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Research Article

Effect of a Short Training Course on Empathy level in Medical Students: A Quasi-Experimental Study

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Abstract

Background: Empathy is an important component of effective communication of a patient-practitioner relationship. Medical students are expected to know this ability as part of their education.

Objectives: This study aimed to assess the effect of a short-training course on the empathy levels of medical students.

Methods: This is a quasi-experimental study conducted on eighty second-year medical students in Ahvaz Jundishapur University of Medical Sciences (AJUMS), Iran, 2019. The intervention comprised of a lecture-based short training course, which was taught by a psychiatrist and was held in two sessions (Two hours each) for two consecutive weeks. Empathy was assessed using the Jefferson Scale of Empathy-Student version (JSE) before and after the intervention. Students with empathy scores higher than average were considered high empathy group, and those with scores lower than average as low empathy group. Data were analyzed using paired T-tests through SPSS software, version 16.

Results: The mean JSE score was 99.66±13.4 and 101.62 ± 16.37, before and after the -intervention, respectively. However, despite the score increased, the difference was not statistically significant (p = 0.054). Nevertheless, the empathy scores of high-empathy students significantly increased after the -intervention (110.49 Vs 114.15, p=0.002). The empathy level also showed a significant enhancement in female students after training (p=0.006).

Conclusion: This study shows that a short training course is somewhat effective in developing medical student empathy. The findings suggest a need for revision of content and implementation of this course training into the existing medical curriculum.

Keywords: Empathy, Communication, Social Skills, Training Programs, Medical Students, Medical Education

Background

Empathy is defined as the ability to understand and share the feelings of another. In medicine, it can be simply described as an appropriate understanding of the patient. (1) Empathy is considered a main element of professionalism in medicine. When patients sense empathy from their physician, they are more concordant with treatment and more likely to get better health outcomes. The empathy communication skill not only is a key element in successful physician-patient interactions but also will ensure the safety of the physician from burnout. (2)

For decades, clinical empathy has been considered extremely important for physicians in the western world. It is commonly recognized as a necessary trait for providing effective patient care. Physicians' empathy is an important skill for health professionals, and the teaching and learning of this skill should not be neglected in medical education. However, research indicates that the medical students' empathy is often stunted during training, and our understanding of how empathy is learned during medical education is still limited. (3-5)

Empathy skill is a quality that is either already present in medical students or learned by them during medical education courses. Overall, health profession degrees devote less curricular time to the development of interpersonal skills. Previous studies point to the steady decline of empathy in medical students during medical training, and one common criticism against physicians is that they often lack empathy skills, that they are too detached, and that their approach to patient care is dispassionate. (6)

According to international evidence, many students have a limited ability to communicate empathetically during clinical experiences. Some researchers have cited insufficient student time, busy schedules, and inadequate education as the main causes of students' lack of empathy skills. (7, 8) While studies have shown that the proper application of empathy skills not only does not bring the mentioned problems but also many benefits such as early detection of diseases, problem-solving, economic cost-effectiveness, and no need for emotional effort.

Since its inception, different universities have been investigating empathy along with effective physician-patient communication and have produced curricula that focus on this issue. (9) Unfortunately, the medical education curriculum in Iran does not have a share in the training of empathy skills, and if there is any attempt to address this, it is most likely to be in the form of a medical ethics course of about a few hours of communication skills training, which is inappropriate in terms of the credit and time allocated. Moreover, little, if any, medical curricular time is specifically devoted to the enhancement of empathy in Iran's medical education system.

Considering that empathy is the main component of communication between physicians and patients, and since at our university, empathy training is provided to pre-clinical medical students as part of a communication skills course, the present study aimed to evaluate this pedagogic method to see whether it might positively improve student empathy skills. It should be noted that lectures with group discussions can be effective in changing students' knowledge and attitudes, and teamwork on empathy can increase students' empathy skills. (1, 8) This is because concerns have been raised about whether this instructional method is sufficient to promote truly empathic medical students and whether it can significantly improve medical students' empathy skills. Thus, this study investigated the effectiveness of the short training course in terms of changes in student empathy scores in Ahvaz Jundishapur University of Medical Sciences. The results of this study will help policymakers in their efficient planning of training courses to promote the empathy skills of physicians in future.

