



ORIGINAL RESEARCH PAPER

A Program to Interest Medical Students in Changhua, Taiwan in the Incorporation of Visual Arts in Medicine

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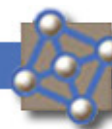
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ABSTRACT

Introduction: Visual arts have been used to facilitate the teaching of the United States Accreditation Council for Graduate Medical Education (ACGME) competencies used in some countries. Some medical students may not appreciate the usefulness of incorporating arts in medical education. Therefore, arts programs that can interest medical students are necessary. We initiated and evaluated a visual arts program at the Changhua Christian Hospital in Changhua, Taiwan, with an aim to give the students a short review of visual arts and to interest them in the incorporation of arts in medicine.

Methods: A total of 110 students in clerkship or internship participated in a visual arts program with emphasis on medicine-related visual arts. Content analysis of the data from the notes made by the instructor from direct observation of students' descriptions during discussions and the written feedback from students at the end of the program was used to evaluate the effect of the program. Anonymous questionnaires were also used for self-assessment of students.

Results: Qualitative analysis of the data revealed that the course was interesting to students. Themes emerged including its helpfulness to students in interpreting paintings, enhanced empathy, increased cultural awareness, enhanced observational skills, better team work, listening and communication skills and reduced stress. Ratings on the questionnaire showed similar results. Moreover, students had an increase in their confidence and desire to interpret paintings.



Conclusion: The structured visual arts program, with emphasis on medicine-related visual arts and other humanities subjects, was able to attract the attention of medical students. It might be helpful to improve the required skills of ACGME competencies, but further studies are needed to support these conclusions.

Keywords: ACGME-competencies, clerkship, empathy, medical humanities, Visual arts.

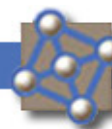
Introduction

Visual arts have been used to facilitate the teaching of the U.S. Accreditation Council for Graduate Medical Education (ACGME) competencies targeted in some other countries. Using facilitated group discussion of an art image, Reilly et al. demonstrated that an approach of visual thinking strategies appeared to increase team building as medical interns worked together, challenging each other to form a cohesive idea about the art form studied¹. Dolev and Braverman found improved visual diagnostic skills in medical students who participated in art observation workshops through systematic visual training using representational paintings². According to Shapiro et al., students can develop skills in emotional recognition and cultivate empathy in arts-based conditions³. It is suggested that seeing is defined not only as observation of physical signs and features, but also as a process of understanding the person and context³. Stress reduction for medical professionals through an arts-in-medicine program has also been demonstrated⁴. The roles of arts may be neglected by medical educators and medical students, especially in countries where arts are not traditionally recognized as having a relationship with medical practice. Some medical students may be unaware of the usefulness of incorporating arts in medical education, and may neglect to participate in arts courses and activities; therefore programs that can interest medical students are necessary. We initiated a visual arts program with three goals: to give medical students entering their clinical training in our hospital an appreciation of paintings, to help them use visual arts as a tool to develop competencies as physicians and to interest them in visual arts.

Methods

Subjects

Our hospital (Changhua Christian Hospital) is a 1,600-bed medical center located at central Taiwan and is one of the main teaching hospitals in this country. In Taiwan, most of the medical students were selected from the senior high school graduates through a national admission test or through other various application procedures. After medical students complete their four years of studies they require two years of clerkship training and one year of internship. From 2008 December to 2010 May, all 110 of the medical students (104 clerks and 6 interns; male to female ratio: 70% to 30%) in a clinical rotation at our hospital participated in the program. The clerks entered one of the three two-month rotation blocks (in May-June, September-October or November-December) in this hospital. The six interns entered a one-year rotation in the hospital during this study period. The participants were divided into small discussion groups (a total of 11 groups, each 7-12 persons) for the program. To make it easy to arrange the courses in small groups, those already in the same block rotations were allocated into one group. The visual arts program (Appreciation of Paintings) was one of several core courses required by the Education Board of the hospital for students entering the clinical rotation.



