


BMJ Open Empathy variation of undergraduate medical students after early clinical contact: a cross-sectional study in China

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ABSTRACT

Objectives Empathy education is very important for medical students. There is little research on the influence of early clinical practice on the development of empathy and other aspects of professionalism in medical students. The aim of this study was to compare the self-reported empathy levels of first-year and second-year undergraduate medical students before and after their early clinical contact curriculum.

Setting The study was conducted at the Shanghai University of Medicine & Health Sciences, Shanghai, China.

Participants A total of 257 undergraduate medical students participated in the study. The 154 first-year students were studying in 10 community-based teaching hospitals, and the 103 second-year students were studying in 3 university-affiliated hospitals.

Primary and secondary outcome measures Primary measures: the Jefferson Scale of Empathy—Student version (JSE-S) was compared between students of different sexes and in different academic years before their early clinical contact course. Secondary measures: comparisons were made after they finished the curriculum 3 weeks later.

Results A total of 219 of 257 students responded (85.21% response rate), and 214 answers could be analysed (135 first-year and 79 second-year students; 120 female and 94 male individuals). No significant differences in the empathy scores before early clinical contact were observed between students of different sexes and in different academic years. After early clinical contact, the mean JSE-S score of the participants was significantly higher than the mean score at the beginning of the curriculum.

Conclusions Empathy-focused training during early clinical contact can improve the empathetic capacity of undergraduate medical students. Fostering empathetic attitudes among undergraduate medical students is necessary for the early stage of their medical education. Further research is needed on the long-term effects of empathy-focused education in entry-level medical students.

INTRODUCTION

Empathy is the ability to understand and share feelings of another¹ and has cognitive, affective, behavioural and moral dimensions.² The empathetic capacity of healthcare professionals is important to patient' satisfaction

Strengths and limitations of this study

- We used the Jefferson Scale of Empathy—Student version as a validated instrument, which has good internal consistency (Cronbach's alpha 0.84).
- Empathy was measured using only a single subjective self-reported questionnaire; self-reported scales are influenced by the perception of socially desirable behavior.
- The interval between the two self-reported questionnaires was only 3 weeks, which may have affected the results because of the influence of recent memory.

and compliance, and empathy has been described as a major aspect of professionalism in medicine.^{3 4} Studies have shown that patients trust empathetic doctors; tend to communicate well with those doctors; provide more detailed information, facilitating diagnosis; and are likely to display improved treatment compliance.^{5 6} Empathy strengthens interactions between patients and doctors and improves doctors' satisfaction levels.⁷ High levels of empathy in healthcare professionals are connected to positive clinical prognoses for patients, by reducing mental stress, improving self-awareness and reducing anxiety and depression.^{8 9}

For future doctors, education about empathy is as important as enhancing their clinical competence.¹⁰ A systematic review showed that educational interventions can be effective at maintaining and enhancing empathy in undergraduate medical students.¹¹ Lim *et al* introduced a drama-based training method entitled 'How to Act in a Role' to enhance the empathetic communication skills of their medical students. This innovative teaching method increased not only students' self-reported empathy but also their competency with regard to consultation skills.¹² Other training methods have also been proposed to enhance medical students' comprehension of empathy and

their empathetic capacity, such as ‘communication skills training’,^{13 14} ‘reflective writing’^{15 16} and ‘motivational interviewing training’.¹⁷ While some studies showed that the empathetic capacity of medical students declined with increasing academic years,^{18–20} others indicated that the empathy scores of students in their final year were higher than those of first-year medical students.²¹ Sex has also been found to influence undergraduate medical students’ empathy.²² Conflicting results have been found with respect to sex-based differences; a reason for this may be the social-cultural background of the students being investigated.²³ Moreover, as empathy level is difficult to measure, the standard approach to enhancing empathy in medical students remains debatable.²⁴

Early clinical contact (ECC) for medical students is an important curricular innovation and has been found to be particularly crucial for teaching professionalism.²⁵ ECC means real-patient contact in a clinical context that enhances the students’ understanding of illness and the role of the health professional and that occurs in the early or preclinical years of undergraduate education.^{26 27} Some studies showed that contact with patients early in medical students’ training elicits a positive emotional response that has the potential to trigger the development of emotional maturity, relational skills and patient-centred attitudes and to promote a better understanding of health and illness.^{28 29} However, the impact of ECC on the development of empathy or other professional abilities in medical students remains relatively under-researched.³⁰

In this study, we encouraged our first-year and second-year medical students to focus on empathetic relationships between patients and doctors through our ECC curriculum. We sought to investigate whether ECC altered medical students’ empathy and whether there were any differences in this respect in terms of sex and/or academic year.

METHODS

Participants

There were 154 students in the first year and 103 students in the second year who took part in the ECC curriculum at the Shanghai University of Medical & Health Sciences in China in July 2018. The first-year students were studying in 10 community-based teaching hospitals, and

the second-year students were studying in 3 of our university hospitals, with 10–15 students in each group. After informed consent was obtained, 219 medical students completed the measurement of empathy (response rates of 87.66% of the first-year and 76.70% of the second-year students, respectively). In total, 214 returned questionnaires were valid. All of our students are high school graduates, aged between 17 and 21 years. The basic characteristics of all participants are shown in [table 1](#).