Objectives

This study aimed to assess the effect of a lecture-based short training course on the empathy levels of medical students.

Methods

This is a quasi-experimental study conducted on medical students in Ahvaz Jundishapur University of Medical Sciences (AJUMS), Iran. The study population consisted of all second-year medical students (n = 94) who enrolled at the beginning of the 2019 academic year at School of Medicine.

In Iran, training courses are designed and implemented to develop the professional skills of medical students. These courses were offered for medical students in the pre-medical phase in the curriculum, which aimed to develop students' professional competencies. One of the professional training courses that were held for medical students was the empathy communication course.

Empathy is a complex issue, and it has not been specified in medical education research. In this course, the conceptual framework of empathy was used, which includes cognitive and emotional processes, the definition of empathy skills, the difference between empathy and sympathy, empathy techniques, and barriers to empathy. This course was taught by a psychiatrist. Indeed, this course was implemented to introduce with empathy concept and help medical students develop general competencies for empathy skills, which formed the basis of clinical empathy development. The course was designed using a lecture-based learning approach to develop student empathy. These topics were offered through a short lecture with questions and answers, discussion and teamwork under the supervision of the instructor. Students were introduced to the empathy concept in the course; lectures were given on empathy and some communication skills, which are considered a key component of empathy. At the end of the course their teamwork and what they learned about empathy from the conversation with each other.

Students' empathy levels were assessed using the student version of the Jefferson Scale of Empathy (JSE) to evaluate the impact of student learning with the short training course. This scale, formerly developed by Hojat et al. to assess empathy among medical students, physicians, and health professionals, has been shown to have acceptable validity and reliability. (10) This questionnaire has been reported valid and reliable in many studies (11, 12) and has been widely used in medical education research (13). It is a 20-item instrument using a seven-point Likert scale from 1 (strongly disagree) to 7 (strongly agree). The score interval ranges from 20 to 140, with higher scores indicating higher levels of empathy. This instrument has three factors: perspective-taking (10 items), compassionate care (8 items), and standing in the patient's shoe (Two items).

The Persian version of JSE used in this study had been translated and validated by Rahimi-Madise et al. (14) The Cronbach's alpha coefficient for the entire scale, perspective-taking, compassionate care, and standing in the patient's shoe components were 0.74, 0.73, 0.71, and 0.51, respectively. In our study, the internal consistency of the JSE was measured using Cronbach's alpha, coefficient which was 0.84 for the whole instrument.

Before the training course, the needs assessment form, which was held in separate meetings with experienced professors in the field of psychiatry and medical ethics, as well as several students, collected their views on educational needs by brainstorming method. The educational content was planned based on the comments obtained.

At the beginning of the first week of the semester, the students participated in the empathy training course, which was held in two sessions (Two hours each) for two consecutive weeks. The educational pattern used in the training course was according to the educational package approved by the Ministry of Health. It included life skills, self-awareness, and empathy communication skills, which were matched based on the training received by the researcher in this regard and concerning the situation and needs of the student's internship. Finally, at the end of the training, students were allowed to discuss with the instructor. In addition, each session ended with a group discussion on the topics of that session. Activities were based on work in small groups and group presentations. Participants examined the medical definitions of empathy and the semantics of empathy versus other terms, such as sympathy, affinity, and caring. In this study, student empathy was measured pre-intervention in the first week of the course as a baseline and the measurement was repeated at the end of the course in a pre-and post-training format. In evaluating the training course to measure the level of skills, self-assessment is through students. To comply with the ethical points, according to the Helsinki Declaration, informed consent was taken from the students before the start of the training course, and if someone did not want to continue attending the course, they could leave the study.

After obtaining the ethical approval from the Ethics Committee of AJUMS, and coordinating with the School of Medicine, the researcher distributed the questionnaires among subjects. Students were invited to participate voluntarily. Informed written consent was obtained from all the medical students, and they were asked to fill the questionnaires honestly. The questionnaires were anonymous, and the subjects were assured that their information was confidential. The completed questionnaires were coded with a unique identifier, cataloged, and stored digitally in an encoded archive.

