The effectiveness of arts-based interventions in medical education: a literature review

Mark Perry,[1] Nicola Maffulli,[1] Suzy Willson,[2] & Dylan Morrissey[1]

CONTEXT Arts-based interventions, which aim to foster understanding of the patient's perspective and to enhance communication skills, have been part of the medical curriculum for several years. This review aims to evaluate the available evidence base for their effectiveness and to suggest the nature of future work.

METHODS The MEDLINE, Google Scholar and ISI Web of Knowledge databases were searched for published articles on studies that have attempted to evaluate the efficacy of an arts-based approach in undergraduate medical education. Further articles were identified through cross-referencing, discussion with colleagues and hand-searching key journals. One mixed, 10 qualitative and four quantitative studies were reviewed.

RESULTS Some studies claim that arts-based interventions are effective in altering attitudes, but poor descriptions of methodology and results make it difficult to judge these claims. No studies consider the effects on behaviour. The evidence base for using arts-based interventions to foster diagnostic observation skills is stronger. However, their effect on other clinical skills has not been studied.

CONCLUSIONS There is a need for further studies to produce a rigorous evaluation of arts-based interventions in terms of their effects on attitudes, behaviour and technical skills other than those involved in observation.

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[1]Centre for Sports and Exercise Medicine, Mile End Hospital, Queen Mary University of London, London, UK
[2]Performing Medicine Project, Clod Ensemble, London, UK

Correspondence: Dr Mark Perry, Centre for Sports and Exercise Medicine, Mile End Hospital, Queen Mary University of London, Bancroft Road, London E1 4DG, UK. Tel: 00 44 020 8223 8528; Fax: 00 44 020 8223 8930; E-mail: mark.perry@thpct.nhs.uk

INTRODUCTION

The doctor's ultimate responsibility is for patient care. Good and effective care extends far beyond diagnosis and the prescription of appropriate management, requiring interaction that is understanding, respectful and comprehensible.[1–3] In fact, it may be difficult to obtain a reliable diagnosis and to ensure treatment compliance without first gaining the patient's trust and cooperation.[4] However, undergraduate medical education has been accused of failing to nurture the skills and attitudes necessary to do this.[5]

The need for medical students to develop human interaction skills has been discussed for over 50 years.[6] Medical humanities departments were established in some medical schools in the USA during the 1990s.[7–10] A selection of British medical schools have followed suit,[11–13] particularly in response to the General Medical Council document *Tomorrow's Doctors*, which advocated special study modules designed for personal development.[14]

The assumption underlying the use of the arts in medical education appears to be that the arts can assist in the development of the student as a communicative doctor through two main theoretical mechanisms. Firstly, study of the arts can directly provide students with a 'simulation' of the wider experience of life necessary for mature interaction with other human beings, which might otherwise be unavailable to them.[14,15] The reading of novels and poetry, for example, can provide a highly focused source of wisdom and insight into human experience and emotion.[4,16,17] Similarly, watching the performing arts can be used to provide similar insights, often intensified by the actors' physical and emotional interpretation. Matharu[17] has described how four examples of indigenous Australian drama can provide essential insight into the medical attitudes and needs of indigenous Australians. This mechanism is one whereby the student is exposed to the art form as an observer.

Secondly, direct participation in the artistic process may help students to explore their own feelings, question them, and develop new ways of thinking.[10,14] Crucially, it should assist students to empathise, an ability which is essential for the development of a solid relationship between doctor and patient. For example, the experience of participating in the performing arts may help students to generate and experience novel emotions, such as those caused by bereavement or exposure to prejudice. Participation in the performing arts may also promote self-confidence,[3] which is an essential foundation for an effective interaction with patients.

Both mechanisms are possibly of equal validity, although experiential methods have been suggested as more amenable to the fostering of an emotional connection.[10] However, very few studies have attempted to provide good evidence of the actual effectiveness of the observational type of intervention in developing human skills, and none have rigorously investigated experiential methods. In part, this lack of research may stem from a belief that a scientific evaluation of effectiveness cannot be applied to arts-related educational methods.[18] Although it is true that the nature of art itself may transcend any attempt to objectify or measure it, this does not imply that the effects of arts training on attitudes and behaviour cannot be measured effectively. In addition, the assumption that the scientific process only encompasses quantitative methods may lead to the conclusion that science is inadequate to assess the potential humanistic benefits of the arts. There has, therefore, been a certain stasis in undertaking scientific evaluations. Fortunately, good unbiased evidence does not have to be quantitative, and good evaluations of arts-based approaches in medicine, therefore, should include both quantitative and qualitative methods.

