Janaki Medical College Journal of Medical Sciences (2024); Vol.12 (3):94-107

JMCJMS

Review Article

The influence of the arts and the humanities on 'personal skills' among medical students and doctors: a scoping review

Pathiyil Ravi Shankar*

Author's Affiliations

*IMU Centre for Education, IMU University
Kuala Lumpur, Malaysia.

Correspondence to:
Prof. Dr. Pathiyil Ravi Shankar
IMU University, Bukit Jalil
Kuala Lumpur
Email: ravi.dr.shankar@gmail.com

ABSTRACT

Medical humanities programs are offered at several medical schools. Workshops and sessions on the arts are also offered. The author examined studies from the literature to evaluate the evidence for the influence of the medical humanities on ambiguity and uncertainty, communication skills, empathy, observation skills, resilience and self-care either alone or in combination. Original research studies published between January 2000 to June 2024 in English language among premedical, medical students (preclinical and clinical), interns and residents were examined. PubMed and the Google Scholar databases were searched using the key words 'Empathy', 'Tolerance of ambiguity', 'Wellbeing', 'Uncertainty', 'Observation skills', 'Resilience and self-care', 'Communication skills', 'Medical humanities' and 'Health humanities'. The abstract of the retrieved articles was carefully read through to examine if they explored the impact of the humanities module on one or more of the characteristics mentioned either quantitatively and/or qualitatively. If the abstract was deemed suitable to the study, the full text of the article was obtained and carefully read through. Duplicates were removed manually. A total of 52 articles were included. Twenty-seven studies (51.9%) focused on empathy either alone or with other characteristics and 25 studies described interventions among basic science medical students. More studies were quantitative, and 30 studies (57.7%) were from the United States. Most measured the studied parameters before and after the intervention using a validated checklist. The evidence for influence is strong for empathy and visual observation skills. There is also moderate evidence for resilience and well-being. The arts and the humanities can create 'better' doctors. More studies from developing countries are required.

Key words: Art, empathy, humanities, medical schools, medical students, resilience, well-being

INTRODUCTION

Medical humanities (MH) and health humanities (HH) programs are being offered at several medical schools globally. The first department of medical humanities was established in the Hershey Medical Centre at Pennsylvania State University in the United States (US) in 1967 [1]. Programs are now offered in several countries. In addition to complete formal programs and modules, workshops on the arts and sessions incorporating these are offered at some institutions. Studies on how the humanities affect medical professionals' "personal skills" are examined in this scoping review. Managing emotions, developing trust with various stakeholders, effective communication, inspiring and influencing others, understanding diverse cultures and incorporating them into management and communication, leading others, and creating and maintaining teams were some of the "personal skills" mentioned in the literature [2].

For medical professionals and students, tolerance for ambiguity (TFA) is a crucial competency that affects both their ethical behaviour and patient care [3]. Physicians with lower TFA may be uncomfortable interacting with and avoid certain types of patients like those who use substances, the poor and the underserved [4]. Patients regarded communication skills as a top priority among the professional attributes of medical doctors [5]. Communication skills may greatly affect the provision of care by primary care doctors.

The Society for General Internal Medicine in the US defines empathy as 'the act of correctly acknowledging the emotional state of another without experiencing that state oneself' [6]. Physicians and other healthcare professionals (HCPs) can better comprehend a patient's experience, problems, and viewpoints by practicing empathy. Competence in clinical skills enables a doctor to practice safely and effectively and to prioritize student acquisition of these skills teachers should emphasize observation, practice, feedback and more practice [7]. Physicians and medical students should place a high priority on personal self-care and stress the importance of a healthy diet, enough sleep, and frequent exercise. Resilience can be strengthened through having strong social ties at work and at home. A positive mentorship and role model system can increase job happiness.

The influence of MH/HH on some of these characteristics alone have been studied. A comprehensive review of these characteristics of a 'good doctor' has not been undertaken. Hence this coping review was carried out. In this scoping review the influence of the medical humanities on ambiguity and uncertainty, communication skills, empathy, observation skills, resilience and self-care either alone or in combination was studied. The study population includes premedical. medical students (preclinical and clinical), interns and residents.

MATERIALS AND METHODS

Databases and search strategy: This review adhered to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines [8] in conjunction with the PRISMA Extension for Scoping Reviews (PRISMA-ScR) [9]. The reporting of this review according to PRISMA-ScR is shown as an appendix. The author searched the PubMed and the Google Scholar databases using the key words 'Empathy', 'Tolerance of

ambiguity', 'Wellbeing', 'Uncertainty', 'Observation skills', 'Resilience and self-care', 'Communication skills', 'Medical humanities' and 'Health humanities'. Only original research studies among premedical, medical students, interns and residents were included. The abstract of retrieved articles was carefully read through to examine if they explored the impact of the humanities module on one or more of the mentioned characteristics either quantitatively or qualitatively.

