

Empathy in medical students as related to academic performance, clinical competence and gender

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Context Empathy is a major component of a satisfactory doctor–patient relationship and the cultivation of empathy is a learning objective proposed by the Association of American Medical Colleges (AAMC) for all American medical schools. Therefore, it is important to address the measurement of empathy, its development and its correlates in medical schools.

Objectives We designed this study to test two hypotheses: firstly, that medical students with higher empathy scores would obtain higher ratings of clinical competence in core clinical clerkships; and secondly, that women would obtain higher empathy scores than men.

Materials and subjects A 20-item empathy scale developed by the authors (*Jefferson Scale of Physician Empathy*) was completed by 371 third-year medical students (198 men, 173 women).

Methods Associations between empathy scores and ratings of clinical competence in six core clerkships, gender, and performance on objective examinations

were studied by using *t*-test, analysis of variance, chi-square and correlation coefficients.

Results Both research hypotheses were confirmed. Empathy scores were associated with ratings of clinical competence and gender, but not with performance in objective examinations such as the Medical College Admission Test (MCAT), and Steps 1 and 2 of the US Medical Licensing Examinations (USMLE).

Conclusions Empathy scores are associated with ratings of clinical competence and gender. The operational measure of empathy used in this study provides opportunities to further examine educational and clinical correlates of empathy, as well as stability and changes in empathy at different stages of undergraduate and graduate medical education.

Keywords ANOVA; Chi square test; *clinical competence; education, medical, undergraduates/ *methods/psychology; *empathy; physician patient relations; reproducibility of results; *sex.

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Introduction

Interpersonal relationships are fundamental to a meaningful human existence. Developing meaningful interpersonal relationships between patients and doctors is important to optimal clinical outcomes. In his 1927 landmark article, Dr Francis Peabody eloquently described how mutual understanding within the doctor–patient relationship is essential to the

successful practice of medicine, by summarizing his discussion in the following statement: ‘The secret of the care of the patient is in caring for the patient.’¹ Doctors’ understanding of their patients’ experiences and feelings were elegantly reiterated by Sir William Osler in his statement: ‘It is as important to know what kind of a man [sic] has the disease, as it is to know what kind of disease has the man.’² These words of advice are as true today as they were many decades ago.

Defined as a personal quality in the uncritical understanding of a patient’s inner experiences and feelings, empathy is the essence of a meaningful patient–doctor relationship.³ It represents, indeed, the capacity of the physician to ‘stand in the patient’s shoes’, and view the world from the patient’s perspective. Therefore, empathy is considered a ‘cognitive’ quality, rather than an ‘affective’ attribute that characterizes the concept of sympathy.

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Key learning points

Empathy is the backbone of patient–doctor relationships.

An operational measure of empathy developed by the authors showed significant associations between empathy scores and ratings of clinical competence in medical school.

Women obtained a higher average empathy score than did men, suggesting that women may render more empathetic care to their patients than men.

Like any other personal quality, empathy varies among individuals. Therefore, one group may possess more or less empathy than another group, depending upon developmental, experiential, social, educational, and other endogenous and exogenous factors.

To a large extent, the quality of the patient–doctor relationship depends on the doctor’s interpersonal skills. Such skills are among the factors that are often taken into consideration in the assessment of clinical competence. Empirical data are available in support of this proposition.⁴ Thus, the quality of the patient–doctor relationship is an outcome of the doctor’s interpersonal skills.

Understanding of the patient’s perspective is an important factor in the doctor–patient relationship.⁵ Failure to understand a patient’s perspective leads to communication problems that in turn contribute not only to patient dissatisfaction, but also to willingness of the patient to take legal action against their doctor.⁶ Research suggests that patient dissatisfaction due to doctors’ lack of understanding can lead to malpractice claims, regardless of the quality of medical care rendered by doctors.⁷ Malpractice attorneys have indicated that more than 80% of malpractice suits are due to problems arising from interpersonal communication with doctors.⁸ Empathy paves the road to better understanding. It is therefore intuitive that clinical outcomes are associated with the quality of interpersonal communication, and empathy is a vehicle for improving doctor–patient interpersonal relationships.