Exposure to the arts has been used to try to improve technical skills such as diagnostic observation skills. Because of the quantitative nature of such outcomes, and the consequently greater confidence of researchers in dealing with such data, the evidence base for this is stronger.

The following review aims to critically analyse current evidence of the effectiveness of arts-based interventions in influencing student attitudes, behaviour and technical skills. It also aims to uncover gaps in knowledge and understanding, and highlight any limitations of previous work. In this way, future evaluations that are methodologically sound and that focus on cogent areas may be developed. Suggestions for the format of future interventions are presented based on the literature review.

METHODS

The literature was initially searched on ISI Web of Knowledge using the search terms '(art or humanities or drama or performing or literature or drawing or painting) AND (medical education or medical

curriculum)'. After limiting the search to English-language research articles in the fields of education and health care and sciences, this yielded 5348 articles. This was a deliberate attempt to perform a high-sensitivity search in order to maximise yield.

The inclusion criterion required that material must represent an attempt to evaluate the efficacy of an arts-based approach in undergraduate medical education using formal research methods. Any articles offering solely opinion or commentary were excluded. The titles were scanned for relevance and most did not meet the inclusion criterion. Forty-two articles were viewed as abstracts and 13 were deemed relevant. Full versions of these 13 articles were obtained and included in the review.

A similar search, limited to English-language articles on humans, was carried out on Ovid MEDLINE, and yielded 1025 articles. Their titles were scanned and five relevant articles were identified, but these had already been found in the previous search.

One further article was gained through scanning the reference lists of the retrieved articles and an unpublished study was provided by a colleague (de la Croix *et al.* 'Performing medicine – a qualitative analysis of students' experiences 2006–2009'; a report commissioned by the Clod Ensemble, 2009 [www.performingmedicine.com]). The journals *Academic Medicine*, *Medical Humanities* and *Medical Teacher*, identified as those containing most of the articles, were searched using the term 'art', but this yielded no further relevant articles. Thus, we had identified a total of 15 articles. Inclusion and exclusion criteria based on methodological quality were not applied because of the low number of relevant articles. All screening was carried out by the primary author (MP) and checked with DM. A third author was available to resolve any disagreements, but none arose.

RESULTS

All the studies reviewed suggested that arts interventions can have positive effects on either attitudes[4,10,11,13,19–25] or diagnostic observation skills[25–28] (Table S1). However, the quality of this evidence varied widely and many different forms of evaluation and arts-based intervention were used. The validity of the evidence will now be discussed, with studies grouped according to the arts approach used. Validity was assessed by consideration of the interventions and outcomes used.

DISCUSSION

Mixed arts interventions

One of the earliest studies involved the use of a mixed music and drama intervention.[19] Thirty-five medical students were passive observers at a performance consisting of different pieces of music expressing grief, followed by an excerpt from a film, *The Loved One*, which satirises the way grief is commercially exploited. Twenty-nine of the students then filled in a written questionnaire; their responses demonstrated a positive attitude towards the event. However, no information suggesting that they had acquired any greater understanding of grief was reported. As the questions on the survey were not reported, it is not clear whether this truly reflected a failure to achieve such an outcome, or whether it was merely the result of the questions used.

Kirklin *et al.*[4] described an arts study module designed to help students understand the impact of cancer on patients and their relatives. Poetry, prose, film, fine art and performing arts aimed at increasing such understanding were provided to 22 medical students. It was unclear whether the students were exposed to these art forms as an audience or were active participants. Evaluation of effectiveness was partially conducted through individual qualitative interviews with students. These generated evidence that most students had found the course useful, but there was insufficient information and analysis in the article to judge whether the students had found it to increase their understanding of living with cancer. Despite these limitations, the authors claimed that the experience would allow students to be more humanistic doctors.

Shapiro and Rucker[10] described how the Arts in Medicine programme at their medical school utilised the study and performance of literature, visual and performing arts, plays, music and dance, but did not report on this use in detail. These authors stated that their research demonstrated improvements in student understanding of the patient's perspective, but, as they gave no details of this research, it is not possible to judge the validity of this claim.