If the abstract was deemed suitable to the study, the full text of the article was obtained and carefully read through. Duplicates were removed manually. If the full text described the impact of a MH/HH module or activity like narrative writing, theatre, arts workshop and others on the studied characteristics then these studies were included. Quantitative, qualitative and mixed-method studies were included. Review articles were not formally analysed but were included in the study description, introduction and discussion.

Inclusion criteria: Original research studies published between January 2000 to June 2024 in English language among the study population were included. This provided a period of 25 years which may be sufficient to include important studies in this area.

Exclusion criteria: Studies published in languages other than English were excluded. Studies among populations other than the study population, studies published before January 2000 and review articles and other types of articles were excluded. The reference lists of the articles were examined to search for other articles on these topics. A process like that described was followed for these articles also.

Data inclusion: A data extraction sheet was prepared with the characteristics including the name of the study, number of authors, year of publication, name of the journal, whether the educational sessions/module were offered at a single institution or multiple institutions, country, type of participants, parameters described, details of the educational intervention, type of study, the instruments used for measurement in the study and a short summary of the findings. The search was carried during the period from 15th July to 20th August 2024.

The most recent search was conducted on 20th August. Figure 1 shows the data charting process for the review. The country, type of study, parameters studied, methods used in the intervention, year of publication and the type of participants were tabulated. Table 1 highlights the characteristics of the included studies. The number and frequency of the included characteristics were noted.

RESULTS

A total of 52 studies were included in this review. Thirty studies (57.7%) were from the United States, 4 (7.7%) were from Nepal and 3 each (5.8%) were from Iran and Canada. Twenty-six (50%) employed a quantitative methodology, 18 (34.6%) used the visual arts as an intervention while 12 (23.1%) employed a MH module utilizing different teaching-learning strategies. Thirty-four studies (65.4%) were published after 2014, and 25 studies (48.1%) were among basic science medical students. Table 1 shows the details of the included studies. The areas that were studied are shown below.

