories and novels (Shapiro, Morrison and Boker, 2004; Charon, 2016). Others desire to cultivate sensibility, to affect, and to greet the affective (Bleakley, 2011). Student perspectives on such programs seem variable also, with the most common concern being around prioritizing curriculum without direct instrumental applications. However, information about student perspectives of art making experiences during medical school is limited at present.

This paper reports on a pilot study of what medical students valued in creative art experiences, which were a component of an innovative remote training program, conducted in rural NSW, Australia. Our aims were to explore:

- What medical students value in the arts component of the ENRICH program,
- How medical students’ experience of art making relates to their perceptions of the roles of wellbeing, ethics and professional identity in medical practice, and
- How the rural setting may affect these experiences.

This is a follow-up study on our research on artists’ perspectives on teaching creative arts in the ENRICH program (Bennett and Hooker, 2018). In that study we found that, besides honing students’ capacities for empathy, artists valued stimulating students’ creativity in ways that challenge the goal orientation predominant in medical training. We also found that being embedded in a rural community setting influenced how the artists appreciated their role in the program. This follow-up study investigated whether students would value the program in similar ways.
Methods

The creative art sessions were offered to medical students as part of the Enhanced Rural Interprofessional Cultural Health (ENRICH) program, an innovativeteaching program held in the resource-poor community setting of Broken Hill, a small mining town located in remote central Australia, 11 hours’ drive away from Sydney (Lyle et al., 2006). The program consists of around 40 clinical and non-clinical education sessions, spread over two semesters. One of its core foci is on interprofessional education within a person-centred approach to health care (Moore, Bolte and Bennett, 2012). The program is innovative in its powerful mix of community-led practice and pragmatic design in service-oriented teaching. Its remote and resource-poor location has enabled maximizing opportunities for student-engaged pedagogical innovation. The art sessions were facilitated by professional artists who presented content around visual (painting/drawing/ photography) and literal (poetry/writing) media. The artists were asked to consider the students’ clinical focus and to encourage students to think about linking the students’ art experiences with their present and future clinical practice. Total participants per art session varied from 4 to 29.

PB, who was a clinical lead for the ENRICH program, designed the interview schedule and collected the data. All medical students who participated in at least one art session of the ENRICH Program were invited to participate in an interview (Box 1 for participant selection criteria). Individual semi-structured telephone and face-to-face interviews were conducted with 7 medical students. All students were in their second to final year of study and on rural placement for 6 to 12 months. The interviews were held within a few weeks of attending their final ENRICH art session and before the completion of their placement. Each interview lasted approximately 30 minutes. The interview questions were primarily reflective of a pragmatic framing of value in curricula, and the research norms at Broken Hill which were designed with potential research applications in mind, as suits a resource-limited setting.

Box 1: Participant selection criteria

| Participants were extended-stay medical students on clinical placement in remote New South Wales, Australia, who attended one or more art sessions as part of the Enhanced Rural Interprofessional Cultural Health (ENRICH) program. |

PB recorded his impressions of each interview in a field note diary directly after each interview. The interviews were transcribed in a conversational style. We conducted qualitative thematic analysis using Charmaz’s method on transcripts and field notes (Charmaz, 2006). Through line-by-line coding and constant comparison of data and codes, PB, CK and CH independently identified themes, then discussed and refined their results as a team. Four themes were identified through multiple cycles of refinement and integration. The analytic process was further extended through collaborative writing.

Ethics approval for this study was obtained from the Human Research Ethics Committee of the University of Sydney; Project No: 2014/642.

Results/Analysis

The four themes we identified centred on the students’ reflections of their art-making experiences and the task of considering these experiences in relation to wellbeing, ethics and professional identity in medical practice. The data showed sometimes competing discourses around pragmatic and tangible outcomes, and student affect and ideals.

The role of art in life and medicine

Students varied in their attitudes towards art. Some students rated art-based activities as low in priority in their lives.
Others - mainly those who were privately engaged in art – viewed art engagement as important to their personal lives. While most students articulated enjoyment, stress relief and ‘time out’ from medicine as their main reason for valuing art engagement, those with prior art-making experience valued it as reconnecting them with the self-identity they had brought into medical school, with the person they were ‘before’.