Description of the Program

For each group, students participate in the 4-hr program with a format of 'pre-lecture discussion (0.5 hr) – lecture (2.5 hr) – post-lecture discussion (0.5 hr) – summary (0.5 hr)'. Class was conducted in either a morning or an afternoon with three 10-minute intermissions. The instructor, a senior physician of the hospital and artist, who had works presented by an art gallery, developed the program. The format was defined with the experiences from two pilot courses for two other small groups of clerks prior to this study. The 4-hr schedule was found suitable to complete the planned four sessions. Several slides displayed with disease-related paintings or other art works and several topics of humanities subjects raised to be discussed were interspersed into both the lecture and summary portions of the program. Students were encouraged to discuss the works and topics from a variety of viewpoints. These two sessions comprised of lectures and group discussions.

The program was roughly subdivided into eight steps ranging from appreciation of paintings to discussion of meaning and value. The rationale was to take holistic care into consideration. Physicians must seek to understand in the context of patients' beliefs, and family and cultural values⁵. The Institute of Medicine in the U.S. addressed that personal health care should include physical, mental, emotional and social concerns⁶. The contents and effects of our program encompassed six realms of meaning: symbolics (language and types of symbolic forms), empirics (sciences of the living things and man), aesthetics (arts and literature), synnoetics (relational insight and direct awareness), ethics (obligation or awareness of relation) and synoptics (history, religion and philosophy) suggested by Phenix⁷. Phenix believed that education is to be regarded as grounded in the search for meaning. The contents of the program covered topics of meaning vertically from physical disease to religion, and horizontally from individuals to humanitarians and from visual arts to other humanities fields.

Step 1 - Discuss a patient-related painting (pre-lecture discussion)

A projected image of the oil painting 'Too Late' (1858, by Pre-Raphaelite William Windus) was used for group discussion. It depicts interaction between a broken-hearted woman dying of consumption and her errant husband returning home. Windus emphasized the illness by contrasting the pale-faced heroine in grayish-white clothes with a rosy-cheeked young woman in a rich purple dress. The details of this painting were not disclosed to the students until the post-lecture discussion. Each group of students examined the image for 10 minutes. They were encouraged to write down the details observed from the painting and then afterward, there was a discussion. During the discussion, they described what they observed, what the motif of the painting was and what interested them most in the painting.

Step 2 - Use of stories, histories and images to increase motivation

The lecture was started with a projected image (a sketch by the instructor) relating to one of the instructor's own experiences. A 20-year-old leukemic young lady who brought a large 'Hello Kitty' plush toy and was moving through the crowd in the hospital, was visiting the clinic, and trying to persuade her mother that she felt well. While the young lady was doing this, the mother was behind her with index finger on her lips to stop the doctor from telling the daughter the truth of her disease. Students were asked to interpret the drawing and learned that the breaking of bad news requires special skills and empathy. The situation reminded them of the *existence of feelings between a patient and his family* and the necessity of a holistic view of health care. A video clip 'Season of Love' from the musical 'Rent' was played. The goal was to have students realize from the lyrics 'How do you measure a year?' and 'In daylight...' to 'in five hundred twenty-five thousand- six hundred minutes', the need of always putting themselves in other's shoes. A slide of the painting 'The Four Doctors' by John Singer Sargent was displayed. It depicts the founding doctors of Johns Hopkins

Hospital. The instructor pointed out that the book in the left hand of William Welch, the first dean of Johns Hopkins University School of Medicine, was an early edition of Petrarch. It symbolized the great medical educator's interest in humanities. After students reviewed two other images of sculptures, they discussed a definition of art and visual arts ('The Thinker' by Auguste Rodin and a bronze work depicting a couple of lovers by Gustav Vigeland) and gave their opinions about what art was.

Step 3 - Learn to interpret paintings

Quick reviews of elements of visual arts (line, color, shape, form, etc...) and principles of aesthetics (repetition, gradation, rhythm and others) were made. The instructor introduced the skill of art appreciation using the four-step method (description, analysis, interpretation and judgment) in art criticism proposed by Edmund Feldman⁸. A brief history of visual arts was presented with slides of paintings being shown. The paintings were selected because they were either representative of an art group or were interesting in subject and were used to help students to learn how to read paintings. Examples were 'The Creation of Adam' by Michelangelo, 'Guernica' by Pablo Picasso and 'Et in Arcadia Ego' by Nicolas Poussin. An example of interesting subjects was Nicolas Poussin's depiction 'Man is mortal' which used a shepherd's shadow (the first image in art history) as a symbol in 'Et in Arcadia Ego'.