Fig: 1 Data charting process for the scoping review

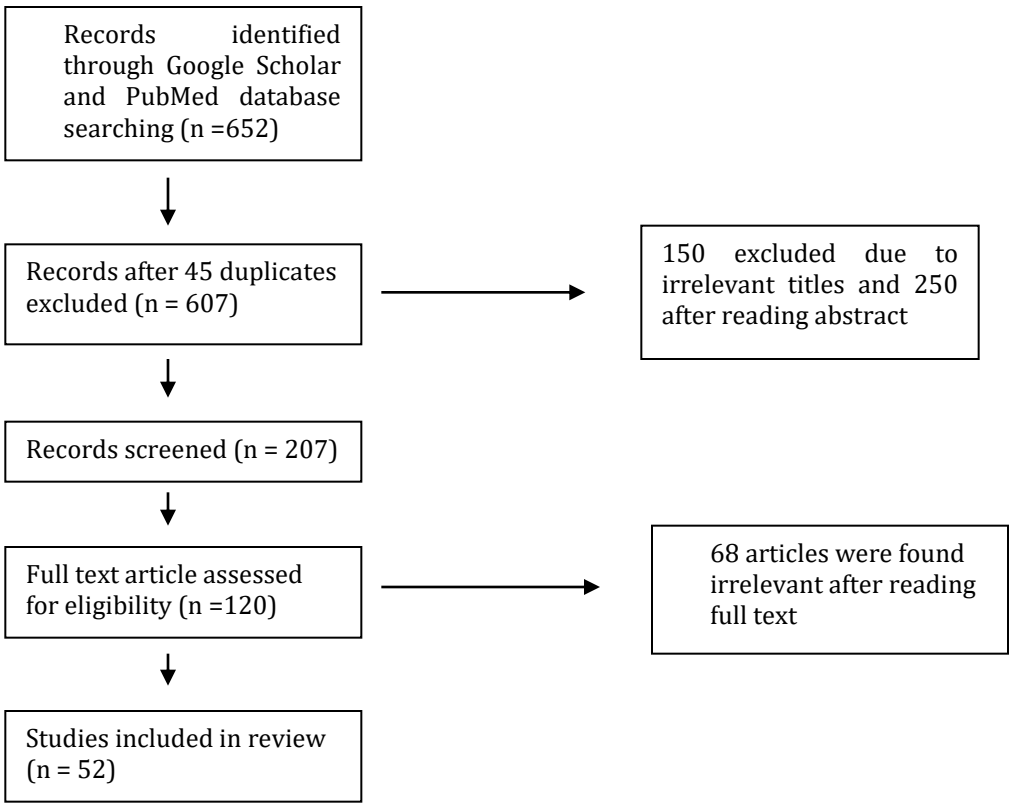

Table 1: Characteristics of the studies included in the review

Country studied	Characteristic studied	Qualitative /quantitative	Arts /humanities method used	Published before or after 2014	Respondents involved
United States 30 Nepal 4 Taiwan 2 Hong Kong 1 Iran 3 Multinational 1 Israel 2 Singapore 2 Japan 1 Canada 3 Korea 1 UK 2 Turkey 1	Uncertainty, tolerance for ambiguity 5 Communication skills 7 Empathy 27 Recognition of bias 2 Observation 11 History taking skills 2 Resilience 8 Professional image 4 Well-being 8 Activism 1 Reflective capacity 1 Insight 1	Quantitative 26 Mixed 12 Qualitative 14	Engagement with visual art 18 Music 2 MH module (multiple methods) 12 Forum theatre Arts making workshop 2 Service-learning projects 1 Small group sessions 1 Poetry and prose 2 Human kindness curriculum Theater 5 Animated comics 1 Film 1 Population health course 1 Narratives 3 Dance 2 Art therapy 1 Creative writing 1 Opera 1 Retreat 1 Other 1	After 2014 33 2014 or before 19	Clinical 16 Basic Science 25 Multiple groups 5 Residents 6 Prospective medical students 1 Interns 4 Physicians/graduates 6 Nursing students 1 Physician assistant students 1 Nurses 1 Others 1 Junior doctors 2

The total may be greater than 52 as multiple parameters may have been investigated in a single study

The Excel file with an overview of the included studies is available at https://figshare.com/s/195bac3da690aa9979e4

Ambiguity and uncertainty: A study evaluated a visual arts course using reflection to address uncertainty [10]. An elective course conducted at art museums for first year medical students significantly improved their reflective capacity.

Communication skills: Communication between the physician and the patient cannot always be scripted and are often improvisational. In the US, jazz was used to teach improvisational communication skills to senior medical students [11].

Empathy: Empathy in residents and medical students has been the subject of numerous studies. A medical school in Nepal completed a curriculum on medical humanities for its first-year medical students. The scores on the Jefferson Scale of Empathy student version increased significantly after the module [12]. Forum theatre promotes audience participation and explores different ways of dealing with a particular problem. In Taiwan, the empathy of medical, nursing and social work students was measured before and after attending a forum theatre session [13]. The scores only increased among first-year students. During their family medicine clerkship, third-year medical students at the University of Hong Kong were randomized to take part in an art-making or problem-solving session [14]. Over time, the empathy levels decreased in both groups; however, the arts workshop group had higher alterations when considering the impact of emotions on medical decision making. Their self-awareness increased, and they recognized the influence of emotions on medical decisions.
The interpersonal reactivity index was used to gauge empathy before and after a medical humanities module at a medical college in Nepal [15]. The first-year students who participated in the study saw an increase in perspective taking, or cognitive empathy, as a result of the program. Medical students at Tehran University of Medical Sciences had their developmental aspects of empathy examined; those who finished the required courses on empathy scored higher [16]. In a medical college in India, four workshops utilizing interactive lectures, creative arts, role-plays and literature were offered to ophthalmology residents [17]. The residents demonstrated enhanced knowledge, abilities, and attitudes related to empathy. In the US, selecting and participating in service-learning projects during a MH course was associated with an increase in empathy and compassion, increased reflective capacity and ability to mitigate biases [18]. In a medical school in Israel empathy was studied among three consecutive batches of medical students who differed in their selection process and in MH exposure [19]. During the fourth year there was a decline in empathy among male students but not among females. Female students who participated in an extended MH programs showed higher empathy scores.

In Singapore, a pilot humanities program HAPPE was used to teach empathy to junior doctors in a palliative care setting [20]. There was an increase in empathy scores among the junior doctors who participated, and the program was regarded as feasible and effective. In the US, discussions on empathy and respondents' comprehension of the applicability of medical humanities were conducted after reading poetry and prose

about patients and clinicians [21]. The MH attitudes and empathy both significantly improved. Additionally, participants had a more sophisticated and in-depth comprehension of the viewpoint of the patient. A long-term study was carried out in Japan to investigate if the Humattitude Care Methodology can help medical students develop and maintain empathy [22].

In the US, a human kindness curriculum was offered during the first two years of medical school to students [23]. There was a significant increase is empathy scores post-course and the curriculum was evaluated positively by the students. Medical students at the University of Ottawa in Canada devised the theatre in community health project as a performance and interactive activity with residents in long-term care [24]. Students' empathy and communication toward the target audience improved. At a US medical school, first-year students were offered a chance to participate in a 4-week elective led by arts educators featuring visualization exercises, and bias and perspective were discussed while interpreting art [25]. Empathic communication, observation skills, perspective taking, and recognition of bias improved. In Taiwan, a visual arts program did not significantly increase empathy among medical students [26].

In a Canadian medical school diabetes management was depicted using two animated comic strips and these were used among students. Students provided written reflections on the strips and participated in a focus group discussion [27]. Baseline mean empathy scores increased after viewing the comics and focus groups participation. The comics highlighted the patient perspective. At a US medical school, mandatory, longitudinal "Humanism and Professionalism" (H&P) component was incorporated in student clerkships, that included blogging, discussing journal articles, film and fiction and debriefing [28]. The usual reduction in empathy during the third year was absent and students who were members of the Gold Humanism Honor Society differed significantly in their empathy scores from their peers. A 15-hour course was piloted to teach empathy to interprofessional students using improvisational theatre technics and the interventional group reported improved mean scores on several items and students mentioned the course positively influenced their relationships with students from other professions and strengthened their ability to think on their feet [29].