Measurement of empathy

The Jefferson Scale of Empathy—Student version (JSE-S), created by Hojat and colleagues,³¹ was used in this study. It includes 20 items answered on a 7-point Likert-type scale (1 indicating strong disagreement and 7 indicating strong agreement). Ten of the items are positively worded, and 10 are negatively worded. The JSE-S was specifically developed as a self-reporting scale for assessing medical students’ attitudes towards empathetic inpatient care. The original JSE-S comprises three components: perspective taking (items 2/4/5/9/10/13/15/16/17/20), compassionate care (items 1/7/8/11/12/14/18/19) and putting yourself in the patient’s shoes (items 3/6). The total score was obtained by summing all items (total scores range from 20 to 140), with higher scores indicating a higher degree of empathy. JSE-S has received international attention from researchers and has been translated into 56 languages, including Chinese, French, German, Italian and Korean.^{32 33}

Procedure

ECC curriculum

The ECC curriculum was administered at the end of the school year and was divided into two parts: 1 week of theoretical lectures about empathy and narrative medicine given by a professor and 2 weeks of clinical practice that included empathy-focused training, patient interviews and reflective narrative story writing. We required and guided students to focus on how to care about patients, become patient-centred and make decisions with consideration given to patients and other aspects beyond the clinical diagnosis and treatment of diseases by doctors. In the patient interview, students were required to explore the inner world of patients and the psychological and social changes associated with the illness experienced by

Table 1 Basic characteristics of participants

Year	Sex	All students N (%)	Age M (SD)	Participants N (%)	Response rates (%)	Hospital
First	Females	89 (57.80)	18.51 (0.77)	78 (57.78)	87.66	Community
	Males	65 (42.20)	18.00 (0.73)	57 (42.22)		
	Total	154(100)	18.38 (0.06)	135(100)		
Second	Females	55 (53.40)	18.73 (0.13)	42 (53.16)	76.70	University-affiliated
	Males	48 (46.60)	19.00 (0.15)	37 (46.84)		
	Total	103(100)	18.85 (0.10)	79(100)		

the patients and their families. Each student completed interviews independently with at least six patients and wrote two reflective narrative stories during the 2 weeks of clinical exposure. Students shadowed a doctor every day and they were not responsible for the patients' diagnoses and treatments.

Two JSE-S surveys

An initial JSE-S survey was administered before the lectures in the first week of our ECC curriculum, and the second survey was administered at the end of this curriculum 3 weeks later. The questionnaires were powered by www.wjx.cn and anonymously collected so that students would not feel forced to participate. The platform recorded the time taken to complete the questionnaire, with the average time to complete being 4.2 min. If the completion time of a questionnaire was less than 2 min or more than 10 min, then its result was excluded from the statistical analyses, because completion times on either end of the spectrum affect the quality of the answers. In this study, 5 of 219 returned questionnaires were excluded (2 of them were completed in less than 2 min and 3 in more than 10 min).

Data analysis

Statistical analyses were performed using SPSS V.19.0 software. All values are shown as the means±SD. Descriptive analyses were performed for all investigated variables, and a D'Agostino-Pearson χ^2 test was used for normally distributed variables.³⁴ The Cronbach's alpha was calculated to assess the internal consistency of the questionnaire. Unpaired t-tests were used to compare the differences between two groups, and analysis of variance (two-way analysis of variance) was used for two-factor variance analysis. Statistical significance was defined as $p < 0.05$.

Patient and public involvement

No patients were involved.

RESULTS

A total of 219 of the 257 students completed the JSE-S questionnaire (85.21% response rate), and 214 answers were analysed (135 first-year and 79 second-year students; 120 female and 94 male individuals) for both surveys. The JSE-S scores in our study were approximately normally distributed, and the Cronbach's alpha of the questionnaire was 0.84. No significant differences were observed between students of different sexes and in different academic years before the ECC curriculum ($p > 0.05$; table 2). After finishing the ECC curriculum, all the students showed a significantly higher mean empathy score as measured by the JSE-S than the score for the whole sample population before the course (table 2). There was a significant difference between students in different grades ($p = 0.001$; table 3), but there was no interaction effect between sex and academic year ($p = 0.759$; table 3).