S14: "almost segregating from routine… it’s the way to relax. It’s the way to just go, okay, I’m not going to think about all of this stuff for a little while… Which I think is important; because whatever it is that’s happening you get some time away. You can, maybe, come back and look at it from a different perspective."

Several students characterised art making as developing their skills as future medical professionals.

S14: "…that was a really interesting task, because it made me think about communication […] everything has more than one story […] and people see things from different perspectives, even if you’re looking at the same thing."

However, some students with a private art hobby were sceptical of the value of art for medicine.

S15: "…as interesting as it was, I’m not sure it really added to the clinical picture of where we’re meant to be."

Overall, students without personal art experience appeared to be more sceptical regarding the usefulness of art for either their private lives or for their medical practice. They also appeared to be more judgemental of themselves as the creators of art, and they were more likely to describe the ENRICH art sessions as ‘interesting’ rather than enjoyable.

S13: "I didn’t fully understand why we were doing creative writing"

The role of ‘wellbeing’ in medicine

Notwithstanding our study's small sample, participants’ perspectives of art in the context of wellbeing in medical practice were quite divergent. Students hesitated to define wellbeing, which tended to be seen as an individual’s personal/subjective outlook on life. By contrast, and unsurprisingly, ‘health’ was defined by all students primarily within a biomedical frame:

S13: "Wellbeing, to me, lends my mind towards more your emotional balanced life. Health being the presence or not of disease. Those, I guess, would be my differences, not distinctly cut, it’s just the words you use. You tend to use health in the sense of, yeah, disease and, yeah, wellbeing can be more a balanced lifestyle."

Some students however regarded health and wellbeing as interchangeable terms with largely congruent meaning, health being approached from an objective and wellbeing from a subjective perspective:

S10: "I think of them as being relatively interchangeable and if you're talking about one you're definitely talking about the other as well … you can say health is somewhat of an objective measurement that wellbeing is somewhat a subjective measurement, either way they're still quite
The students’ opinions on whether wellbeing was an integral part of practicing medicine were split. Interestingly, all students who identified wellbeing as a core responsibility of practicing medicine had fond experiences of engaging privately in creative art. But the reverse was not true: some students with prior self-initiated art exposure saw ‘wellbeing’ as an optional rather than a core responsibility of a medical professional (S15, S16).

Ethics concepts and perceptions of how art engagement fits into ethical medical practice

Our questions around what students valued in art-making were designed to enable reflection on values in medicine, and on the possible role of art making in relation to cultivating ethical practice. Our data suggests that this is a potentially rich line of exploration in medical education but requires more scaffolding. The interview question ‘It's been said that ethical practice requires imagination and sensitivity to be done well. What do you think about this statement?’ was largely met with confusion, followed by a recital of the formal ethics principles learnt in medical school (patient autonomy, do no harm, benevolence). Most students thus saw ethical medical practice as following formal principles, while imagination, creativity and sensitivity were situated outside of the ethics framework as something optional one may or may not choose to integrate into one’s medical practice.

S6: “I don’t feel there’s much room for imagination because essentially there’s not that much leeway in deciding what’s right and wrong… if you can use imagination to create a situation that’s beneficial for more parties then that’s good, But I don’t think that’s necessarily changing what is right and wrong”

Students who regarded art engagement as enjoyable and useful for stress relief but not necessarily as a conduit for becoming a better medical professional, were ambivalent regarding the value of practicing one’s creativity for developing ethical sensitivity. Students who regarded art engagement as useful for medical practice however saw sensitivity and imagination as core elements of ethical medical practice. Several students regarded art engagement as a transformative medium to expand one’s ethical awareness:

S10: "Everything is individualised. So it’s all well and good to have procedures and protocols and all of that in place, but sometimes they don't fit. So I think there needs to be flexibility… And I think art does contribute to that because the thing with art is, in my perspective anyway, creativity, that sort of stuff, which plays into problem solving and flexibility and getting around things…. And I think art is – or people who have that sort of background are quite good […] to practice ethically means … you're practicing to try and put the patient's best interests at mind but for that second point I guess provides you with the opportunity to broaden what could be in the patient's best interest. So it’s not so much imagination but sort of in the sense that it broadens what's fact in your mind and that's what I tend to sort of think of it as a bit […] ethic like actual ethic debates and things like that which might make it interesting and also push people's thoughts […] (art engagement) opens up your mind to how people think and why people think the way they think and just gives you those extra tools. And that just broadens that aspect in terms of dealing with different people”

Social signal value of the art sessions’ location

The remoteness of the town of Broken Hill, its friendly and relaxed community, and the fact that professional artists facilitated the sessions provided a special and unique framing to the ENRICH art program. This was appreciated by
all participating students and appeared to have enabled most of them to approach the sessions open-mindedly and with curiosity. The unique framing seemed to be particularly helpful for students without prior self-initiated art experience. It seemed to help them set aside or lower their scepticism towards engaging in an activity that was, at least initially, regarded as unrelated or irrelevant to the medical program.

Matching comments made by participating artists in a related study, (Bennett and Hooker, 2018) students emphasised the impact of going to separate, art-dedicated spaces, some of which were of social significance in Broken Hill. Students were moved from their ‘normal’ learning space, to an art-making environment. It gave them an opportunity to leave their logic-based learning behind for a while, and experiment with a creative learning approach. Allowing access to public spaces and private businesses for these art sessions also indicated the value the Broken Hill community placed on art-making and medical students’ learning.

Discussion

The goal of this study was to collect preliminary data on medical students’ perspectives of participating in creative art workshops within an innovative medical training program, and if and how art-making experience influenced students’ perceptions of wellbeing, ethics and professionalism in medicine. While most students valued art engagement as a source of stress relief from medicine and an opportunity to ‘be themselves’, our data also suggests that incorporating art-making into medical education has a potential to cultivate values-based practice and expand students' concepts of ethics in medicine and thus their professional identity (Jones, Kittendorf and Kumagai, 2017). Of benefit was also the setting of the ENRICH program in the resource-limited rural town of Broken Hill which enabled students to enmesh their developing professional identity with the location's social value and community contribution (also observed by participating artists) (Bennett and Hooker, 2018). Complemented by the fact that the art sessions were facilitated by professional artists in dedicated community-based art spaces, this frame blended students’ result-oriented expectations with an understanding that outcomes needed to be defined broadly including attributes such as open mindedness, lateral or creative thinking, and ethical sensitivity.

The experiential nature of the ENRICH art activities challenged students. Participants unsurprisingly varied in their ability and willingness to be engaged in the reflective parts: students with prior art-making experience showed a tendency to hold a broader self-awareness of themselves and their art making than those without prior exposure to art activities. Interestingly, several students who had previously engaged in self-initiated art activities suggested that there was value in continuing and expanding the ENRICH art program into the future and for all medical students as a pathway to learning and personal development in medical school/practice. It is also important to note that students varied in their assessment of the value of art making; the valuable aspects of the experience may vary substantially, from experiencing vulnerability for some to simply providing a break from medical study for others.

Our findings correlate with existing research which has shown that creative activity is related to emotional intelligence (Geher, Betancourt and Jewell, 2017) and critical engagement with ethical issues, (Bierly, Kolodinsky and Charette, 2008) and that it can foster self-awareness, professional identity and empathic understanding in relation to one’s role and relationships as a health professional (Perry et al., 2011; Potash et al., 2014; Cox, Brett-MacLean and Courneya, 2015; Kinsella and Bidinosti, 2016; Potash, Chen and Tsang, 2016; Jones, Kittendorf and Kumagai, 2017; Shapiro et al., 2018). Art-making has a potential to complement normative and philosophically-based ethics teaching in medicine, providing more capacity to encourage the critical thinking and emotional self-awareness needed for ethical medical practice (MacNeill, 2014). Our sample also showed how much an art making program would need to be carefully designed, facilitated, and suitably contextualised to make it meaningful for students and meet those learning objectives.
Drawing on claims that creativity is foundational to health for all people, (Schmid, 2005; Perruzza and Kinsella, 2010; Wilson et al., 2016) we have grounds to suggest that medical students can and should be supported to access creative art programs. Programs that enable students to experience a collaborative art-making process with patients, which could allow students to directly observe instrumental benefits for these patients (Czamanski-Cohen, 2012), offering the opportunity both for reflexivity and to extend students’ repertoire for providing patient-centred care.