Step 4 - Interpret medicine-related paintings

Several disease and age-related paintings were presented and discussions were held; examples were 'The Three Ages of Woman' by Gustav Klimt, 'Sick Child' by Edward Munch and 'The Anatomy Lesson of Dr. Nicolaus Tulp' by Rembrandt. During discussions, the instructor made efforts to have the students describe the details of a painting, abstract the important information and symbols from the painting, and understand the meaning behind the painting. For instance, regarding 'The Three Ages of Woman', the students could come to a conclusion that the painter intended to describe human beings, being destined to age, disease and death after birth. The instructor reminded the students of what Martin Heidegger said: that man was a being-toward-death. The related issues of birth, aging, disease and death are what physicians are required to deal with.

Step 5 - Interpret paintings relating to human suffering and relate to humanitarianism

Slides of paintings with subjects concerning human suffering were presented including, 'The White Crucifixion' by Marc Chagall, 'Mystery and Melancholy of a Street' by Giorgio de Chirico and several others. Topics of sociological discrimination, existential isolation and suffering of innocent civilians in war were discussed while viewing the images. 'I swear to treat all my patients with the same application and commitment ... and ignoring every difference of race, religion, nationality...' in the Hippocratic Oath were quoted with mention of physicians' altruism, compassion and empathy. The group also discussed an altruistic story of the founding physician of our hospital. A quick review of humanitarianism was made with mention of several stories of notable humanitarians. The stories, with pictures of actress and humanitarian Audrey Hepburn were tremendously interesting and welcomed by the students as examples other than Albert Schweitzer.

Step 6 - Discuss related topics in the other humanities fields

Several examples with themes of other humanities fields about the human *predicament*, *ethics*, *arts and medicine* were discussed. Examples are: 'The Metamorphosis' by Franz Kafka, 'The Plague' by Albert Camus, 'A Farewell to Arms' by Ernest Hemingway and *Psalms* 103 in literature. Other examples include 'Notre Dame de Paris' by Richard Cocciante and 'Sunday in the Park with George' by Stephen Sondheim in musicals and 'Patch Adams' by Tom Shadyac and 'My Sister's Keeper' by Nick Cassavetes in films. Subjects

talking about humans' longing for meaning (examples: love in Shakespeare's '*Romeo and Juliet*' with a quotation '...heaven is here, Where Juliet lives;' and in Claude-Michel Schönberg's '*Les Misérables*' with a quotation 'Love is the foolishness of men, and the wisdom of God') were also mentioned. These were interesting to the students and were discussed to connect other humanities fields to medicine.

Step 7 - Repeat discussions on the same patient-related painting (post-lecture discussion)

The student reviews the painting 'Too Late' again. They were asked to write down the details and the motif they observed and a post-lecture discussion was held. It was expected that, with the introduction of appreciation of paintings and through discussions, the students would be able to interpret a painting more accurately, learn to listen to others' opinions and work as a team to come to a conclusion. The instructor then disclosed the motif and the unnoticed details of the painting.

Step 8 - Discuss the values and meaning with a summary made

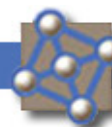
The previously discussed painting 'Too late' was originally exhibited with a quotation from Alfred Tennyson's poem 'Come Not, When I am Dead'. The poem was then read. A video of a popular Celtic song 'Danny Boy' sung by a Celtic Woman and a clip of 'Think of Me' from 'Phantom Of The Opera' by Andrew Lloyd Webber were presented to the students. They also read paragraphs of essays describing how a writer loved his deceased family member by a contemporary local essayist and a classical poet.

Different religious viewpoints between different societies were discussed. The instructor mentioned pieces with suggestions to seek or answer the meaning of life such as in literature by Victor Frankl (*Man's Search for Meaning*), Mitch Albom (*Tuesdays with Morrie*) and Cardinal Joseph Bernardin (*The Gift of Peace*) and in films such as 'A River Runs Through It' and 'Shadowlands'. A summary was made to remind the students of the importance of seeking to understand the meaning of the patients' stories, in the context of the patients' beliefs, family and cultural values, as suggested in the report by The Association of American Medical Colleges⁵.