The data were entered into the Statistical Package of Social Sciences v.18.0 (SPSS Inc., Chicago, IL), and adequate statistical analysis was conducted. Mean and standard deviation (SD) was calculated for continuous variables, while percentages were calculated for categorical variables. To analyze the data more accurately, the students were divided into two groups based upon the pre-test empathy score (i.e., baseline empathy scores before training) using the median score. Accordingly, students with empathy scores higher than average were considered high empathy group and those with scores lower than average as low empathy group. Paired-samples T-tests were used to test the significant difference in the JSP scores before and after training. The level of statistical significance was set at $p<0.05$.

Results

Of the 94 medical students who participated in the training course, 80 students completed the JSE questionnaires before and after the training course (response rate 85.1%). The mean age of students was 21.2±1.3 years; 38(47.5%) were male, and 42(52.5%) were female.

The mean JSP score was 99.66 ± 13.47, with a minimum of 69 and maximum of 133 before the course. This score was 101.62±16.37, with a minimum of 70 and maximum of 134 after the training course. Despite the increase in the score after the training course, the difference was not statistically significant (t = 1.96, p = 0.054). Table one shows the medical students' total score of empathy and its subscales pre-and post-training.

Table1. The comparison of empathy scores and its three subscales pre- and post-training

Items	Pre-training Mean (SD)	Post-training Mean (SD)	t	p
Empathy	99.66 (13.47)	101.62 (16.37)	-1.958	0.054
Perspective-taking	52.73 (7.35)	53.43 (8.05)	-0.775	0.441
compassionate care	38.56 (7.97)	39.3 5(9.33)	-0.900	0.371
Standing in the patient's shoe	8.51 (2.34)	9.05 (2.11)	-1.870	0.065

Table 2. Comparison of pre- and post-training empathy scores for high- and low-empathy groups

Items		Pre-training Mean (SD)	Post-training Mean (SD)	t	p
Lower empathy group	Empathy	88.3 (7.1)	88.5 (9.8)	0.108	0.91
	Perspective-taking	47.9 (5.6)	48.2 (5.5)	0.185	0.85
	compassionate care	32.7 (6.7)	33.1 (8.1)	0.239	0.81
	Standing in the patient's shoe	7.6 (2.3)	8.1 (1.9)	1.04	0.30
Higher empathy group	Empathy	110.5 (8.1)	114.1 (10.4)	3.29	0.002
	Perspective-taking	57.3 (5.7)	58.4 (6.8)	0.945	0.35
	compassionate care	44.1 (4.2)	45.3 (5.9)	1.50	0.14
	Standing in the patient's shoe	9.3 (2.2)	10 (1.8)	1.54	0.13

A comparison of mean scores of empathy levels is shown in Table two. Students with higher empathy in the pre-test improved significantly in their empathy scores over the semester (t = 3.29, p = 0.002). However, there was no change in empathy scores in the empathy level in the lower empathy group (t = 0.108, p = 0.91).

A comparison of empathy scores by gender revealed that empathy scores significantly increased in female students after training course (pre-and post-training 102.76 Vs 106.64; p=0.006), but had no change for male students (pre-and post-training 96.23 Vs 96.08; p=0.913).

Discussion

There is a consensus today that empathy, as a vital element in the physician-patient relationship, is one of the important topics in medical education. (15) Unfortunately, the medical education curriculum in Iran does not involve any empathy training, and if there are any efforts to address this, they are more likely to be in form of medical ethics courses involving two to four hours of empathy training, which is inappropriate in terms of the credits and time allocated.

The present study was conducted to evaluate the effect of short training communication skills on empathy levels of second-year medical students. The results showed that the average score of empathy along with all its dimensions was not statistically significant after participation in the training course. Possibly, the short duration of the training and the use of passive methods led to this result, which needs to be examined more closely.