First-year students enrolled in a two-semester population health course had their social empathy index measured at the start and finish of the course. Along with doing a reflective writing task, students' ratings on social empathy tended to rise [30]. Personal illness narratives provided a medium for students to talk about their personal illness experiences while listening to their classmates' stories [31]. Students opined that the exercise, although emotionally challenging, was worthwhile. At the US Virginia Commonwealth University, 14 Internal Medicine residents completed six hours of instruction in classrooms and workshops with professors of theatre and demonstrated significant improvement in different empathy subscores [32].

Observation skills: A study examined whether medical students' ability to make visual diagnoses may be enhanced by studying and looking at paintings [33]. When compared to the control group, the art observation students' observational skills

improved dramatically. Preclinical students were given the opportunity to take a course called "Training the eye: improving the art of physical diagnosis," which improved their capacity to accurately observe both physical findings and works of art [34]. The effects of first-year medical students attending visual thinking strategies (VTS) seminars were investigated in a pre-post experimental investigation [35]. The amount of time spent examining the photos, the vocabulary used to describe them, and the quantity of observations that were clinically significant all increased with VTS training.

Medical students should be able to present an accurate medical history and artists from the Guthrie Centre taught the skills of telling a story to medical students using writing, movement, acting exercises and improvisation [36]. All seven students who participated agreed that theatrical technics were effective. The parallels and discrepancies between clinical and art-based methods for instructing students in pattern detection and observation was examined [37]. The arts promoted the development of emotional understanding, empathy, and knowledge of various viewpoints, while the clinical method proved especially successful in imparting abilities related to pattern identification.

A visual arts exercise enhanced students' clinical diagnosis observational skills in a US medical school [38]. Students stated that their skills and mindfulness had improved. Using VTS, medical and nursing students at the University of Texas in San Antonio were taught visual observation skills [39]. Students' observations about art, the terminology they used to describe it, and the amount of time they spent looking at pictures all increased dramatically. Among women, the increase was more notable. Additionally, communication skills and ambiguity tolerance improved. Thirty-six first-year medical students from the United States were randomly assigned to an art observation group and a control group at a medical college in Philadelphia. The art observation group received instruction from professional art educators who were employed by the Philadelphia Museum of Art [40]. Students' visual observation abilities in ophthalmology were enhanced by art observation. The development of clinical observation abilities required both art observation and clinical preceptorship. The course, "The art of observation," was an elective taken by second-year medical students that had a favourable impact on these skills [41]. A recent review does point out that there is a lack of hard data demonstrating how visual arts improve diagnostic abilities [42]. The author points out that giving students access to a variety of medical case studies and relevant information can help them advance their diagnostic abilities. This may stimulate the ability to identify minute variations between the cases. The function of the visual arts at various stages of medical education was reviewed [43]. The evaluation endorsed the use of visual arts to enhance clinical quality, but it also noted that further research was needed to determine the precise impact of visual arts on clinical outcomes.

Resilience and self-care: Different stressors contribute to burnout at both the undergraduate and postgraduate levels. Schools and programs have begun to explore and offer resilience-based interventions. Emergency physicians were recruited to participate in emotion-focused art therapy in three university hospitals in South Korea

[44]. The intervention significantly improved participants resilience and self-image. In a US medical school, 394 medical students participated in sessions to promote well-being focused on areas like maintaining sensitivity to patients and finding balance [45]. According to the students the program supported introspection and resulted in less tiredness, and greater connection with each other. A medical school at Philadelphia in the US partnered with the Philadelphia Museum of Art to create the Fostering Resilience through Art in Medical Education (FRAME) workshop for senior residents in internal medicine [46]. The workshop was favourably received, and participants reported lower emotional exhaustion and depersonalization.

The COVID-19 pandemic increased levels of burnout among HCPs. A 12-week trial of arts therapies was conducted, and participants felt the program created a sense of community and supported resilience and healing [47]. A variety of factors contributed to the success of the intervention including the diversity of the participants, the sessions being conducted in a physically separate location from their workplace, the skills of the facilitators, working together on a project and the creative activity pushing the learners out of the comfort zone. An elective on opera and medicine was developed and piloted at a US medical school among preclinical students with the objective to foster reflective capacity and formation of professional identity [48]. The course was well received and promoted professional identity formation among the participants. In Canada, the impact of a theatre module on medical student well-being was studied [49]. The module was fun and relaxing, enhanced their mutual relationships and contributed to their personal growth and resilience.

