

Enhancing and sustaining empathy in medical students

MOHAMMADREZA HOJAT, DAVID AXELROD, JOHN SPANDORFER & SALVATORE MANGIONE

Jefferson Medical College of Thomas Jefferson University, USA

Abstract

Background: Empathy is an important component of physician competence that needs to be enhanced.

Aim: To test the hypotheses that medical students' empathy can be enhanced and sustained by targeted activities.

Methods: This was a two-phase study in which 248 medical students participated. In Phase 1, students in the experimental group watched and discussed video clips of patient encounters meant to enhance empathic understanding; those in the control group watched a documentary film. Ten weeks later in Phase 2 of the study, students who were in the experimental group were divided into two groups. One group attended a lecture on empathy in patient care, and the other plus the control group watched a movie about racism. The Jefferson Scale of Empathy (JSE) was administered pre-post in Phase 1 and posttest in Phase 2.

Results: In Phase 1, the JSE mean score for the experimental group improved significantly ($p < 0.01$); no change in the JSE scores was observed in the control group. In Phase 2, the JSE mean score improvement was sustained in the group that attended the lecture, but not in the other group. No change in empathy was noticed in the control group.

Conclusion: Research hypotheses were confirmed.

Introduction

Empathy is an important component of the physician-patient relationship that has been linked to clinical competence ratings in medical school (Hojat 2002a) and to positive patient outcomes in the practice of medicine (Hojat et al. 2011; Del Canale et al. 2012). It is reported that empathy is one of the most frequently mentioned components of humanism in medicine (Linn et al. 1987). Empathy was also found to be the most important quality for being considered a "good physician" (Carmel & Glick 1996).

It has been reported that physicians' understanding of their patients' perspective, a key feature in the conceptualization of physician empathy (Hojat 2007), enhances patients' perceptions of being helped (Eisenthal et al. 1979), improves patients' empowerment (Street et al. 2009), and increases patients' perception of a social support network (Street et al. 2009). In a study with diabetic patients, dietitians' empathy was found to be predictive of patient satisfaction and successful consultations (Goodchild et al. 2005). Physicians' understanding of their diabetic patients' beliefs about their illness was associated with better self-care outcomes (Sultan et al. 2011). In a study with internal medicine residents, a lower level of empathy was associated with a higher rate of self-reported incidents of medical errors (West et al. 2009).

These findings suggest that empathy should be considered as a core component of clinical competence (Hojat et al. 2011; Del Canale et al. 2012; Hojat et al. 2013), and attempts should be made to improve empathy in physicians-in-training and in-practice.

Practice points

- Empathy is an important component of clinical competence; yet, research shows that empathy tends to decline in medical school.
- Findings of this study add to the literature by showing that empathy can be enhanced and sustained in medical school by targeted educational activities.
- Temporary enhancement in empathy as a result of targeted educational programs can be sustained by additional reinforcement.
- Additional research is needed to further examine the long-term effects of targeted educational programs to enhance and sustain empathy in undergraduate and graduate medical education.

A number of approaches have been described to enhance empathy in medical education (Hojat 2007, 2009). They include improving interpersonal skills, exposure to role models, role playing, shadowing a patient, hospitalization (or pseudo-hospitalization) experiences, studying literature and the arts, improving narrative skills, watching theatrical performances or movies, audio or video-taping of student's encounters with patients, and the Balint (1957) method.

A few empirical studies have recently attempted to improve empathy among physicians-in-training (Fernandez-Olano et al. 2008; Magee & Hojat 2010; Forstater et al. 2011; Lim et al. 2011; Van Winkle et al. 2012). These studies used the Jefferson Scale of Empathy (JSE) to assess the study outcomes. For example,

Correspondence: Mohammadreza Hojat, Jefferson Medical College, Center for Research in Medical Education and Health Care, 1025 Walnut St, Suite 119, Philadelphia 19107, USA. Tel: +215-955-9459; fax: +215-923-6939; email: mohammadreza.hojat@jefferson.edu

in one small scale study with family medicine residents, an increase in JSE scores was noticed in those who volunteered to deliver and assemble a rocking chair to the homes of their indigent patients who were mothers of new born babies (Magee & Hojat 2010). (More information about the Rocking Chair Project is posted on: www.rockingchairproject.org). In another small scale study, erosion of empathy was prevented by instructing emergency medicine residents to shadow patients in the emergency room (Forstater et al. 2011). Also, it is reported that a communication skills workshop for the purpose of enhancing empathy could slightly improve the JSE scores in a group of Spanish medical students and family and community medicine residents (Fernandez-Olano et al. 2008).