It has also been reported that women are more perceptive to emotions than men,^{9,10} possessing qualities that can contribute to better understanding, and hence to better empathetic relationships. The findings of several studies suggest that gender differences exist in rendering care and on caring attitudes.^{11–14} Based on the psychoanalytic and evolutionary theory of parental investment, women are believed to develop greater

care-giving attitudes toward their offspring than men.⁹ These caring qualities can be generalized towards other targets such as patients. As the number of women in medicine increases worldwide, it is important to examine the influence of gender of medical students and doctors on factors associated with care, including empathy.

Measuring empathy

Despite the emphasis currently placed by medical education on ‘professionalism’, and particularly on empathy as one of the important components of professionalism, empirical research on the topic is scarce. One reason for the dearth of empirical research on empathy among medical students and doctors is the absence of a valid and reliable operational tool¹⁶ by which to measure empathy in patient care situations. Only a few instruments exist to measure empathy in the general population, among which are the Interpersonal Reactivity Index,¹⁷ the Hogan Empathy Scale,¹⁸ and the Emotional Empathy Scale.¹⁹ None of these specifically relates to the patient–caregiver situation. Recently, we developed the *Jefferson Scale of Physician Empathy*, specifically designed for measuring empathy in medical students and doctors in relation to patient care.²⁰ (Copies of the *Jefferson Scale of Physician Empathy* can be obtained from the authors).

Purpose

The purpose of this study was to investigate empathy in medical students. In particular, the following research hypotheses were tested:

- 1 Based on the assumption that empathy as a factor in interpersonal skills is among the components of clinical competence, we hypothesized that medical students with higher empathy scores would obtain higher ratings of clinical competence in core clinical clerkships. Conversely, students with low empathy scores would obtain the lowest ratings of clinical competence.
- 2 Based on the notion that women, in general, demonstrate more caring attitudes than men, we hypothesized that female students would obtain a higher mean score than their male counterparts on the empathy scale.

Methods

Participants

The study sample consisted of 371 third-year medical students (198 men, 173 women) at Jefferson Medical

College in two academic years (1999–2000 and 2000–01) who completed the Jefferson Scale of Physician Empathy. They represent 83% of total students in the two classes.

Materials

Measure of empathy

The Jefferson Scale of Physician Empathy used in this study includes 20 items answered on a 7-point Likert scale (1 = strongly disagree, 7 = strongly agree). Satisfactory psychometric properties of this scale have been reported.²⁰ For example, construct validity of the scale was confirmed among medical students and internal medicine residents by factor analytic results; criterion-related validity was supported by significant correlations with other conceptually relevant measures, such as perspective-taking, compassion, sympathy, warmth, dutifulness, trust, tolerance, and personal growth.²⁰ The internal consistency aspect of reliability (coefficient alpha) was found to be .89 and .87 among medical students and internal medicine residents, respectively.²⁰

Measures of clinical competence

We used the medical school faculty's global ratings of students' clinical competence in each of the six third-year core clerkships (family medicine, internal medicine, obstetrics/gynaecology, paediatrics, psychiatry, and surgery) to examine their associations with empathy scores. These global ratings are part of a detailed assessment form that is completed in each clerkship by using a 4-point scale ranging from 'High Honours' (superior rating) through 'Excellent' and 'Good' to 'Marginal Competence' (barely passing). In this study, we combined the lowest competence ratings (Good and Marginal Competence) to obtain a reasonably large sample size in that category for statistical comparisons (less than 1% of students obtained a marginal competence rating in each clerkship). The number of High Honours ratings obtained by individual students for the six core clerkships ranges from zero (no High Honours) to six (High Honours in all six clerkships).

Data have been reported in support of psychometrics of these clerkship global ratings.²¹ For example, predictive validity of these ratings was established by their significant associations with scores in medical licensing examinations, and with clinical competence ratings given by postgraduate programme directors on completion of the first year of postgraduate medical training.²¹ The internal consistency aspect of reliability

(the Chronbach's coefficient alpha) for the six core clerkship ratings was 0.71 for the sample of the present study.