Conclusion

Active art-making is a largely untapped resource in medical education. It overlaps with, but also extends beyond more traditional medical humanities’ educational materials by focusing on the process of actively creating something (Michael, 2006; Varpio, Grassau and Hall, 2017). In that, it has the potential to mitigate or prevent burnout and increase students’ wellbeing, (Kinsella Frost, 2019) and cultivate different skill sets such as creative problem solving, empathy, professionalism and professional identity. Art-making exceeds the objective of improving student empathic common to many medical humanities programs. It may be directed explicitly towards the active practice of self-care. It can also provide opportunities for modelling professionalism (including vulnerability) and for offering emotional care to students.

LIMITATIONS/ FURTHER RESEARCH

Our findings are based on a small sample size. Expanded research using a larger cohort of medical students is needed, as is study of art making across a diversity of learning contexts. Considering that this study identified differences between students with and without private art experience, further studies would also benefit from a) gathering more in-depth information around participants’ previous private art experiences in relation to their perceptions of art sessions and of their effects on qualities of medical professionalism such as critical thinking and ethical sensitivity. Further research would also benefit from investigating whether different art modalities may shape students’ perspectives in different ways, e.g. poetry vs. life drawing vs. photography.

Take Home Messages

- Students with past self-initiated art-making experience valued art engagement as a source of stress release from medicine and an opportunity to retain prior identity. They also showed a tendency to hold a broader awareness around self-identity and art as a means to develop their professionalism as future medical professionals.
- Incorporating art-making into medical education has a potential to cultivate their empathy, professionalism, and professional identity.
- The involvement of professional artists and dedicated art spaces added to the impact of the art-making experience on participating students.

Notes On Contributors

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**Bibliography/References**

Acai, A., McQueen, S., Fahim, C., Wagner, N., *et al.* (2016) 'It's not the form; it's the process': a phenomenological study on the use of creative professional development workshops to improve teamwork and communication skills', *Medical Humanities*, 42(3), pp. 173-180. [https://doi.org/10.1136/medhum-2015-010862](https://doi.org/10.1136/medhum-2015-010862)

Aung, S. (2010) "White coat, warm heART''', *Canadian Medical Association Journal*, 182(12), pp. E586-E588. [https://doi.org/10.1503/cmaj.100905](https://doi.org/10.1503/cmaj.100905)

Bardes, C. L., Gillers, D. and Herman, A. E. (2001) 'Learning to look: developing clinical observational skills at an art museum', *Medical Education*, 35(12), pp. 1157-1161. [https://doi.org/10.1046/j.1365-2923.2001.01088.x](https://doi.org/10.1046/j.1365-2923.2001.01088.x)

Bennett, P. W. and Hooker, C. (2018) 'What artists value when providing workshops for clinical students in a regional training setting: A qualitative study', *Journal of Applied Arts & Health*, 9(3), pp. 319-335. [https://doi.org/10.1386/jaah.9.3.319_1](https://doi.org/10.1386/jaah.9.3.319_1)

Bierly, P., Kolodinsky, R. and Charette, B. (2008) 'Understanding the Complex Relationship Between Creativity and Ethical Ideologies', *Journal of Business Ethics*, 86(1), pp. 101-112. [https://doi.org/10.1007/s10551-008-9837-6](https://doi.org/10.1007/s10551-008-9837-6)

Bleakley, A. (2011) 'Professing medical identities in the liquid world of teams', *Medical Education*, 45(12), pp. 1171-1173. [https://doi.org/10.1111/j.1365-2923.2011.04147.x](https://doi.org/10.1111/j.1365-2923.2011.04147.x)

Bolaki, S. (2016) *Illness as Many Narratives: Arts, Medicine and Culture*. Edinburgh University Press.