Lazarus and Rosslyn[20] evaluated a one-semester Arts in Medicine module at Leicester Warwick Medical School, which included seminars on poetry, fine art and drama. They used a Likert-style questionnaire to assess the effects of the module in terms of developing understanding of 'patients and doctors', and on

the relevance of the arts to medical practice and knowledge. Responses from the 22 students completing the module suggested that the module may have developed students' understanding of the doctor–patient relationship, but the questions were too superficial to give real insight into the effects of the arts on ability to practise medicine effectively. A qualitative technique may have yielded richer and more useful responses.

Overall, the quality of the studies concerning mixed arts interventions precludes any firm conclusions on their efficacy. In particular, none of these studies gave sufficient details of the evaluation or analysis methods used, and therefore any evaluation of validity is difficult. Furthermore, results were described in terms that are too vague to permit useful conclusions.

Literature-based interventions

Jacobsen *et al.*[13] described their institution's Literature and Medicine special study module. The module consisted of 9 full study weeks including literature seminars, tutorials and the preparation of assessed essays, aimed at increasing student understanding of the illness experience, highlighting lay perceptions of medicine, and helping students to see how they are viewed by others. These authors first evaluated their course in 2000, using a 1-hour focus group meeting involving all participating students and staff both before and after the course. In the pre-course meeting, the group wishes for the course included the desire for it to assist them to see issues from another perspective and to accept the feelings of others. The post-course meeting showed that this and other wishes had been met. A second evaluation in 2002 used a nominal group technique to assess student feelings in a single 1-hour session involving all students and staff. This showed, amongst other findings, that students felt that the module had helped them to 'experience' illness situations that would otherwise have not been available to them. These evaluations do lend support to evidence of the ability of a literature module to change attitudes, but knock-on effects on behaviour were not addressed.

Lewis and Grant[11] evaluated a 'day of suffering' involving the exposure of 20 medical students to literature documenting differing aspects of suffering. A nominal group technique was used to evaluate the effectiveness of the session. This showed that students felt that the intervention had helped them to reflect on the value of medicine, that it highlighted ways of alleviating suffering, encouraged lateral thinking and was relevant to clinical work. Interestingly, an enhanced ability to understand the suffering of others was not cited as a positive perceived outcome, which would perhaps have been expected if the aims of the session had been truly met.

Lancaster *et al.*[21] evaluated a 4-week literature course covering themes relevant to medicine, such as death and dying, and disability. Five Year 4 medical students opted for the course, the success of which was evaluated by the nominal group technique. The students reported that the most important outcomes were their increased understanding of the patient's perspective, greater ability to recognise the 'hidden subtext' in a patient's communication, recognition of the patient as an individual, and reduced assumptions about patient feelings and motivations.

Taking these findings at face value, literature-based approaches do appear to have positive effects on student attitudes. However, the sole use of group analysis methods in these studies[11,13,21] may have led to bias resulting from dominant group member attitudes. In addition, the effects on behaviour were not addressed.

Performing arts-based interventions

Rosenbaum *et al.*[22] prepared a short dramatisation entitled 'In their own words', which was created from written accounts of professional authors' illness experiences. The piece was performed as a reading by a selection of Year 1 medical students at the University of Iowa, with the rest of the year group forming the audience. The responses of the 413 participating students were collected through written answers to open-ended questions relating to learning about the experience of a patient and steps that could be taken to improve patients' experiences. A rigorous thematic analysis showed five main themes of emerging awareness: ill health causes emotional reactions which should be responded to as much as the physical aspects of illness; patients desire to be listened to; the verbal and non-verbal communications of health care providers can have powerful effects on patients; patients want to be treated as humans rather than collections of symptoms, and disorders and information that may be considered as inconsequential by clinicians may be of significance for patients. Although these group insights were more a matter of realisation than a statement of any change in attitude, attitudinal effects can be assumed to a certain extent. The main limitation of this well-conducted study concerned its ambiguity about the

nature of the respondents as it was unclear whether respondents included the performing students in addition to those observing. It is likely that those performing would have gained greater insights through their active engagement with the material.

Shapiro and Hunt[23] evaluated the effects of two separate dramatisations of illness experience on 150 medical students and other medical personnel. Evaluation was principally conducted using a short Likert-style questionnaire given to all attendees. Written evaluation showed that the drama had improved understanding of the experience of the depicted diseases and had augmented empathic feelings. However, response rates were fairly low, at 36.4% and 58.8% of the student audience for the two performances. It is possible that this may have led to a biased result as the non-responders may have felt differently.