Multiple student characteristics: The American Medical Student Association developed the "Humanistic Elective in alternative medicine, Activism and Reflective Transformation (HEART)" as an option for fourth-year medical students. Among the topics discussed were humanism in medicine, self-care, complementary and alternative medicine, activism, communication, and community development [50]. Participants learnt valuable lessons and advanced both professionally and personally from the elective. It was investigated if junior physicians participating in a palliative care rotation in Singapore would accept an elective focussing on art [51]. The participants perception of the program was mixed and though they completed it service and manpower needs may affect program acceptability. In Iran the use of classical western paintings, and contemporary Persian paintings was compared with Safavid era miniatures [52]. Miniature paintings can have similar effects to classical paintings in improving professional skills like accuracy and attention, teamwork and cooperation, and improved sensitivity. In Iran the impact of a narrative medicine program on medical students' empathy and reflective capacity was examined [53]. The mean empathy and reflection scores of the experimental group increased significantly following the program while that of the control group did not.

According to a multi-institutional survey conducted in the United States, exposure to the humanities was negatively correlated with burnout and favourably correlated with empathy, wisdom, self-efficacy, tolerance of ambiguity, and spatial skills [54]. During their first clinical year, students at the University College London medical school could

participate in the "Medicine in the Community" program [55]. Students in the intervention group were exposed to the medical humanities in the afternoon, and their resilience and empathy scores were greater than those of the control group. VTS offers a fresh viewpoint on art, and research has been done on how this affects ambiguity tolerance and how it might be related to empathy [56]. The authors mention that VTS may offer a pathway to improve tolerance of ambiguity that is less influenced by character traits. At a US medical school improvisational theatre technics were used to teach students communication, professionalism and other skills through 'medical improv.' [57]. The response of the students was positive. In Turkey, a special study module 'Medicine and art history' was offered and students considered art as a valuable tool to learn medicine [58]. Students observational and communication skills improved significantly. In the United Kingdom, a single day program exploring perception, communication, emotion and narrative was offered to students [59].

In the US, the elective "The Healer's Art" established a safe space for students to learn about the values at play and the significance of their job while also fostering a community of inquiry into the basic and humanistic facets of professions [60]. As part of their humanistic curriculum, US internal medicine residents gather at the Boston Museum of Fine Arts for an evening of community building and reflection [61]. Respondents mentioned that program helped them to strengthen their commitment to family and friends, motivated them to reflect daily, and to connect more with patients.

Studies on medium- and long-term impact: Studies on the medium- and long-term effects of MH are scarcer. According to respondents, a medical humanities module enhanced their capacity to communicate concepts to patients in plain English and enhanced their teamwork abilities by offering a fresh viewpoint on medical education in a qualitative study conducted in Nepal [62]. In the United States, a scholarly master's program focused on biomedical ethics and medical humanities strengthened students' knowledge and abilities in clinical ethics; fortified their self-care and reflection practices; advanced their sense of professional identity and integrity, particularly when faced with morally difficult situations; and enhanced their productivity [63].

An online poll given to alumni of a first-year college course that included a medical humanities component revealed that respondents felt the program improved their capacity for teamwork, communication, leadership, and clinical observation. They also become more adept at empathizing with patients [64]. The responders suggested that the curriculum be introduced in both undergraduate and postgraduate medical education, as it greatly aided in their development.

DISCUSSION

The influence of the health humanities on different areas based on the studies mentioned above is discussed. I also add my personal perspectives on the impact and the challenges in different areas.

Ambiguity and uncertainty: Elective course enhanced students' observational skills, they became aware of the subjectivity and

uncertainty associated with perception, were able to accept multiple viewpoints and their self-care abilities were also strengthened [10]. Visual arts are especially useful in introducing students to the concept of ambiguity and uncertainty. My colleagues and I have used abstract paintings that could be interpreted by students in different ways. Online copies of paintings are easily available on the internet and with an LCD projector introducing them during group work is easy.

Communication skills: A variety of methods including HH have been used to strengthen communication among students. In the US, a study found compared to the control group adaptability and listening skills improved significantly among students exposed to jazz. Students mentioned that jazz improved creativity and engagement [11]. We have found using group activities and role-plays improves communication skills. Students learn to cooperate and work together in teams and role-plays helps them strengthen their communication in different situations. There could be challenges in introducing these in HH courses and the large class size may require multiple facilitators. Interprofessional teams consisting of different groups of students can be considered. Interprofessional learning may be a challenge as this is still uncommon. My colleagues and I had facilitated IPL during our HH sessions in the Caribbean among medical and nursing students but the interaction between the two groups was less.

Empathy: The evidence for empathy is the strongest among the different characteristics. Empathy before and after sessions was measured using different validated questionnaires. We had also noted an increase in empathy in Nepal following a MH module. An increase in empathy has been shown in a variety of settings. Medium and long-term effects on empathy have to be studied as most reports were before and immediately after a module. Once a HH module is initiated its effect on empathy (pre-post) can be studied using different questionnaires. Studying the medium- and long-term effects can be more challenging.