DISCUSSION

ECC closes the gap between theory and practice. Hence, many medical schools are adjusting their curricula to provide greater vertical integration between basic and clinical subjects.²⁸ Clinical contact can deepen medical students' understanding of professionalism, especially when students face the death of a patient directly³⁵; such scenes have a strong impact on the formation of empathy and other professional qualities.³⁶ Hojat defined medical empathy as 'a cognitive attribute that mainly includes the understanding of experiences, problems and perspectives of patients, and the ability to communicate this understanding and an intention to help'.³⁷ Empathy strengthens the relationship between patients and health professionals and improves patient-physician satisfaction.³⁸ In some studies, self-reported measures have found that empathy declines during undergraduate medical training. A study by Hojat *et al* showed that the empathy scores did not change

Table 2 Group comparisons of scores on the JSE-S administered to 214 medical students

Variable	Subgroup	N (%)	Before ECC M (SD)	After ECC M (SD)	t; df	P values
Academic year (sex)	First year					
	Females	78 (57.78)	113.2 (11.15)*†	115.4 (10.48)	2.95; 77	0.015
	Males	57 (42.22)	110.4 (13.14)†	114.1 (10.73)	2.71; 56	0.016
	Total	135(100)	111.8 (11.66)†	115.1 (11.02)	4.52; 134	0.003
	Second year					
	Females	42 (53.16)	113.7 (12.60)*	115.7 (10.32)	4.08; 41	0.007
	Males	37 (46.84)	111.6 (13.82)	118.7 (09.73)	3.89; 36	0.009
Total	79(100)	113.6 (13.14)	118.2 (14.00)	2.11; 78	0.026	

Values are expressed as the mean (M)±SD or number (%). $P > 0.05$.

*Compared between sexes.

†Compared between different academic years.

ECC, early clinical contact; JSE-S, Jefferson Scale of Empathy—Student version.

**Table 3** Two-way ANOVA of two-factor variance analysis (sex; grade)

Source of variation	Total variation, %	F (dfn, dfd)	P value
Interaction	0.045	F (1, 206)=0.095	0.759
Row factor (sex)	0.598	F (1, 206)=1.27	0.261
Column factor (grade)	2.240	F (1, 206)=4.76	0.001

ANOVA, analysis of variance.

significantly during the first 2 years among their students, but a significant decline was observed at the end of their third year.³⁹ However, studies by Eunice and Ulloque *et al* showed that the empathy level of last-year students was higher than that of freshmen.^{21 40}

In our study, the Cronbach's alpha was 0.84, which is similar to the findings in some other studies in China^{41 42} and indicates that the JSPE-S is internally consistent among Chinese medical students. We compared the self-reported empathy levels of two grades of undergraduate medical students before and after the ECC curriculum. The main finding of this study was the improvement in empathy scores in all of our students after ECC. Our ECC curriculum includes not only empathy-focused early clinical exposure to real patients but also theoretical instruction regarding doctor–patient empathy. During ECC, we emphasise the importance of empathy, and students are required to focus on and record real cases of doctor–patient empathy in clinical practice. This suggests that students who attend empathy-focused clinical programmes early in their 5 years of study may establish and strengthen their empathy, which is a key component of medical professionalism. We have unified the requirements for the patient interview and reflective writing for both first-year and second-year students. Reflective narratives are a useful and enjoyable way to teach medical students about issues pertaining to empathy.⁴³ Empathy education should be emphasised as a key part of the early integration of patient contact into the curriculum, as it plays an important role in students' future doctor–patient relationships.⁴⁴ Other interesting results were that there were no significant differences between students of different sexes and in different academic years and there was no interaction ($p=0.759$) between these two factors. This is not consistent with the findings of some studies that indicated that female students had significantly higher average empathy scores than male students^{19 45 46} but similar to the results of other studies.^{32 47–49} The sex-based disparity might be due to 'particular factors' unique to European and American medical students. In some Asian countries, there is often no significant difference, which might be caused by different social–cultural background.^{48 49} Our students come directly from high school after passing a unified selective examination. This is essentially different from American medical students, who usually major in different subjects in college. Our university has a course called 'Introduction to Medicine' in the first year, which helps students think about ethics, life and death. The lack of significant differences between different sexes

and academic years before ECC in our study may result from different cultures and different sources of students, as addressed earlier. Future research should use multiple forms of measurement to better understand the mechanisms involved in empathy changes in medical students.⁵⁰

One limitation of our study is that empathy was constructed using only a single subjective self-reported questionnaire among undergraduate medical students. Self-reported empathetic capacity is not always accurate and often does not correlate with the patients' assessments^{51 52}; future research should consider the patients' perspectives as well. Short observation time is the second limitation, and self-reported scales are influenced by the perception of socially desirable behaviour, which means that after the training, students may have become aware of what were the desirable answers on the questionnaire, which may have introduced bias. The main purpose of this study was to observe the short-term impact of ECC on medical students' empathy. The time interval necessary for eliminating bias in the results needs further study, and we will carry out related studies on the long-term effects in our follow-up research.

CONCLUSIONS

Empathy education is very important for undergraduate medical students to promote the quality of the doctor–patient relationship in their future work. ECC can not only stimulate students' enthusiasm for learning but also play a vital role in the formation of vocational ability. This study revealed that empathy-focused training during ECC could improve the empathetic capacity of our undergraduate medical students. Empathy and other aspects of professionalism should be taught to junior medical students. Further research is needed on the long-term effects of early empathy education in medical students.

Correction notice This article has been corrected since it was published. The affiliation for Haiying Guo & Hui Xiao has been updated.

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Competing interests None declared.

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Patient consent for publication Obtained.

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