

Measuring medical students' empathy using direct verbal expressions

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Purpose: Empathy is an important trait in physicians and a key element in the physician-patient relationship. Accordingly, one of the goals in medical education is developing empathy in students. We attempted to practically assess medical students' empathy through their direct verbal expressions.

Methods: The medical students' empathy was measured using the modified Pencil-and-Paper Empathy Rating Test by Winefield and Chur-Hansen (2001). The students took 15 minutes or so to complete the scale, and it was then scored by one of two trained evaluators (0 to 4 points for each item, for a total score of 40). The subjects were 605 medical students, and the data were analyzed using descriptive analysis, independent t-test, and one-way analysis of variance in SPSS version 21.0.

Results: The students' empathy scores were low (mean, 12.13; standard deviation, 2.55); their most common responses (78.6%) registered as non-empathetic. Differences in empathy were observed by gender (female students > male students; $t = -5.068$, $p < 0.001$), school system (medical school > medical college; $t = -1.935$, $p = 0.053$), and academic level (pre-medical 1 year < other years; $t = -4.050$, $p < 0.001$).

Conclusion: Our findings lead us to the significant conclusion that there is the need for empathy enhancement training programs with practical content.

Key Words: Communication skills, Physician-patient relations, Empathy, Professionalism, Medical education

Introduction

The question of what qualities make a good doctor persists throughout medical education. Patients' increased knowledge of health care and changes in medical education and the health environment have placed more emphasis on doctors' social competence [1], including Canada's announcement of its CanMEDS program, the United Kingdom's Good Medical Practice, and the United

States' Outcome Project. This emphasis on doctors' competency reflects the specific mission of medical education at a national level [1]. There may be differences in the specific content of the programs, but one common competency is communication skills, which are essential for both therapeutic patient-physician relationships and interpersonal relations with colleagues. For this reason, communication is the leading evaluation item on the doctor's licensure examination [2] and has been the subject of efforts to develop a reliable, valid

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standardized communication skill assessment tool [3]. Similarly, communication is a core competency for graduate medical students.

In particular, empathy is the core of patient–doctor relationships that leads to higher satisfaction with health care services and better clinical results [4,5,6]. Patients in particular prefer strong patient–doctor relationships [7,8], which indicates a need to increase empathy by evaluating medical students' empathy levels and then providing adequate training and education programs [9].

In reality, however, there are barriers to assessing and evaluating medical students' empathy. Most of the previous studies that assessed empathy among medical students used the Jefferson Scale of Empathy [10,11,12], which assesses how well students are able to empathize with their patients. However, it is necessary to look more carefully into the concept of empathy. It must be noted that empathy extends beyond acknowledging patients' needs. Students should be able to actually demonstrate empathy at workplace and convert their knowledge into action [13].

Therefore, this study attempted to assess medical students' empathy through their direct verbal expressions. This work will also help us to understand medical students' empathy more precisely compared with previous studies, which were limited to attitudes toward and acknowledgment of empathy. The study questions were (1) What are medical students' levels of empathy expres-

sion? (2) Are there differences in the level of empathy expression by gender? (3) Are there differences in the level of empathy expression by school system? (4) Are there differences in the level of empathy expression by academic levels?

Subjects and methods

1. Subjects

From 2005 to 2015, data were gathered from 673 medical students: 68 surveys were excluded because of insufficient responses, leaving a final total of 605 students' data for analysis. Of these 605 responses, 400 were from 6-year medical college (MC) students and 205 were from the 4-year medical school (MS) system (Table 1).