Observation skills: The visual arts increase observation skills among students. This has been widely studied in the US. My colleagues and I have widely used paintings and the visual arts in the MH/HH modules but the impact on observation skills was not studied. Paintings and other visual arts can be easily obtained from the internet and used for educational purposes. Studying the impact on observation may be more challenging.

Resilience and self-care: The evidence for the impact of HH on resilience and self-care is moderately strong. We have not studied the impact of the modules we facilitated on resilience and self-care, but students mentioned that the modules had succeeded in creating a safe space and a zone of self-expression. The impact of HH on self-care and resilience among students in developing nations can be studied. There are questionnaires to study these though they may need to be customized to the study locations. Studies on the impact of MH/HH on multiple student characteristics have been conducted. Positive impact has been noted. Studies on medium and long-term impact are scarcer and most studies have examined the immediate and short-term impact.

Most of the studies were conducted in the United States among preclinical students. Clinical students were the second most studied group. Most studies were on empathy

and measured empathy before and after the intervention using a validated instrument. The evidence that empathy can be improved through the arts is strong and available from a variety of settings. Visual thinking strategies and observation skills were also commonly studied. The evidence that the arts, especially VTS can improve observation skills is also strong. The number of published studies for some of the parameters was low. Most studies were restricted to a single institution and while more studies were published after 2014 there were also a substantial number published between 2000 to 2014. A variety of educational interventions were employed. Thus, arts can create 'better doctors' with the evidence being stronger for some of the parameters compared to others.

Limitations: Only two databases were searched. Only English language articles were included. Studies on communication skills and on professionalism using methods other than the arts and the humanities were excluded. Only studies measuring the impact of the educational intervention on the studied characteristics using either quantitative, qualitative or mixed methods approach were included. A single author conducted the search, selected the articles to be included and wrote the manuscript. Most studies measured the impact of the educational intervention on the selected parameters short-term either immediately or a few days after the intervention.

CONCLUSIONS

Based on the results and strength of evidence the arts and humanities can create better doctors. The evidence is strong for empathy and visual observation skills. There is also moderate evidence for resilience and well-being. The number of studies and evidence for tolerance of ambiguity, and other characteristics was less. Medical humanities should be strengthened in developing nations. More interventions and studies from developing countries are needed. Developing instruments to study these parameters in the context of developing nations should be prioritized.

ACKNOWLEDGEMENT: The author acknowledges all students who had participated in the HH modules he had facilitated.

Conflict of interest: The author has no conflict of interest to declare.

Source of support: None

Author's contribution: conceived the idea, reviewed the literature, analyzed the studies, wrote the manuscript and revised it critically for intellectual content-**PRS**

REFERENCES

1. Dolan B. One hundred years of medical humanities: a thematic overview. Humanitas: Readings in the development of the medical humanities 2015: 1-30.
2. Fisher E. What practitioners consider to be the skills and behaviours of an effective people project manager. International journal of project management 2011; 29(8):994-1002.
3. Geller G, Grbic D, Andolsek KM, Caulfield M, Roskovensky L. Tolerance for ambiguity among medical students: patterns of change during medical school and their implications for professional development. Acad Med 2021; 96(7):1036-1042.
4. Wayne S, Dellmore D, Serna L, Jerabek R, Timm C, Kalishman S. The association between intolerance of ambiguity and decline in medical students' attitudes toward the underserved. Acad Med 2011; 86:877–82.
5. Sari MI, Prabandari YS, Claramita M. Physicians' professionalism at primary care facilities from patients' perspective: the importance of doctors' communication skills. J Family Med Prim Care 2016; 5(1):56-60.