Performance measures in objective examinations

Scores of the Medical College Admission Test (MCAT), examination grades in the first and second years of medical school, and scores in Steps 1 and 2 of the US Medical Licensing Examinations (USMLE) were used as indicators of performance in objective examinations of medical knowledge.

Procedures

The empathy scale was completed voluntarily by all participants during orientation at the beginning of the academic year. Students' empathy scores were merged with data retrieved from the Jefferson Longitudinal Study of Medical Education.²² Analysis of variance (ANOVA), *t*-test, and chi-square test were used for group comparisons. Pearson product-moment correlation coefficients were calculated to examine the associations between empathy and scores in the MCAT, first- and second-year grade-point averages (GPAs) in medical school, and USMLE scores.

Results and discussion

Means and standard deviations of empathy scores for different groups are reported in Table 1. The number of observations varies for different variables because of the unavailability of complete data at the time of this study.

As shown in Table 1, the lowest mean of empathy scores was obtained by students who received no High Honours ratings in the six third-year core clerkships. Conversely, the highest mean score was obtained by those who achieved three or more (out of a maximum of six) High Honours ratings. Students with one or two High Honours ratings scored between the two aforementioned groups: $F_{(2, 178)} = 2.9$, $P = 0.08$. Furthermore, students with at least one High Honours rating had a mean empathy score that was significantly higher than their classmates with no such ratings: $t_{(179)} = 2.2$, $P < 0.05$.

In addition, the mean of empathy scores was higher for students who did not obtain any low ratings (Good or Marginal Competence) than for those with one or two such ratings. The lowest mean empathy score was obtained by students with three or more Good or Marginal Competence clerkship ratings: $F_{(2, 178)} = 3.1$, $P < 0.05$. These findings support our

Table 1 Means and standard deviations of the Jefferson Scale of Physician Empathy scores by ratings of clinical competence in six core clerkships in medical school and by gender

Groups	Mean	SD	P†
Ratings of clinical competence in six core clerkships			
<i>Honours Ratings</i>			
0 High Honours Ratings (<i>n</i> = 70)	115	11	= 0.08
1 or 2 High Honours Ratings (<i>n</i> = 86)	119	10	
3 or more High Honours Ratings (<i>n</i> = 25)	120	12	
0 High Honours Ratings (<i>n</i> = 70)	115	11	< 0.05
1 or more High Honours Ratings (<i>n</i> = 111)	119	10	
<i>Good or Marginal Competence Ratings</i>			
0 Good or Marginal Competence ratings (<i>n</i> = 62)	120	11	< 0.05
1 or 2 Good or Marginal Competence ratings (<i>n</i> = 79)	117	10	
3 or more Good or Marginal ratings (<i>n</i> = 40)	114	11	
0 Good or Marginal Competence rating (<i>n</i> = 62)	120	11	< 0.01
1 or more Good or Marginal ratings (<i>n</i> = 119)	116	10	
<i>Sex</i>			
Men (<i>n</i> = 198)	119	11	< 0.01
Women (<i>n</i> = 173)	122	10	

†*t*-test and analysis of variance were employed to determine the statistical significance of the differences. Complete data were not available for the entire sample at the time of this study.

first research hypothesis. These results are consistent with previous findings in which empathy as assessed by standardized patients was associated with better performance in history-taking and physical examinations by fourth-year medical students.²³

Correlation coefficients between empathy and scores in the biological sciences, physical sciences, and verbal reasoning sections of MCAT, first-, and second-year GPAs, and scores in Steps 1 and 2 of the USMLE were all statistically non-significant (ranging from $r = 0.01$ to $r = -0.06$). These findings are consistent with those previously reported, where no relationship was observed between empathy and scores in Parts I and II of the medical licensing examinations²⁴ (formerly the National Board of Medical Examiners examinations, currently the USLME).