2. Instruments and procedures

The instrument used in the study was Winefield and Chur–Hansen's [14] Pencil–and–Paper Empathy Rating Test (Appendix 1). The test describes ten different communication situations and requires that respondents address each as though they were having actual conversations; the test takes 15 minutes. Two trained assessors rated each item's response from 0 to 4 points (Appendix 2), and differences between the assessors were by reaching consensus during the second round of

Table 1. Distribution of Subjects

School system	Academic level					Gender		Total
	PM 1	PM 2	M 1	M 2	M 4	Male	Female	
MC	181 (29.9)	58 (9.6)	51 (8.4)	-	110 (18.2)	237 (39.2)	163 (26.9)	400 (66.1)
MS	-	-	132 (21.8)	46 (7.6)	27 (4.5)	121 (20.0)	84 (13.9)	205 (33.9)
Total	181 (29.9)	58 (9.6)	183 (30.2)	46 (7.6)	137 (22.6)	358 (59.2)	247 (40.8)	605 (100)

Data are presented as the number (%).

PM: Pre-medical year, M: Medical year, MC: Medical college, MS: Medical school.

assessment. The lowest possible score is 0 and the maximum is 40, and previous studies found the scale's internal reliability to be 0.83 and 0.91; in this study, it was 0.71.

3. Statistical analyses

The results were analyzed by frequency, descriptive analysis, independent t-test, and one-way analysis of variance using SPSS version 21.0 (IBM Corp., Armonk, USA). All statistical analysis used the significance level of 0.05.

Results

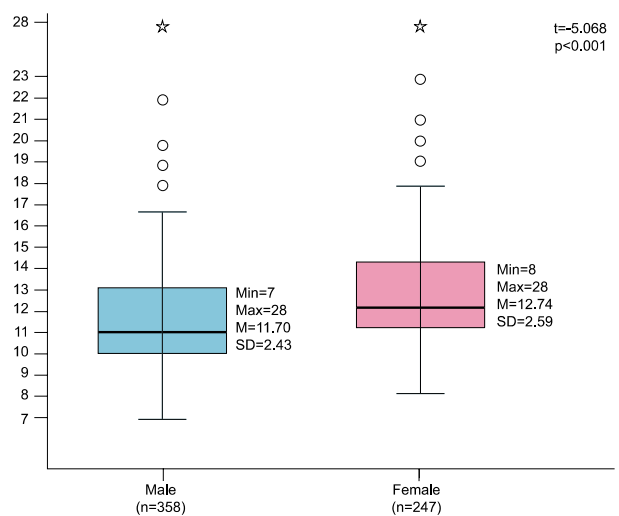
1. Level of empathy expression

The medical students' empathy expression primarily ranged from nonempathetic (78.6%) and partially acceptable (17.4%), to facilitative (2.6%). A few, 1.4%, were rated as aggressive/derogatory and the total mean score was quite low, 12.13 (standard deviation, 2.55) (Table 2).

2. Differences by gender, school system, and academic level

The minimum score for the male students was 7 and for females it was 8; the maximum score for both groups was the same, 28. Comparing the total mean scores, females showed significantly higher scores than did males (female, 12.74 > male, 11.70; $t = -5.068$, $p < 0.001$) (Fig. 1).

Fig. 1. Medical Students' Empathy Expression by Gender



Min: Minimum, Max: Maximum, M: Mean, SD: Standard deviation.

Table 2. Medical Students' Empathy Expression Scores

Case	Distribution of response type					Total	Mean	SD
	0	1	2	3	4			
1	2 (0.3)	454 (75.0)	126 (20.8)	23 (3.8)	-	605 (100)	1.28	0.53
2	33 (5.5)	259 (42.8)	272 (45.0)	41 (6.8)	-	605 (100)	1.53	0.70
3	2 (0.3)	488 (80.7)	96 (15.9)	19 (3.1)	-	605 (100)	1.22	0.49
4	5 (0.8)	508 (84.0)	83 (13.7)	9 (1.5)	-	605 (100)	1.16	0.42
5	5 (0.8)	511 (84.5)	78 (12.9)	11 (1.8)	-	605 (100)	1.16	0.43
6	1 (0.2)	499 (82.5)	94 (15.5)	11 (1.8)	-	605 (100)	1.19	0.44
7	27 (4.5)	431 (71.2)	126 (20.8)	21 (3.5)	-	605 (100)	1.23	0.58
8	3 (0.5)	530 (87.6)	66 (10.9)	6 (1.0)	-	605 (100)	1.12	0.37
9	5 (0.8)	553 (91.4)	43 (7.1)	4 (0.7)	-	605 (100)	1.08	0.32
10	3 (0.5)	519 (85.8)	68 (11.2)	15 (2.5)	-	605 (100)	1.16	0.44
Total	86 (1.4)	4,752 (78.6)	1,052 (17.4)	160 (2.6)	-	6,050 (100)	12.13	2.55

Data are presented as number (%).