6. Markakis K, Frankel R, Beckman H, Suchman A. Teaching Empathy: It can be Done Working Paper. 1999 San Francisco, CA, USA The Annual Meeting of the Society of General Internal Medicine
7. Dhaliwal U, Supe A, Gupta P, Singh T. Producing competent doctors—the art and science of teaching clinical skills. Indian Pediatr 2017; 54:403-9.
8. Page MJ, McKenzie JE, Bossuyt PM et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. BMJ 2021;372.
9. Tricco AC, Lillie E, Zarin W et al. PRISMA extension for scoping reviews (PRISMA-ScR): checklist and explanation. Ann Intern Med 2018; 169(7):467-73.
10. 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(11S):S8-13.
11. Haidet P, Jarecke J, Yang C, Teal CR, Street Jr RL, Stuckey H. Using jazz as a metaphor to teach improvisational communication skills. Healthcare 2017; 5 (3):41.
12. GC KB, Arjyal A, Douglas AH, Subedi M, Gongal R. A quantitative evaluation of empathy using JSE-S Tool, before and after a Medical Humanities Module, amongst first-year medical students in Nepal. BMC Med Educ 2022; 22(1):159.
13. Voo PY, Lue KH, Tsai MC, Yen WJ, Kuo TA, Sun HL. Application of Forum Theatre in Medical Humanities Education: Focusing on Empathy-A Pilot Study. J Med Educ 2020; 24(3):151-60.
14. Potash JS, Chen JY, Lam CL, Chau VT. Art-making in a family medicine clerkship: how does it affect medical student empathy? BMC Med Educ 2014; 14:1-9.
15. Shankar PR, Piryani RM. Changes in empathy among first year medical students before and after a medical humanities module. Education in Medicine Journal 2013; 5(1).
16. Hizomi Arani R, Naji Z, Moradi A, Shariat SV, Mirzamohamadi S, Salamati P. Comparison of empathy with patients between first-year and last-year medical students of Tehran University of Medical Sciences. BMC Med Educ 2021; 21:1-7.
17. Bhagat PR, Trivedi KY, Prajapati KM et al. Nurturing Empathy through Arts, Literature, and Role Play for Postgraduate Trainees of Ophthalmology. Int J Appl Basic Med Res 2024; 14(1):42-7.
18. 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.
19. Lwow M, Canetti L, Muszkat M. Gender differences in the effect of medical humanities program on medical students' empathy: a prospective longitudinal study. BMC Med Educ 2020; 20:1-9.
20. Ong EK. HAPPE—A pilot programme using humanities to teach junior doctors empathy in a palliative medicine posting. The Asia Pacific Scholar 2021; 6(1):83.
21. Shapiro J, Morrison EH, Boker JR. Teaching empathy to first year medical students: evaluation of an elective literature and medicine course. Educ Health 2004; 17(1):73-84.
22. Fukuyasu Y, Kataoka HU, Honda M, Iwase T, Ogawa H, Sato M, et al. Watanabe M, Fujii C, Wada J, DeSantis J, Hojat M. The effect of Humanitude care methodology on improving empathy: a six-year longitudinal study of medical students in Japan. BMC Med Educ 2021; 21(1):316.
23. Shapiro J, Youm J, Kheriaty A, Pham T, Chen Y, Clayma R. The human kindness curriculum: an innovative preclinical initiative to highlight kindness and empathy in medicine. Educ Health 2019; 32(2):53-61.
24. Jay M, Hashmi SS, Fraccaro LJ, Bhatt C, Gill S, Khater S, et al. Medical Students using Theatre to Engage Seniors in Long-Term Care Facilities: Fostering Empathy Through a Humanities Pilot Project. Journal for Learning through the Arts 2021; 17(1).
25. Rezaei S, Childress A, Kaul B, Rosales KM, Newell A, Rose S. Using visual arts education and reflective practice to increase empathy and perspective taking in medical students. MedEdPortal2023; 19:11346.
26. Yang KT, Yang JH. A study of the effect of a visual arts-based program on the scores of Jefferson scale for physician empathy. BMC Med Educ 2013; 13:1-5.
27. Tsao P, Yu CH. "There's no billing code for empathy"-Animated comics remind medical students of empathy: a qualitative study. BMC Med Educ 2016; 16:1-8.
28. Rosenthal S, Howard B, Schlussel YR et al. Humanism at heart: preserving empathy in third-year medical students. Acad Med 2011; 86(3):350-8.
29. Zelenski AB, Saldivar N, Park LS, Schoenleber V, Osman F, Kraemer S. Interprofessional improv: Using theater techniques to teach health professions students empathy in teams. Acad Med 2020; 95(8):1210-4.
30. Wellbery C, Saunders PA, Kureshi S, Visconti A. Medical students' empathy for vulnerable groups: results from a survey and reflective writing assignment. Acad Med 2017; 92(12):1709-14.
31. DasGupta S, Charon R. Personal illness narratives: using reflective writing to teach empathy. Acad Med 2004; 79(4):351-6.
32. Dow AW, Leong D, Anderson A, Wenzel RP, VCU Theater-Medicine Team. Using theater to teach clinical empathy: a pilot study. J Gen Intern Med 2007; 22:1114-8.