In 'Performing medicine – a qualitative analysis of students' experiences 2006–2009', an unpublished report commissioned by the UK-based theatre and performance company, Clod Ensemble, de la Croix *et al.* reported a qualitative analysis of students' experiences after a performing arts-based intervention at Barts and The London School of Medicine and Dentistry, London. Students provided written reflections on their experiences of the intervention in response to open questions. After thematic analysis, it appeared that students felt the sessions had increased their self-confidence and enhanced their verbal communication strategies, understanding of the patient's perspective, understanding of issues such as diversity, and awareness of how they appeared physically to others and the effect this might have.

Another study assessed the effects of a performing arts-based intervention on 1401 medical students.[24] Performances of the Pulitzer prize-winning play *Wit*, which dramatises a terminally ill patient's experience of medical care from diagnosis to death, were played to medical students in colleges throughout the USA between 2000 and 2002. Performances were followed by discussion in small groups and sometimes by talks by people with terminal illness. A previously piloted, written, post-performance survey comprising items to be answered on a 5-point Likert scale was used to assess the impact of the intervention. The vast majority of students reported having been emotionally affected and most also reported that reflection on the issues of death, diagnosis and prognosis disclosure, and physical and spiritual pain, had been prompted. The main limitations of this study involved its sole use of quantitative methods, which may have failed to gather information on relevant issues not covered by the fixed questions.

Performing arts-based interventions may therefore have some effect on developing positive attitudes, but more studies, with more rigorous and appropriate methods, are required to support this impression. Such studies should also address effects on behaviour.

Visual arts-based interventions

Bardes *et al.*[26] showed that medical students exposed to three sessions of art workshops at a museum showed improvements from a pre-test to post-test in the precision of their written observations of photographs of people's faces and had greater ability to infer emotions from observations. The art workshops consisted of the observation and discussion of painted portraits, as well as the application of these skills to photographs of faces. The main limitation of this study was its lack of a control group; it could be argued that the practice of looking at photographs in the pre-test and as part of the intervention was at least as important as any effects derived from the art itself.

Dolev *et al.*[27] investigated the use of fine art in improving the visual diagnostic skills of medical students. Ninety medical students at Yale University School of Medicine were randomised to a control group, a lecture group and a fine art intervention group. The control group received standard clinical tutorials involving subjective and objective patient assessment skills; the lecture group attended lectures involving radiographic images of that week's anatomy course content, and the intervention group participants each studied a painting for 10 minutes before describing it in detail to four peers. These intervention sessions were moderated by the curator of the Yale Centre for British Art, who attempted to elicit detailed descriptions. It was unclear whether students attended one or more sessions. Evaluation was conducted using a pre- and post-intervention design. All students were asked to describe a photograph of someone with a medical disorder in as detailed a manner as possible in 3 minutes and were graded quantitatively depending on the number of features recorded. To avoid learning effects, the students studied different pictures in each of the pre- and post-tests. The order was randomly decided and all students viewed the same two pictures. Pre-test scores did not differ between groups, but post-test scores were significantly higher for the fine art intervention group. A repeat of this evaluation with 86 different students the following year obtained similar results.

Naghshineh *et al.*[28] compared the observation skills of 59 medical students divided into an art-based intervention group and an inert control group. The intervention consisted of eight 2.5-hour sessions involving observation and discussion of fine art, followed by a lecture drawing attention to the links between art and clinical observation. A pre-post design was used, in which all students sat a 1-hour written visual skills examination assessing the accuracy and number of clinical image observations. The intervention group had a far greater pre- to post-test change in observational accuracy than the controls, and demonstrated a dose–response relationship between number of sessions attended and improvement. A qualitative content analysis of student impressions of the images in the examination was also carried out: the intervention group showed more evidence of skills pertaining to paying attention to negative findings, the speculative thinking necessary for developing differential diagnoses, and the making of diagnoses based on pertinent visual evidence.