Evaluation and Analysis

Written records of the details of the painting by the students about what they observed from the painting 'Too Late' examined twice in step one and step seven were collected for comparison. In each of the discussions on artwork or other humanities subjects in each step, the instructor made direct observation and notes on students' descriptions briefly. Qualitative data were collected from the notes made by the instructor and the written feedback from students at the end of the program; data from these two sources was used in a content analysis. With a debriefing process, we developed the coding scheme based on previous studies¹⁻⁴ and from the data collected. Precise coding rules and clear coding procedures were provided after the problems concerning the definition of the rules were discussed and resolved by three coders. We tested for inter-coder agreement (Cohen's $kappa = 0.82$), and after coding the entire data set, the consistency of the coding was rechecked (Cohen's $kappa = 0.85$).

Anonymous questionnaires with a scale of 'not at all - very much so' after the first discussion at step one (pre-lecture survey) and after the summary at step eight (post-lecture survey) were also used to evaluate the program. The questions asked are shown in Table 1. Items A1-A3 and B1-B3 were included to see if the students were more interested in reading paintings and more confident to read a painting after the program. We used the Mann-Whitney U test to test the significance of differences for the results of items such as: 'I know how to interpret paintings' between the pre-lecture and post-lecture surveys. Items (B4-B8) including, 'The program is helpful to improve skills in observation' were used for self-assessments of the impact of the program in the post-lecture



survey only. These items were used for self-assessment of the possible effectiveness of visual arts to some of the skills in ACGME competencies¹⁻³ and stress reduction reported in the previous studies⁴. There was a multiple-choice question asking; 'Who is eligible to be the instructor for such a visual arts program?' in the post-lecture survey.

The Institutional Review Board of the hospital approved the study.

Table 1: Items asked in questionnaires and results for pre-lecture and post-lecture surveys

Survey question	N	Adjective										Mean±sd		
		Scale												
		Not at all										Very much so		
		0	1	2	3	4	5	6	7	8	9	10		
Pre-lecture														
A1*	I know how to read paintings	110	3(3%)	10(9%)	11(10%)	28(25%)	14(13%)	18(16%)	16(15%)	7(6%)	3(3%)	0(0%)	0(0%)	3.9±2.0
A2†	I agree with the others about the motif of the painting discussed	110	11(10%)	6(5%)	15(14%)	22(20%)	18(17%)	22(20%)	4(4%)	9(8%)	3(3%)	0(0%)	0(0%)	3.6±2.1
		Not at all										Very much so		
		1	2	3	4	5	6	7	8	9	10			
A3§	When there is one, I will always read the painting	110	7(6%)	38(35%)	41(37%)	23(21%)	1(1%)							2.8±0.9
Post-lecture														
		Not at all										Very much so		
		0	1	2	3	4	5	6	7	8	9	10		
B1	I know how to read paintings	110	0(0%)	1(1%)	12(11%)	20(18%)	9(8%)	19(17%)	18(16%)	12(11%)	12(11%)	4(4%)	3(3%)	5.2±2.2
B2	I agree with the others about the motif of the painting discussed	110	0(0%)	2(2%)	8(7%)	17(15%)	12(11%)	29(26%)	20(18%)	10(9%)	8(7%)	3(3%)	1(1%)	5.0±2.0
		Not at all										Very much so		
		1	2	3	4	5	6	7	8	9	10			
B3	When there is one, I will always read the painting	110	0(0%)	9(8%)	37(34%)	55(51%)	8(7%)							4.1±0.7
B4	The program is helpful to improve skills in observation	110	0(0%)	0(0%)	17(17%)	42(38%)	49(45%)							4.1±0.7
B5	The program is helpful to improve skills in listening and communication,	110	0(0%)	12(11%)	24(22%)	45(41%)	29(26%)							3.8±1.0
B6	The program is helpful to enhance empathy to patients	110	0(0%)	0(0%)	17(17%)	55(50%)	35(33%)							4.0±0.8
B7	The program is helpful in building a teamwork	110	0(0%)	11(10%)	24(22%)	45(41%)	30(27%)							3.6±1.0
B8	The program is helpful to reduce stress	110	2(2%)	7(6%)	25(23%)	40(36%)	36(33%)							3.9±1.0
B9§	I enjoyed this program	103	0(0%)	0(0%)	14(14%)	45(44%)	46(45%)							4.3±0.7

*A1 vs. B1 ($p < 0.001$, Mann-Whitney U test). †A2 vs. B2 : ($p < 0.001$, Mann-Whitney U test)). ‡A3 vs. B3 : ($p < 0.001$, Mann-Whitney U test)). §B9 was an item added for the students other than the first group (seven students).