Braverman, I. M. (2011) 'To see or not to see: how visual training can improve observational skills’, *Clinics in Dermatology*, 29(3), pp. 343-6. [https://doi.org/10.1016/j.clindermatol.2010.08.001](https://doi.org/10.1016/j.clindermatol.2010.08.001)

Brett-MacLean, P. (2007) 'Use of the Arts in Medical and Health Professional Education', *MUSA*, 4(1), pp. 26-29.

Brodzinski, E. and Munt, D. (2009) 'Examining Creativity in Health and Care', *Health Care Analysis*, 17(4), pp. 277-284. [https://doi.org/10.1007/s10728-009-0128-x](https://doi.org/10.1007/s10728-009-0128-x)

Charmaz, K. (2006) *Constructing grounded theory: a practical guide through qualitative analysis*. California: Sage: Thousand Oaks.

Charon, R. (2016.) *The Principles and Practice of Narrative Medicine*. 6 edn. New York: Oxford University Press.

Chiavaroli, N., Huang, C.-D. and Monrouxe, L. (2018) *Learning medicine with, from, and through the humanities in*
Cox, S., Brett-MacLean, P. and Courneya, C. (2015) "’My turbinado sugar’: Art-making, well-being and professional identity in medical education’, Arts & Health, 8(1), pp. 65-81. https://doi.org/10.1080/17533015.2015.1037318

Czamanski-Cohen, J. (2012) 'The Use of Art in the Medical Decision-Making Process of Oncology Patients’, Art Therapy, 29(2), pp. 60-67. https://doi.org/10.1080/07421656.2012.680049

Dalton, J., Ivory, K., Macneill, P., Nash, L., et al. (2020) 'Verbatim Theater: Prompting Reflection and Discussion about Healthcare Culture as a Means of Promoting Culture Change', Teaching and Learning in Medicine, 32(5), pp. 531-540. https://doi.org/10.1080/10401334.2020.1768099

Delhousie University Medical Humanities Program (2017) Delhousie University Medical Humanities Program - Music. Available at: https://medicine.dal.ca/departments/core-units/DME/medical-humanities/about/areas-of-study/music.html (Accessed: 08 September 2020).

Geher, G., Betancourt, K. and Jewell, O. (2017) 'The Link between Emotional Intelligence and Creativity', Imagination, Cognition and Personality, 37(1), pp. 5-22. https://doi.org/10.1177/0276236617710029

Jones, E. K., Kittendorf, A. L. and Kumagai, A. K. (2017) 'Creative art and medical student development: a qualitative study’, Medical Education, 51(2), pp. 174-183. https://doi.org/10.1111/medu.13140

Katz, J. T. and Khoshbin, S. (2014) 'Can visual arts training improve physician performance?', Transactions of the American Clinical and Climatological Association, 125, pp. 331-342. https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4112699/

Kinsella, E. A. and Bidinosti, S. (2016) ‘I now have a visual image in my mind and it is something I will never forget’: an analysis of an arts-informed approach to health professions ethics education’, Advances in Health Sciences Education, 21(2), pp. 303-322. https://doi.org/10.1007/s10459-015-9628-7

Kinsella Frost, C. (2019) 'Art in debrief: a small-scale three-step narrative inquiry into the use of art to facilitate emotional debriefing for undergraduate nurses', Journal of Research in Nursing, 24(3-4), pp. 197-209. https://doi.org/10.1177/1744987118812539

LaCombe, M. and Elpern, D. (2010) Osler's Bedside Library: Great Writers who Inspired a Great Physician. American College of Physicians.

Lyle, D., Morris, J., Garne, D., Jones, D., et al. (2006) 'Value adding through regional coordination of rural placements for all health disciplines: The Broken Hill experience', Australian Journal of Rural Health, 14(6), pp. 244-248. https://doi.org/10.1111/j.1440-1584.2006.00841.x

MacNeill, P. (2014) Ethics and the Arts. Dordrecht: Springer Netherlands.