In a very well designed and described qualitative study of 38 medical students, Shapiro *et al.*[25] compared the effects on observation and pattern recognition skills of a standard 'clinical photographs and cases' (CPC) intervention with those of a fine art-based intervention. Each group attended three 2-hour sessions over 6 months. The art sessions were built around the concept of 'deep seeing', whereby students were encouraged to look beyond the surface and to try to derive deeper meanings. The art sessions were supplemented by dance sessions as it was hypothesised that dance would add spatial and temporal aspects to the art experience, which might therefore lead to an enhanced effect. A rigorous qualitative content analysis was performed, using data derived from student interviews, student written feedback and instructor debriefings. Triangulation of these data from more than one source helped to pinpoint key themes. The CPC approach appeared to lead to a better appreciation of pattern recognition, which was presumed to have resulted from the closer similarity between the CPC patterns and the clinical patterns the students were used to. However, the art sessions appeared to generate skills that were beyond the original expectations of the study. There appeared to be benefits in terms of recognising and understanding the more complex and subtle patterns relating to human experience and emotion. This intervention therefore seemed to be effective in making students more aware of the patient as a person rather than as a collection of symptoms. Other qualities fostered by the art intervention were awareness of multiple perspectives, appreciation of subtle body language cues, and scepticism about initial impressions.

This review demonstrates a relatively high-quality evidence base for the use of the visual arts as an adjunct to improving clinical observation skills. However, there is probably a need to evaluate the use of visual arts, and other art forms, in developing other technical clinical skills.

CONCLUSIONS

Although there are intriguing suggestions that arts-based approaches may help to foster positive attitudes towards patients in medical students, the evidence base for this is relatively weak and is certainly less convincing than that for suggestions that arts-based approaches can improve observation skills. Most studies concerning human skills failed to describe their methods adequately and all of them limited their evaluation to the students' own opinions of attitude change. The problem with wholly relying on such opinions is that a changed attitude will not necessarily translate into better patient care unless subsequent changes in behaviour also occur, and an assumption that changed attitudes will inevitably lead to changed behaviours may not be correct.[29,30] Hence, the assessment of changes in behaviour is also important. Therefore, there is a need for further studies to evaluate arts-based interventions in terms of their effects on both attitudes and behaviour.

The ideal study should have the following characteristics. Firstly, it should be a multicentre study, covering more than one medical school, to maximise external validity. Secondly, both qualitative and quantitative methods should be used as information derived from each is equally important but distinct. Thirdly, it should clearly describe the intervention and evaluation methods used. Naturally, ethical clearance, institutional support and student (user) involvement should also be considered.

The evaluation of single arts-based interventions may be preferable to that of mixed approaches at present in order to establish the relative efficacies of the distinct arts genres. The intervention assessed should be one that can be feasibly included into the existing medical curriculum and expertly provided by available staff. For example, a fully functioning 'Performing Medicine' department already exists at Barts and The London Medical School, and so the experiential performing arts would be a natural choice of art form

for our group. However, approaches based on other art forms would need to be evaluated elsewhere.

Attitude changes arising from such interventions should be assessed by a mixture of validated qualitative methods, such as semi-structured interviews, written reflections and focus groups.[31] Behavioural effects might be measured both qualitatively and quantitatively, ideally in a situation resembling a clinical encounter. For example, an objective structured clinical examination (OSCE)[32] in which an actor plays a patient and the student plays a doctor might be used.

Qualitative methods for assessing effects on behaviour might include interviewing the actor to assess the effects of the student's behaviour on the 'patient'. Quantitative methods to evaluate behaviour might involve the use of observation by expert observers[29] in real time or through video analysis.[33] Quantification of such observation might be effected through the observer's completion of a validated questionnaire to assess verbal or non-verbal communication skills, such as the Relational Communication Scale for Observational Measurement.[34]

To increase the internal validity of such quantitative methods, it might be useful to include a control group receiving a non-arts-based intervention aimed at improving communication skills, such as a lecture outlining the elements of good verbal and non-verbal communication. In addition, any quantitative testing should be conducted both before and after the intervention to permit adjustments for the effects of group baseline differences. The randomised allocation of participants to groups is also important to increase the probability of equivalence, with stratification for gender and any other relevant factors. It is also essential to ensure that groups are well-matched for factors relating to any OSCE, such as the clinical scenarios and actors used both pre- and post-test. Finally, to avoid contamination, it is important to recruit students who have not been exposed to any arts-based interventions previously.

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SUPPORTING INFORMATION

Additional Supporting Information may be found in the online version of this article at http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2923.2010.03848.x.

Table S1. Summary of the literature included.

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