33. Dolev J, Braverman I. Enhancing medical observational skills through fine art: a randomized controlled study. https://elischolar.library.yale.edu/cgi/viewcontent.cgi?article=2525&context=ymtdl
34. Naghshineh S, Hafler JP, Miller AR et al. Formal art observation training improves medical students' visual diagnostic skills. J Gen Intern Med 2008; 23:991-7.
35. Agarwal GG, McNulty M, Santiago KM, Torrents H, Caban-Martinez AJ. Impact of visual thinking strategies (VTS) on the analysis of clinical images: a pre-post study of VTS in first-year medical students. J Med Humanit 2020; 41:561-72.
36. Hammer RR, Rian JD, Gregory JK et al. Telling the patient's story: using theatre training to improve case presentation skills. Med Humanit 2011; 37(1):18-22.
37. 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.
38. Jasani SK, Saks NS. Utilizing visual art to enhance the clinical observation skills of medical students. Med Teach 2013; 35(7):e1327-31.
39. 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.
40. Gurwin J, Revere KE, Niepold S et al. A randomized controlled study of art observation training to improve medical student ophthalmology skills. Ophthalmology 2018; 125(1):8-14.
41. 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.
42. Matsumoto K. Appreciating visual arts may not foster medical diagnosis skills. F1000Res 2023; 12:79.
43. Gelgoot E, Caufield-Noll C, Chisolm M. Using the visual arts to teach clinical excellence. MedEdPublish 2018; 7.
44. Eo SK, Kim C, Park KH, Eo EK. The effectiveness of emotion-focused art therapy on the resilience and self-image of emergency physicians. World J Emerg Med 2022; 13(6):479.
45. Patel V, Brackman S, Shafi U, Causey A, Melnik Allen L, Dittmar A, et al. Overview of an emergent, arts-based resiliency curriculum to mitigate medical trainee burnout. Arts Health 2021; 13(1):98-106.
46. Orr AR, Moghbeli N, Swain A et al. The fostering resilience through art in medical education (FRAME) workshop: a partnership with the Philadelphia Museum of art. Adv Med Educ Pract 2019: 361-9.
47. Torres KA, Glaros C, Henry M, Reed K, Moss M, Tietbohl C. Creative arts intervention to reduce burnout and decrease psychological distress in healthcare professionals: a qualitative analysis. Arts Psychother 2023; 83:102021.
48. Levin SR, Cai F, Noronha N, Wald HS, Daniel MM. Diseases, doctors, and divas: cultivating reflective capacity in preclinical medical students through a critical examination of opera. Journal for Learning through the Arts 2017; 13(1).
49. Nagji A, Brett-MacLean P, Breault L. Exploring the benefits of an optional theatre module on medical student well-being. Teach Learn Med 2013; 25(3):201-6.
50. Dossett ML, Kohatsu W, Nunley W, Mehta D, Davis RB, Phillips RS, et al. A medical student elective promoting humanism, communication skills, complementary and alternative medicine and physician self-care: an evaluation of the HEART program. Explore 2013; 9(5):292-8.
51. Ong EK, Tan UT, Chiam M, Sim WS. The employment of art therapy to develop empathy and foster wellbeing for junior doctors in a palliative medicine rotation-a qualitative exploratory study on acceptability. BMC Palliat Care 2024; 23(1):84.
52. Abedi F, Charkhi R, Fakhr F, Vagharseyyedin SA, Farrokhfall K. Comparison of the effectiveness of visual thinking strategy between Persian miniature and classical painting in learning medical humanities from the perspective of medical students. Modern Care Journal 2022; 19(2).
53. Daryazadeh S, Adibi P, Yamani N, Mollabashi R. Impact of a narrative medicine program on reflective capacity and empathy of medical students in Iran. J Educ Eval Health Prof 2020; 17.
54. Mangione S, Chakraborti C, Staltari G et al. Medical students' exposure to the humanities correlates with positive personal qualities and reduced burnout: a multi-institutional US survey. J Gen Int Med 2018; 33:628-34.
55. Schamroth A, Berman H, Spencer N. Can medical humanities impart empathy and resilience skills to medical students? MedEdPublish 2020; 9.
56. Bentwich ME, Gilbey P. More than visual literacy: art and the enhancement of tolerance for ambiguity and empathy. BMC Med Educ 2017; 17:1-9.
57. Watson K. Perspective: serious play: teaching medical skills with improvisational theater techniques. Acad Med 2011; 86(10):1260-5.
58. Elbe H, Gümüş E, Koçak EN, Çetinavcı D, Yücel A. Art-Based Special Study Module: Improving Visual Thinking and Communication Skills of Medical Students. Tıp Eğitimi Dünyası 2023; 22(67):15-28.
59. Edmonds K, Hammond MF. How can visual arts help doctors develop medical insight? International Journal of Art & Design Education 2012; 31(1):78-89.

60. Rabow MW, Wrubel J, Remen RN. Authentic community as an educational strategy for advancing professionalism: a national evaluation of the Healer's Art course. J Gen Int Med 2007; 22:1422-8.
61. Gooding HC, Quinn M, Martin B, Charrow A, Katz JT. Fostering humanism in medicine through art and reflection. J Mus Edu 2016; 41(2):123-30.
62. Shankar PR, Palaian S, Gyawali S. Perceived Medium-Term Influence of a Medical Humanities Module on Medical Students and Faculties: A Qualitative Study. Journal of Datta Meghe Institute of Medical Sciences University 2022; 17(2):358-63.
63. Liu EY, Batten JN, Merrell SB, Shafer A. The long-term impact of a comprehensive scholarly concentration program in biomedical ethics and medical humanities. BMC Med Educ 2018; 18:1-10.
64. Shankar PR, Dhakal AK, Piryani RM, Shrestha D, Dwa YP. Influence of Sparshanam, a Medical Humanities Module on Personal and Professional Development among the First Batch of Medical Graduates in Lalitpur, Nepal: A Cross-Sectional Study. JBPKIHS 2022; 5(1):57-62.