Table 1 shows that women scored significantly higher ($M = 122$, $SD = 10$) than men ($M = 119$, $SD = 11$, $t_{(369)} = 3.2$, $P < 0.01$). This finding confirms our second research hypothesis. Additional analyses were performed to test whether gender and clinical ratings were significantly associated. Percentages of men and women with at least one High Honours rating were 59% and 64%, respectively. Moreover, 32% of men and 37% of women obtained no low ratings. The associations between gender and High Honours clinical ratings ($\chi^2_{(1)} = 0.36$) and

between gender and low clinical competence ratings ($\chi^2_{(1)} = 0.54$) were not statistically significant. These findings suggest that the obtained relationships between empathy and ratings of clinical competence are not confounded by students' gender.

Conclusions

In a series of reports by the Association of American Medical Colleges (AAMC) on the Medical School Objective Project,²⁵ it is emphasized that 'physicians must be compassionate and empathetic in caring for patients' (Report I, page 4). Furthermore, the following qualities are listed among the goals of teaching communication in medicine: 'understanding patient's perspective, express caring, concern, empathy' (Report III, page 13). An operational tool is needed in response to this call to empirically investigate the extent to which these goals have been achieved. The empathy scale developed by our research team and used in this study may help to serve that purpose. This study represents a step towards implementation of an operational measure of empathy, and evaluations of factors that are associated with the concept.

The results of this study generally indicate that students' scores of an operational measure of empathy were linearly associated with ratings of clinical com-

petence as given by faculty members in the third year of medical school. However, students' grades in objective examinations did not significantly correlate with empathy scores. One explanation for these findings is that understanding of patients' feelings and experiences, as reflected in empathy scores, does influence interpersonal relationships and therefore is relevant in the assessment of clinical competence of medical students. Such interpersonal qualities are not as relevant in students' performance in objective examinations (often in multiple-choice format) as they are in subjective ratings of global clinical competence.

Our findings that women scored significantly higher on the empathy scale than men suggests that female doctors might render a different type of medical care^{12–14} based on a better understanding of the patient's experiences and feelings. Given the increasing number of women in medicine and the high proportion of female patients, the issue of gender-based differences in medical care rendered by male and female doctors deserves further research attention.

Just what role empathy plays in the doctor–patient relationship is an issue that deserves further exploration. This research suggests that there is a component of the process of evaluating student clinical performance that involves empathy. However, is the empathetic student judged better because he/she deals with more of the issues affecting the patient health or because empathy leads to a better understanding of their patient? Or is the empathetic student evaluated higher because the student is more likeable and has a better relationship with the evaluator?

Also, where in the process of the doctor–patient relationship is empathy most obvious and/or important? Is it in the taking of the history? It might be argued that the empathetic student learns more from the history because the patient is put at ease. Or is it in the diagnosis, in that the student clinician is better able to weigh the various elements under consideration and give them proper importance for the specific patient? Or is it in the treatment, where the empathetic student is better at preparing a plan with which the patient is most likely to comply? Or is it in some combination of these possibilities?

From this research it does not appear that the empathetic student has a better fund of knowledge, at least as measured by a licensing examination. The focus thus seems to shift to some of the issues mentioned above. Identifying where empathy enters the process will make clearer how interventions might take place in cases where empathy is less than adequate.

In summary, this study suggests that the operational measurement of empathy in medical students is

feasible, and that the personal orientation of medical students towards empathy, as reflected in their empathy scores, is significantly and positively associated with ratings of clinical competence and gender. Because empathy is associated with better understanding in patient–doctor communication, and particularly because of reports that recent changes in the health care system can negatively influence doctor–patient relationships,²⁶ it is timely and important to examine the impact of changes in the health care system on doctors' empathy, and to empirically study empathy among medical students, examining its correlates and investigating its stability and changes as students progress through medical school and residency training.

Contributors

All authors contributed to the conceptual development of this study, interpretation of the results and writing of the manuscript. JSG initiated and spearheaded the Jefferson Longitudinal Study of Medical Education, from which data for this study were retrieved. Statistical analyses were performed by MH.

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