Drama training and role playing enhanced empathy scores of medical students in New Zealand (Lim et al. 2011) and, watching and discussing a brief theatrical play (performed by peers) about the challenges of aging significantly improved JSE scores in medical and pharmacy students (Van Winkle et al. 2012). However, it was noticed that the increase in empathy scores dissipated shortly (7–26 days) in both groups of students (Van Winkle et al. 2012). These studies are limited due to a small sample size, a lack of control group, or follow-up to examine long-term effects of the intervention. None of them have included complementary educational activities to examine if the increase in empathy scores could be sustained.

Study purpose

We designed this control-group study to overcome the aforementioned limitations, and used a validated empathy-measuring instrument to examine if empathy can be enhanced and sustained in medical students. Specifically, we tested the following hypotheses:

- (1) Medical students' empathy would be enhanced by watching and discussing video clips of medical encounters from certain selected movies.
- (2) Enhanced empathy can be sustained when reinforced by supplementary educational activities.

Method

Participants

Research participants included 248 second-year students at Jefferson Medical College (51% women, $n = 126$), representing 94% of the total class ($n = 264$).

Measurement of empathy

The JSE was used in this study. This is a validated instrument to measure empathy in the context of medical education and patient care (Hojat et al. 2001, 2002a, 2002b, 2002c, 2005; Hojat 2007). It was developed based on an extensive review of the literature, and relied on the definition of empathy in the context of patient care as predominantly a cognitive attribute that involves an understanding of experiences, concerns, and perspectives of the patient, combined with a capacity to

communicate this understanding and an intention to help (Hojat 2007; Hojat et al. 2009).

Evidence in support of the JSE's construct validity (Hojat et al. 2001; Hojat 2007); criterion-related validity (Hojat et al. 2002a, 2002b); predictive validity (Hojat et al. 2005); internal consistency reliability (Hojat et al. 2001, 2002b); and test-retest reliability has been reported in medical students (Hojat et al. 2001) and physicians (Hojat et al. 2002b). Evidence in support of the psychometrics of the JSE has also been reported in medical students in Mexico (Alcorta-Garza et al. 2005), Japan (Kataoka et al. 2009), Korea (Roh et al. 2010), Iran (Shariat & Habibi 2012), and physicians in Italy (Di Lillo et al. 2009). The JSE is an extensively used researched instrument in medical education research and has been translated into 42 languages to date, and used in more than 60 countries. The scale includes 20 items, each answered on a 7-point Likert-type scale (Strongly Agree = 7, Strongly Disagree = 1). The possible range of scores is 20–120; the higher the score, the more orientation toward empathic engagement in patient care (More information about the JSE can be found at the following website: www.jefferson.edu/jmc/crmehc/jse.html).

Procedure

The study protocol was reviewed and approved by Thomas Jefferson University's Institutional Review Board. Research participants were divided into experimental and control groups by alphabetic order of their last names. Students from letter A to L were assigned to the experimental group ($n = 129$) and the rest (letters M–Z) to the control group ($n = 119$). The alphabetic grouping method had been used by course coordinators to assign students into small study groups, which in this experiment facilitated directing students by their names in the experiment and control groups to different auditoriums at the time of the experiments. The study consisted of two phases. Phase 1 was design to test the first hypothesis and Phase 2 to test the second research hypothesis.

Phase 1: Students in the experimental group were assembled in an auditorium where they watched 22 brief video clips of patient encounters selected from the following three movies for a total running time of one hour: *The Doctor* (5 clips), *First Do No Harm* (8 clips), and *Wit* (9 clips). The clips were specifically chosen for depicting positive and negative medical encounters. After showing each clip, students were invited to briefly express their views about the clip, and describe any positive or negative factors they noticed in the clip.