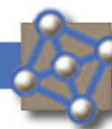
*A1 vs. B1 ($p < 0.001$, Mann-Whitney U test). †A2 vs. B2 : ($p < 0.001$, Mann-Whitney U test). ‡A3 vs. B3 : ($p < 0.001$, Mann-Whitney U test). §B9 was an item added for the students other than the first group (seven students).

Results

The instructor noted students' improvement in observation and description during the post-lecture discussion. There were more details seen and more information about the hero and heroine's emotions described in the students' records written in step seven (after lecture) as compared with in step one.

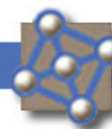
Content analysis of the qualitative data collected revealed that these themes emerged:

- 1) The visual arts program is very interesting and helps students to interpret a painting. Examples are 'I think the program is very well organized and enriching. It increases my ability to appreciate a painting and my knowledge of arts' and 'It is the most interesting and inspiring humanities class that I have ever attended.'



- 2) The program helped students to enhance empathy for patients. For example, one student wrote, 'As we discussed the medicine or age-related paintings, we learned the necessity of knowing the feelings of patients and families and their needs.' Another student answered 'It was very interesting to note that my group members could have different points-of-views about the same painting we looked at. It reminds of me that the patients I care for may have their own emotions, feelings and ideas.'
- 3) The visual arts program can promote students cultural awareness through humanities. One student commented; 'It made me think about meaning and refresh my spirit. Arts appreciation brings me to a higher level of life.' Another one stated 'Medicine should be with humanities; life cannot be without art. It will be wonderful to have much more experience in humanities and art'.
- 4) The program can be helpful to reduce stress. The examples are 'While I enjoyed interpreting paintings, I found it could reduce my study pressure and work pressure' and 'The beautiful things in the paintings shown, make me feel pleasant by reducing stress'.
- 5) This visual arts program can be helpful in observational skills. The examples are 'Through learning to interpret a painting, I learned to observe and describe objects and things in detail and to analyze' and 'Interpreting a painting, I interpreted from the main roles to the nearby objects and from the main components to the other related details. It helps me to be sensitive to what I observe'.
- 6) Small-group discussions are the most suitable for a visual arts (painting) program, and help to build teamwork. One student wrote 'Small-group discussion made me feel comfortable to express my ideas. It is especially true when diversities of opinions existed about a painting unfamiliar to us. It will facilitate discussion and communication and have us work like a team.' Another example was: 'Nothing is as absolute as we always think. Truths always came out after sufficient discussion in the group'.
- 7) This type of program helps to improve the skill in listening and communication. There was one respondent that stated: 'Through the group discussion, I learned that the skill of communication could be improved by listening.' Another one wrote; 'Medicine is not just a combination of scientific knowledge and drugs. The program is helpful to learn the art of listening.'

The results of the pre-lecture and post-lecture surveys are shown in Table 1. Using Mann-Whitney U test, the results showed that students had a significant increase in their confidence (item 1; $p < 0.001$) and desire (item 3; $p < 0.001$) to interpret paintings after the program. In addition there was an increase in agreement on the motif of paintings (item 2; $p < 0.001$). Student self-assessments (e.g. 'The program is helpful to improve my ability in observation, listening and communication, enhance empathy for patients and learn to build teamwork and reduce stress') resulted in averages ranging 3.6 – 4.1 on a scale of 1-5. The rating was 3.9 and 4.3 for the item 'The program is helpful to reduce stress' and 'I enjoyed this program', respectively. For the multiple-choice question concerning 'Who is eligible to teach this program?' the results were a physician with sufficient knowledge of interpreting paintings (60/80, 75%), an artist-physician (24/80, 30%), an artist-patient or a patient (or a patient's family member) with sufficient knowledge of interpreting paintings (21/80, 19%) and an artist (6/80, 8%).