Studies to date are contradictory regarding possible changes in empathy skills in response to the training activity. Some researchers speculate that empathy skills can be improved through educational strategies, but others believe it is a personality trait that cannot be taught. (16) Our findings did not show a significant increase in empathy skills after the training activity. Of course, it should be stated that we would have probably come up with different results if we had measured the level of empathy skills in this group of students once again a few months after the training. Furthermore, this is one of the limitations of this study, which is recommended to be considered in future studies. Similar to this study, the result of Delprete showed that the level of empathy of medical students did not change significantly one week after the empathy training course. (17)

In addition, it is possible that exposure to the cognitive method of instruction did not appear to improve empathy skills. In fact, cognitive method training does not seem to be the best method to teach professionalism in medicine. According to the literature, interactive training methods such as role modeling and mentoring guided by faculty are more effective methods in developing professionalism. (3) Therefore, one reason for non-effectiveness of our training course in improving empathy skills in medical students can be the fact that face-to-face encounters and interactive techniques are the necessary components in training empathy. This is because empathy is a quality that largely depends on interpersonal engagement. (2)

Another possible reason for our results is that we assessed the empathy level of students immediately after the workshop and did not attempt a long-term follow-up of these students after training. Therefore, it must be acknowledged that at least in the short-term timeframe of this study, we should not expect any significant change in empathy levels and that alterations in a person's sense of empathy are developed and solidified over periods of months and years, rather than weeks.

Although research has not specifically examined the impact of such short courses in medical schools on improving the empathy skills of medical students in Iran, there are many reports from different universities that training courses have improved students' empathy. (3, 7) However, the difference lies in the longer duration of the courses reported in these studies and the more active methods adopted such as role-playing and establishing relationships with the patient. On the other hand, there are also studies reporting that conducting empathy training did not improve students' empathy skills, which is consistent with the findings of the present study. (17) Researchers believe that learning can be significantly facilitated if the four elements of thinking, feeling, observation, and action are involved simultaneously in the learning process. (1, 8) Naturally, using appropriate methods in the implementation of training courses can increase the efficiency and effectiveness of these training courses. Numerous studies have suggested communication skills training courses in the medical education curriculum for medical students and have found interventional studies in this area to be essential. (7, 18) However, few, if any, effective and specific methods have so far been proposed for these training.

Findings of the study showed that empathy scores in the high empathy group increased significantly after the intervention, while the scores of the low empathy group did not show significant change. Probably the topic of empathy was more important and appealing to the high empathy group, so it could be argued that a greater interest in the content of the empathy training led to a greater impact on education and ultimately a significant increase in the students' empathy scores. It is possible that the group with higher empathy scores may be more motivated to learn empathy and communication skills compared with the other group. More careful studies will shed more clarity on this assumption.

We found empathy scores of female students were higher compared with male students, and the empathy scores of female students significantly increased after the training course. In most studies, female students' empathy scores have been reported to be higher than those of male students, which is in agreement with the results of the present study. (19) Some authors speculate that this difference may be due to females' greater capacity for empathetic communication, for providing support that is more emotional rather than rational, and for spending more time with their patients compared with their male

counterparts. Females have been reported to be more receptive to emotional signals, spend more time with patients, and offer more preventive and patient-oriented care and more emotional support, whereas men are more likely to offer rational solutions. (20) Therefore, these traits could be argued to have led to developing empathy skills in female students after participating in the training course.

It is important to note that this study aimed to investigate the effect of a short-term and limited training course on enhancing the level of empathy of medical students, but due to using non-active teaching methods and assessing the level of student empathy immediately after the workshop, we were not able to show the positive effect of our training on improving students' empathy. Possibly, if we had used active teaching methods and measured students' levels of empathy a few months after the training course, different results would be obtained.

Literature establishes that communication and empathy skills are a competency requiring formal teaching. (21) Evaluation of performance using multiple evaluators and multiple methods is of paramount importance. Many strategies that can be used to improve professionalism in the educational environment are available, but an optimum combination of methods is yet to be found. (22, 23) Empathy is a teachable communicative skill; however, there are many problems related to communication training. These problems are linked to educational courses, teaching methods, and the gap between theory and practice. (16) It should be noted that empathic skills cannot be improved overnight. They can only be developed in line with increased life experiences and first-hand interactions.