McLean, C. L. (ed.) (2014) Creative Arts in Humane Medicine. Alberta: Brush Education Inc.

Michael, J. (2006) 'Where’s the evidence that active learning works?’, American Journal of Physiology: Advances in Physiology Education, 30(4), pp. 159-167. https://doi.org/10.1152/advan.00053.2006

Moore, M., Bolte, K. and Bennett, P. (2012) 'Innovative training for rural medical students', The Clinical Teacher,
Mukunda, N., Moghbeli, N., Rizzo, A., Niepold, S., et al. (2019) 'Visual art instruction in medical education: a narrative review', Medical Education Online, 24(1). https://doi.org/10.1080/10872981.2018.1558657

Panda, S. (2006) 'Medicine: Science or Art?', Mens Sana Monographs, 4(1), pp. 127-138. https://doi.org/10.4103/0973-1229.27610

Perruzza, N. and Kinsella, E. (2010) 'Creative Arts Occupations in Therapeutic Practice: A Review of the Literature', The British Journal of Occupational Therapy, 73(6), pp. 261-268. https://doi.org/10.4276/030802210X12759925468943

Perry, M., Maffulli, N., Willson, S. and Morrissey, D. (2011) 'The effectiveness of arts-based interventions in medical education: a literature review', Medical Education, 45(2), pp. 141-148. https://doi.org/10.1111/j.1365-2923.2010.03848.x

Potash, J. S., Chen, J. Y., Lam, C. L. and Chau, V. T. (2014) 'Art-making in a family medicine clerkship: How does it affect medical student empathy?', BMC Medical Education, 14(1). https://doi.org/10.1186/s12909-014-0247-4

Potash, J. S., Chen, J. Y. and Tsang, J. (2016) 'Medical student mandala making for holistic well-being', Medical Humanities, 42(1), pp. 17-25. https://doi.org/10.1136/medhum-2015-010717

Schaff, P. B., Isken, S. and Tager, R. M. (2011) 'From Contemporary Art to Core Clinical Skills: Observation, Interpretation, and Meaning-Making in a Complex Environment', Academic Medicine, 86(10), pp. 1272-1276. https://doi.org/10.1097/ACM.0b013e31822c161d

Schmid, T. (2005) Promoting health through creativity: for professionals in health, arts and education. London: Whurr Publishers.

Scott, K. M., Berlec, S., Nash, L., Hooker, C., et al. (2017) 'Grace Under Pressure: a drama-based approach to tackling mistreatment of medical students', Medical Humanities, 43(1), pp. 68-70. https://doi.org/10.1136/medhum-2016-011031

Shapiro, J., Morrison, E. and Boker, J. (2004) 'Teaching Empathy to First Year Medical Students: Evaluation of an Elective Literature and Medicine Course', Education for Health (Abingdon, England), 17, pp. 73-84. https://doi.org/10.1080/13576280310001656196

Shapiro, J., Youm, J., Heare, M., Hurria, A., et al. (2018) 'Medical Students' Efforts to Integrate and/or Reclaim Authentic Identity: Insights from a Mask-Making Exercise', Journal of Medical Humanities, 39(4), pp. 483-501. https://doi.org/10.1007/s10912-018-9534-0

Varpio, L., Grassau, P. and Hall, P. (2017) 'Looking and listening for learning in arts- and humanities-based creations', Medical Education, 51(2), pp. 136-145. https://doi.org/10.1111/medu.13125

Watson, K. (2011) 'Perspective: Serious Play: Teaching Medical Skills With Improvisational Theater Techniques', Academic Medicine, 86(10), pp. 1260-1265. https://doi.org/10.1097/ACM.0b013e31822cf858

Wilson, C., Bungay, H., Munn-Giddings, C. and Boyce, M. (2016) 'Healthcare professionals’ perceptions of the value and impact of the arts in healthcare settings: A critical review of the literature', International Journal of Nursing Studies, 56, pp. 90-101. https://doi.org/10.1016/j.ijnurstu.2015.11.003
Appendices

None.

Declarations

The author has declared that there are no conflicts of interest.

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Ethics Statement

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