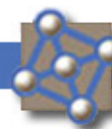
Discussion

We observed that this visual arts program was able to interest medical students. Students reported that they had a significant increase in their ability and desire to read paintings and an increase in agreement among them on the motif of paintings after the program. This implies that the visual arts program may be helpful to have the students more readily able to identify the subject and content of a painting. The discussions on famous and interesting medicine-related art works and the other interesting humanities fields might make students interested in reading paintings. Brief descriptions of method of how to appreciate a painting may make it possible for students to try to read a painting. Further studies are needed to confirm this. Students might also learn to listen to others' opinions and work as a team to come to a conclusion. Results of content analysis revealed the possible effectiveness of the program to competencies required such as to improve the skills of observation, listening and communication and help to build teamwork and enhance empathy and stress reduction. Similar results were reported qualitatively in the previous studies with various art programs¹⁻⁴. Results of self-assessment questionnaires, such as 'The program is helpful to improve my ability in observation, listening and communication, enhance empathy for patients and learn to build teamwork reduce stress' were positive. Using similar questionnaires, Bardes et al, reported that most students participating in an art program with painting reading under the tutelage of art educators and medical faculty were able to strongly agree regarding the usefulness of the program to improve their skills in observation, description and interpretation⁹. We hope that students may be motivated to participate in more arts and other humanities programs.

We innovatively had an experienced physician-painter as the instructor. The instructor described how to interpret a painting, while giving experiences in patient care and communication that might interest the students. Most students agreed that a physician with sufficient knowledge of appreciation of paintings would be a suitable instructor for such a program. This supported the finding that students objected to humanities instructors lacking professional training or experience in medicine as reported recently by Shapiro et al¹⁰. For a program such as this with an aim to interest students, especially for students enrolled in clinical courses, a physician-art educator appears to be a better choice. A person with a diverse background in art and medicine would have the knowledge needed to communicate to the learners. When considering faculty development, any colleague interested in arts can deepen their knowledge of painting appreciation and broaden experiences in aesthetics and be trained to be an instructor. The program also discussed the topics of the other related humanities fields such as literature, musicals, ethics and values and meaning. Multimedia were used to display the images and videos. All these enriched the contents of the program and may make it attractive to the audience. Furthermore, a diversity of interesting paintings and subjects related to other humanities fields may be selected for each step by the instructor to fit such a program.

As there existed very many masterpieces of medical or disease-related art works by great famous Western artists, most of the art selected for display in images or video clips was from the West. The selection was expected to draw attention of students and to interest them in art. In addition, several paragraphs of essays by contemporary local writers and classical poets and several paintings by the local painters were included in this program. This plus the discussion of different religious viewpoints gave students examples of the need to understand patients' stories, beliefs and cultural values. One may select art works attractive to students and relevant to disease, medicine or other humanities subjects from the cultural backgrounds of the society when implementing such a program. Programs with a focus on other art forms such as performing arts and other fields of humanities such as literature may be of interest.

The time for this short program is an issue to be addressed. It was limited for each topic mentioned. It is reasonable to consider extending the time. But, the reality that students may hesitate to participate in a longer program needs to be balanced. Scheduling



conflicts may exist for the longer program. For interns willing to participate but having heavy clinical loads, attending this kind of program is difficult. In our study, one class needed to be rescheduled several times because of scheduling conflicts between the clinical courses and the program. Though it is possible that some attending physicians and even students themselves may think the program irrelevant to clinical care and discourage the students to attend the art program, we did not encounter this problem. It may be partly due to the required nature of the course defined by the Education Board of our hospital. To encourage the students to attend a course like this, a short introduction with the possible advantages of the art programs in medical education known to them at orientation of their rotation may be helpful. Having undergone a curriculum evaluation, this program has been merged into a required humanities course for the clerks of a medical school after this study. Further studies are needed to clarify whether such a program can have an impact on teaching ACGME competencies. For example, it is worthwhile studying the results of psychometric tests for empathy such as the 'Jefferson Scale of Physician Empathy'¹¹ with and without the intervention of a visual arts program.

Conclusions

The structured visual arts program with emphasis on medicine-related visual arts and other humanities subjects was able to attract the attention of medical students. It appears to have been helpful in improving the required skills of ACGME competencies but further studies are needed to confirm this result.

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