This study has limitations. This was conducted among medical students of only one medical college. Therefore, the results cannot necessarily be generalized. Another possible limitation of the study is the absence of a control group. In addition, we did not attempt a long-term follow-up of these students as they progressed through empathy training. Despite these limitations, our study presents the way for developing training courses to increase empathy levels in medical students.

Conclusions

Even though the implementation of this training course led to the enhancement of empathy levels and a change in attitude in high empathy groups and female students, it failed to improve the overall empathy skills among all medical students. In disagreement with other studies showing that training courses, similar to those used in this study, should have a significant impact on empathy, we did not draw such a conclusion in our study and believe that time constraints, the training methods, and longitudinal follow-up also play an important role in the success of empathy promotion courses. Therefore, further studies are needed to evaluate the impact of these factors on improving empathy in medical students and to explore alternative measures and activities to enhance the curriculum of the medical school to educate more effective and compassionate physicians. The findings suggest a need for revision of content and implementation of this course training into the existing medical curriculum.

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References

1. Krishnasamy C, Ong SY, Loo ME, Thistlethwaite J. How does medical education affect empathy and compassion in medical students? A meta-ethnography: BEME Guide No. 57. Med Teach. 2019 Nov;41(11):1220-1231. doi: 10.1080/0142159X.2019.1630731. [PMID: 31389720].
2. Rosenthal B, Gravrand H, Lisi AJ. Interprofessional collaboration among complementary and integrative health providers in private practice and community health centers. Journal of Interprofessional Education & Practice. 2019;15:70-4. doi:10.1016/j.xjep.2019.02.007.
3. Pohontsch N, Stark A, Ehrhardt M, Kötter T, Scherer M. Influences on students' empathy in medical education: an exploratory interview study with medical students in their third and last year. BMC Med Educ. 2018 Oct 5;18(1):231. doi: 10.1186/s12909-018-1335-7. [PMID: 30290824]. [PMCID: PMC6173872].
4. Papageorgiou A, Miles S, Fromage M. Does medical students' empathy change during their 5-year MBBS degree? Educ Health (Abingdon). Sep-Dec 2018;31(3):142-147. doi: 10.4103/efh.EfH_279_17. [PMID: 31134944].
5. Rodriguez T, Beck L, Woodmansey K, Hoskin E. Dental Students' Perceptions of Dentist-Patient Interactions: An Exploration of Empathy in Dental Students. Strides Dev Med Educ. 2018;15(1): e65124. doi: 10.5812/sdme.65124.
6. Smith KE, Norman GJ, Decety J. The complexity of empathy during medical school training: evidence for positive changes. Med Educ. 2017 Nov;51(11):1146-1159. doi: 10.1111/medu.13398. [PMID: 28884471]. PMCID: PMC5657391
7. Fragkos KC, Crampton PE. The Effectiveness of Teaching Clinical Empathy to Medical Students: A Systematic Review and Meta-Analysis of Randomized Controlled Trials. Academic Medicine: Journal of the Association of American Medical Colleges. 2019;95(6):1-7. DOI: 10.1097/acm.0000000000003058. [PMID: 31688037].
8. Lam TCM, Kolomitro K, Alamparambil FC. Empathy training: Methods, evaluation practices, and validity. Journal of Multidisciplinary Evaluation. 2011;7(16):162-200.
9. Pham H, Trigg M, Wu S, O'Connell A, Harry C, Barnard J, et al. Choosing medical assessments: Does the multiple-choice question make the grade? Educ Health (Abingdon). May-Aug 2018;31(2):65-71. doi: 10.4103/efh.EfH_229_17. [PMID: 30531047].
10. Hojat M, DeSantis J, Shannon SC, Mortensen LH, Speicher MR, Bragan L, et al. The Jefferson Scale of Empathy: a nationwide study of measurement properties, underlying components, latent variable structure, and national norms in medical students. Adv Health Sci Educ Theory Pract. 2018 Dec;23(5):899-920. doi: 10.1007/s10459-018-9839-9. [PMID: 29968006]. [PMCID: PMC6245107].
11. Patel S, Pelletier-Bui A, Smith S, Roberts MB, Kilgannon H, Trzeciak S, et al. Curricula for empathy and compassion training in medical education: a systematic review. PLoS One. 2019 Aug 22;14(8):e0221412. doi: 10.1371/journal.pone.0221412. [PMID: 31437225]. [PMCID: PMC6705835].
12. D'souza PC, Rasquinha SL, D'souza TL, Jain A, Kulkarni V, Pai