In the movie *The Doctor*, Dr Jack MacKee is an arrogant but successful heart surgeon in a leading hospital who is diagnosed with throat cancer. His experiences, as a patient in his own hospital, profoundly change his bedside manner and his views on patient care. In the movie *First Do No Harm*, a child is diagnosed with epilepsy. The movie is about the encounters of the mother with physicians, nurses, and hospital administrators. In the movie *Wit*, Dr. Vivian Bearing is an English professor who is diagnosed with terminal ovarian cancer. The movie is about her encounters with physicians, nurses, and residents in the hospital.

Students in the control group assembled in another auditorium and watched a medical history documentary film,

The Great Fever. This is a one-hour film about the heroic efforts of Major Walter Reed, chief surgeon of the U.S. Army and his team in the discovery that mosquitoes are the vector for yellow fever.

The JSE was administered to participants in both experimental and control groups before and after the sessions. They were told that the purpose of the assessment test (JSE) was to examine outcomes of the class activities. Nothing was mentioned about empathy to influence their responses.

Phase 2: Ten weeks after Phase 1, a follow-up Phase 2 study was undertaken to examine longer-term effects of the Phase 1 study. We randomly divided the students in the experimental group of Phase 1 into two groups. One group participated in a lecture and slide presentation about the importance of empathy in patient care by one of the investigators (MH), followed by class discussion (reinforced group). The other group (not reinforced), plus students in the control group (of Phase 1) were assembled in another auditorium and watched the movie, *Something the Lord Made*. In this movie, Dr. Alfred Blalock who is a white heart surgeon, hires a poor black carpenter, Vivien Thomas, to work with him in his laboratory at Johns Hopkins School of Medicine in the 1940s. Racism in medicine at that time is depicted in the movie. Students discussed the movie and voluntarily completed the assessment test (JSE) at the end of the session.

In all test administrations in both phases of the study, students were reminded that their responses to the assessment test (JSE) would be voluntary, their individual responses would be kept strictly confidential, would not become part of their academic record, and that data would be reported in aggregated group statistics. They were told to use their "campus key" (a unique identification number used by the University for all students and staff) on the assessment test for correlating their responses in different test administrations.

Statistical analyses

Pretest-posttest comparisons were made in Phase 1 by using *t*-test, and analysis of variance was used for repeated measure design in Phase 2 to examine the significance of changes in empathy scores in different test administrations. Statistical Analysis System (SAS, Cary, NC), Version 9.2 for Windows was used for statistical analyses.

Results

Of the total students in the class ($n=264$), 248 (94%) voluntarily completed the JSE in Phase 1, and 162 completed (61%) in Phase 2. The following is the breakdown of JSE completion rates for Phase 2: of 65 students in the experimental group who were assigned to attend the lecture session on empathy in Phase 2, 55 (85%); of 64 students in the experimental group assigned to watch the movie on racism in Phase 2, 38 (59%), and of 119 students in the control group who watched the movie in Phase 2, 69 (58%). Despite the differences in response rates in Phase 2 of the study, no significant gender difference was found among the three groups ($\chi^2_{(2)}=1.5$, $p=0.45$) nor between each group or the

entire class (approximately 50% gender split), indicating that the final sample represented the total class based on gender. We also made a comparison of empathy scores between the experimental and control groups before the experiment (pretest scores) to assure that the two groups had similar empathic inclination. No statistically significant difference was found ($t_{(246)}=0.30$, $p=0.77$) indicating that using the alphabetic approach in group assignment resulted in an unbiased sampling with regard to the baseline empathy scores.

Phase 1 results

Means and standard deviations of empathy pretest-posttest scores and summary results of statistical analyses are reported in Table 1.

As shown in the table, an average increase of 2.2 scale points was observed in the empathy scores of students in the experimental group, which was statistically significant ($p < 0.01$) (effect size = 0.21). No change in mean empathy score was noticed in the control group. Findings of a statistically significant improvement in empathy scores in the experimental group provide support for the first research hypothesis, although the effect size of the difference is not substantial (Hojat & Xu 2004).

Due to gender differences in empathy (Hojat et al. 2001, 2002a, 2002b), in additional analyses, we compared pretest-posttest changes in empathy scores in the experimental and control groups by gender and noticed a pattern of findings similar to that in the entire sample. However, by examining the magnitude of improvements, it seemed that men benefitted more than women in Phase 1 of the study (2.7 and 1.6 scale points improvements in men and women, respectively).