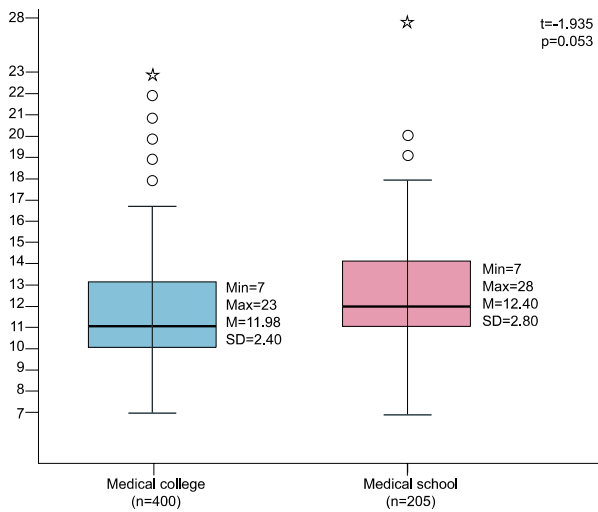
Response scales: 0, aggressive/derogatory; 1, nonempathetic; 2, partially acceptable; 3, interchangeable/empathetic; 4, facilitative. SD: Standard deviation.

By school system, the minimum score was the same for both MC and MS students, 7 and the maximum scores were 23 (MC) and 28 (MS). The total mean score was higher for MS students, but the difference was not statistically significant (MS, 12.40>MC, 11.98; $t=-1.935$, $p=0.053$) (Fig. 2).

No specific pattern were found by academic level, but the year 1 pre-medical students showed the lowest scores,

followed by year 2 pre-medical, medical year 4, medical year 1, and medical year 2 (Fig. 3). Additional analysis shown among the year 1 pre-medical, there was statistical significance between those who fell in group A and those in group B (group B, 12.40>group A, 11.49; $t=-4.050$, $p<0.001$).

Fig. 2. Medical Students' Empathy Expression by School System



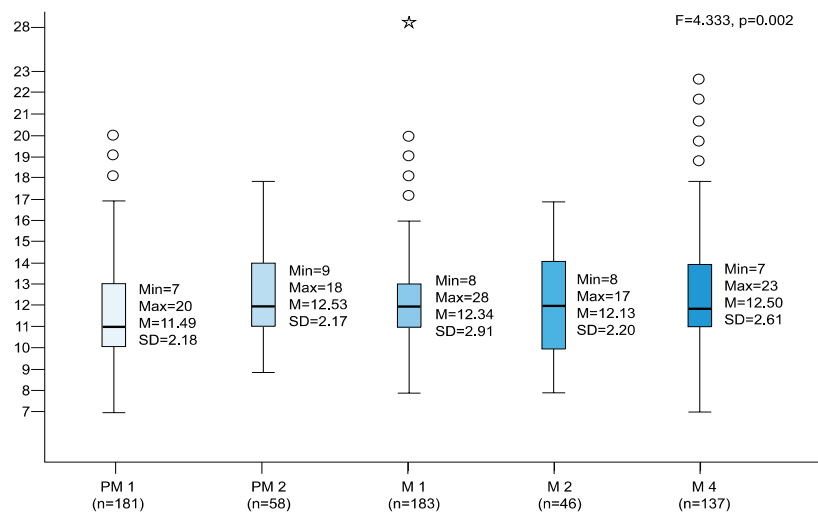
Min: Minimum, Max: Maximum, M: Mean, SD: Standard deviation.