K. Effect of a single-session communication skills training on empathy in medical students. Acad Psychiatry. 2020 Jun;44(3):289-294. doi: 10.1007/s40596-019-01158-z. [PMID: 31811627].
13. Winter R, Issa E, Roberts N, Norman RI, Howick J. Assessing the effect of empathy-enhancing interventions in health education and training: a systematic review of randomised controlled trials. BMJ Open. 2020 Sep 25;10(9):e036471. doi: 10.1136/bmjopen-2019-036471. [PMID: 32978187]. [PMCID: PMC7520826].
14. Rahimi-Madiseh M, Tavakol M, Dennick R, Nasiri J. Empathy in Iranian medical students: a preliminary psychometric analysis and differences by gender and year of medical school. Med Teach. 2010;32(11):e471-8. doi: 10.3109/0142159X.2010.509419. [PMID: 21039088].
15. Seeberger A, Lönn A, Hult H, Weurlander M, Wernerson A. Can empathy be preserved in medical education? Int J Med Educ. 2020 Apr 20;11:83-89. doi: 10.5116/ijme.5e83.31cf. [PMID: 32311676]. [PMCID: PMC7246122].
16. Zeyer A, Dillon J. The role of empathy for learning in complex Science| Environment| Health contexts. International Journal of Science Education. 2019;41(3):297-315. doi:10.1080/09500693.2018.1549371.
17. DelPrete A, Giordano C, Castiglioni A, Hernandez C. Medical Students' Attitudes toward non-adherent patients before and after a simulated patient-role activity and small-group discussion: revisited. Cureus. 2016 Apr 19;8(4):e576. doi: 10.7759/cureus.576. [PMID: 27226937]. [PMCID: PMC4873315].
18. Eklund JH, Meranius MS. Toward a consensus on the nature of empathy: A review of reviews. Patient Educ Couns. 2021 Feb;104(2):300-307. doi: 10.1016/j.pec.2020.08.022. [PMID: 32888755].
19. Santiago LM, Rosendo I, Coutinho M-L, Maurício KS, Neto I, Simões JA. Comparing empathy in medical students of two Portuguese medicine schools. BMC Med Educ. 2020 May 13;20(1):153. doi: 10.1186/s12909-020-02034-3. [PMID: 32404095]. [PMCID: PMC7218824].
20. Hojat M, Vergare MJ, Maxwell K, Brainard G, Herrine SK, Isenberg GA, et al. The devil is in the third year: a longitudinal study of erosion of empathy in medical school. Acad Med. 2009 Sep;84(9):1182-91. doi: 10.1097/ACM.0b013e3181b17e55. [PMID: 19707055].
21. Buchman S, Henderson D. Interprofessional empathy and communication competency development in healthcare professions' curriculum through immersive virtual reality experiences. Journal of Interprofessional Education & Practice. 2019;15(1):127-30. doi:10.1016/j.xjep.2019.03.010.
22. Ruiz-Moral R, de Torres LP, Monge D, Leonardo CG, Caballero F. Teaching medical students to express empathy by exploring patient emotions and experiences in standardized medical encounters. Patient Educ Couns. 2017 Sep;100(9):1694-1700. doi: 10.1016/j.pec.2017.04.018. [PMID: 28487117].
23. Nezam Nia M, Salajegheh M. Effect of Educational Intervention on Empowering the Sense of Empathy in Medical Students: Application of Health Belief Model. Strides Dev Med Educ. 2017;14(3-4): e67435. doi:10.5812/sdme.67435