Phase 2 results

Means, standard deviations, and summary statistical results of repeated measure analysis of variance comparing the three participating groups (two experiment and the control groups) are reported in Table 2.

As shown in the table, for the experimental group who attended the lecturer session on empathy, thus, being exposed to supplementary empathy-enhancing reinforcement (reinforced group), the statistically significant improvement in empathy scores (from pretest to posttest 1) was sustained in posttest 2 (pretest < posttest 1 = posttest 2, $p < 0.01$). However, for the experimental group who watched the

Table 1. Means and standard deviations (SD) of scores on the Jefferson Scale of Empathy for experimental and control groups before and after educational interventions in Phase 1 of the study.

Groups	Pretest		Posttest		Difference	t-test
	Mean	SD	Mean	SD		
Experimental ($n=129$)	113.0	(11.4)	115.2	(12.3)	+2.2	3.5**
Control ($n=119$)	112.6	(10.4)	112.6	(11.0)	0.00	

** $p < 0.01$.

Table 2. Changes in mean scores of the Jefferson Scale of Empathy in different times in the experimental and control groups in Phase 2 of the study.

Groups	n	Administration of the Jefferson Scale of Empathy			F-ratio	Differences
		Pretest (Phase 1) M (SD)	Posttest 1 (Phase 1) M (SD)	Posttest 2 (Phase 2) M (SD)		
Experimental (reinforced group) ^a	55	113.3 (9.8)	116.3 (10.9)	115.7 (9.4)	4.3**	pre < post1 = post2
Experimental (not reinforced) ^b	38	114.0 (10.4)	116.5 (10.0)	112.7 (13.4)	3.06*	pre = post2 < post1
Control group ^c	69	113.9 (9.2)	114.7 (9.8)	115.4 (10.5)	0.17	pre = post1 = post2

^aThe "reinforced" experimental group watched and discussed video clips of medical encounters in Phase 1 of the study. The JSE was administered before (Pretest), and after watching and discussing the clips (posttest 1). Ten weeks later, in the follow up Phase 2 study, this group attended a class on the topic of empathy in patient care and completed the JSE at the end of the class session (posttest 2).

^bThe "Not reinforced" experimental group watched and discussed video clips of medical encounters in Phase 1 of the study. The JSE was administered before (Pretest), and after watching and discussing the clips (Posttest 1). Ten weeks later, in the follow up Phase 2 study, this group watched a movie about racism in medicine and completed the JSE at the end of the movie show (Posttest 2).

^cControl Group watched a medical history documentary film in Phase 1 of the study. The JSE was administered before (Pretest), and after the film (Posttest 1). Ten weeks later, in the follow up Phase 2 study, this group watched a movie about racism in medicine and completed the JSE at the end of the movie (Posttest 2).

* $p < 0.05$, ** $p < 0.01$.

movie on racism, thus, not receiving any supplementary empathy-enhancing reinforcement (not reinforced group), the significant improvement observed in empathy scores from pretest to posttest 1 (in Phase 1) dissipated in posttest 2 (in Phase 2) (posttest 2 = pretest < posttest 1, $p < 0.05$). No statistically significant change in empathy scores was found in the control group (pretest = posttest 1 = posttest 2).

These findings indicate that the gain in empathy (in the reinforced experimental group) was sustained by supplementary reinforcement in the experimental group who attended a lecture session on the importance of empathy in patient care. However, the initial improvement gained in Phase 1 (in the not reinforced experimental group) was lost in Phase 2 of the study in the absence of such reinforcement in the experimental group who watched a movie on racism. These findings confirm the second research hypothesis.

Replication of the aforementioned statistical analyses by gender showed a pattern of findings similar to the entire sample for men. However, for women a slight change of pattern of findings was noticed in the control group in which the mean empathy score improved in posttest 2. This suggests that watching and discussing the movie in which racism in medicine was depicted increased the women's average empathy score by 1.99 scale points from posttest 1 assessment ($p < 0.05$).

Discussion

The study findings that empathy can be enhanced and sustained in physicians-in-training by targeted educational programs are encouraging, considering the reports of empathy decline during undergraduate and graduate medical education (Mangione et al. 2002; Hojat et al. 2004, 2009; Bellini & Shea 2005; Chen et al. 2007; Newton et al. 2008).

Compelling evidence supports the importance of enhancing empathy to achieve more desirable patient outcomes. For example, in a factor analytic study, 52% of the variance in ratings of patient satisfaction with medical care was accounted for by indicators of physicians' empathic engagement such as interpersonal warmth and respect for the patient (Kenny

1995). It is reported that patients with the common cold who perceived that their physician was empathic had shorter duration of illness and less severe conditions associated with their immune system changes (Rakel et al. 2009), which can be attributed to patients' compliance with their physicians' treatment plan. In a large scale study in Denmark, patients were more likely to recommend doctors who demonstrated better empathic skills, such as expressing interest to explore more about the patients' concerns, facilitating communication, and helping patients with their emotional problems (Vedsted & Heje 2008) as a result of a trusting relationship.

With regard to the aforementioned findings, and in light of recent studies that directly link physician empathy and tangible patient outcomes (Hojat et al. 2011; Del Canale et al. 2012), our findings are timely and important, reinforcing the notion that enhancing empathy can improve clinical outcomes. Therefore, leaders in academic medical centers should go one step further than just declaring the desirability of enhancing empathy among physicians-in-training and in-practice (Hojat et al. 2013). They should develop an action plan to design and implement programs to enhance and sustain empathy in medical students, residents, and practicing physicians at all levels of undergraduate, graduate, and continuing medical education programs.

Study limitations

Limitations of this study include the single institution study, which may jeopardize the external validity or generalization of the findings. Another limitation is due to the shortcoming in the design of the study for an absence of readministering the JSE just prior to starting Phase 2 to assess the possibility of any change that could have occurred between posttest 1 and the start of Phase 2 of the experiment. Also, the control group could have been divided into two subgroups in Phase 2 in a cross-over design, so that one subgroup could be exposed to Phase 1 experiment for the experimental group (watching and discussing video clips) to examine if their empathy could be improved. For future research, we recommend such modifications in research design.

Also, the effect size estimates of improvements in empathy scores was not impressive indicating that the statistically significant improvements may not be considered as clinically important (Hojat & Xu 2004). We speculate that the effect size estimates can be improved by more exposure to empathy-enhancing activities such as those used in this study. In addition, in future research, a longer-term follow up study is needed to examine the effects of repeated reinforcements in enhancing and sustaining empathy.

Despite these limitations, findings of the present study are encouraging in showing that it is possible to enhance and sustain empathy in medical students by targeted educational programs. To the best of our knowledge, this is the first empirical study in which a validated measure of empathy in the context of patient care was used to examine the possibility of enhancing and sustaining empathy in physicians-in-training in a control experimental research design. The study can serve as an initial step for future research to examine approaches to enhance and sustain empathy in physicians in-training and in-practice.

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Ethical approval: This study was approved by the Institutional Review Board of Thomas Jefferson University.

Declaration of interest: The authors report no conflict of interest.

Glossary of terms

Empathy: In the context of medical education and patient care, empathy is defined as a predominantly a cognitive attribute that involves an understanding of experiences, concerns, and perspective of the patient, combined with a capacity to communicate this understanding, and an *intention to help* (Hojat, 2007; Hojat, Louis, Markham et al., 2011; Hojat, Vergare et al., 2009).

Notes on contributors

MOHAMMADREZA HOJAT, PhD, is Research Professor of psychiatry and human behavior, Department of Psychiatry and Human Behavior, and director, Jefferson Longitudinal Study of Medical Education, Center for Research in Medical Education and Health Care, Jefferson Medical College of Thomas Jefferson University, Philadelphia, Pennsylvania.

DAVID AXELROD, MD, JD, is Assistant Professor of Medicine in the Division of General Internal Medicine. He is the course director for 2nd year medical students in Introduction to Clinical Medicine, Department of Medicine, Jefferson Medical College of Thomas Jefferson University, Philadelphia, Pennsylvania.

JOHN SPANDORFER, MD, is Associate Professor of Medicine and Roger Daniel associate dean for professionalism in medicine, Department of Medicine, Jefferson Medical College of Thomas Jefferson University, Philadelphia, Pennsylvania.

SALVATORE MANGIONE, MD, is Associate Professor of Medicine, director of Physical Diagnosis Course and associate director, Internal Medicine Residency, Department of Medicine, Jefferson Medical College of Thomas Jefferson University.

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