Discussion

One of the goals in medical education is developing empathy among patients [15]. Therefore, accurate assessment of medical students' empathy is the first and most critical factor in education's goals and contents. Until today, medical students' empathy assessments have focused more on their cognitive approaches and attitudes and have used limited sources. Therefore, this study attempted to assesses these students empathy based on their expression, and the results show that Korean medical students have very low empathy expression.

The following example shows one of the 10 cases that were used to assess the students' empathy using their

Fig. 3. Medical Students' Empathy Expression by Academic Level



Min: Minimum, Max: Maximum, M: Mean, SD: Standard deviation, PM 1: Pre-medical year 1, PM 2: Pre-medical year 2, M 1: Medical year 1, M 2: Medical year 2, M 4: Medical year 4.

verbal expressions.

Student response from case 5:

"If my exam marks don't improve, I'm going to fail and lose my government allowance. I don't know what to do."

Student A: "If you worry that much, why don't you focus on your studies instead? Why are you wasting your time?"

Student B: "Is it hard for you to continue your studies without a scholarship? Did you have a talk with your teacher? Why don't you look for other scholarships?"

Student C: "What kind of studying style are you adopting? It seems that you are focusing on things other than your studies. Please check your priority."

In the case above, the medical students showed no empathy regarding the triggering topic. They gave direct advice, reassurance, and closed questions, which were coded as 1 for nonempathetic, and the majority of students, 84.5%, gave such responses 84.5%. There were also some aggressive responses 0.8%, which were coded as 0. In contrast, only 14.7% of responses were coded 2 and 3, that is, the students showed empathy regarding the trigger and the subjects' feelings. No students showed code 4, the facilitative verbal response.

Student D: "You seemed to be very anxiety with the school fee issue. I once had the similar frustration. Although you may be very worried, let's try to study together."

Student E: "So you are very worried about the government scholarship. I don't know if I could be a great help to you, but I will try my best to support you in your studies. Cheer up, buddy!"

Student F: "I guess you are very worried that your exam scores will not improve. But if you keep on trying hard preparing for the exams, don't you think your scores will improve?"

As seen from the above examples, medical students' usage of empathy expression skills showed very low total

scores, between 12 and 13, and these scores showed statistically significant differences by gender, school system, and academic level. These findings support the results from Lee et al.'s study [16], in which the female students had higher scores than the males, MC students' scored higher than the MS students, and year 3 students scores were higher than those for year 1, although that study used a different tool.

Our main findings suggest the following: First, medical students lack empathy expression and communication skills. The paper also supports the findings from the pilot study by Hur et al. [13] in which medical students' empathy expression skills were very low. Despite the current lack of medical students' empathy, current formal education appears to lack sufficient programs to enhance this trait among medical students [17]. Winefield and Chur-Hansen's work [14] shows that medical students' empathy could be enhanced through workshop experiences, which implies that empathy expression can be improved by sufficient training. Such results indicate a need for training programs for medical students in order to enhance their levels of empathy expression. These programs should include content on practical communication skills focused on empathy expression.

Second, the groups showed different level of empathy expression, and thus we need to better understand these students' characteristics. Many studies have reported that empathy varied by gender [18], and this study also found similar results. Although the students' empathy scores did not show a consistent difference, MS students showed higher empathy than the MC students, and also, the higher the academic year, the higher the empathy score. These results are interesting as they contrast with prior studies that suggested declining empathy with increasing academic levels. It could indicate that the effect of communication education provided at lower

grade levels manifests as students advance to upper academic levels. However, there is a possibility that even without a systematic education, expanded networks and accumulated communication experiences as students advance may have developed students' empathy, calling for more in-depth studies on this matter. Nevertheless, our result supports the result from Hong et al. [19], which also found that MS students' empathy scores were higher than those of the MC students and that students from higher education levels showed higher scores on the Korean edition of the Student Version of the Jefferson Scale of Empathy. This indicates that we must consider gender, school system, and academic level in developing training programs to enhance students' empathy. Particularly low scores were seen in the year 1 pre-medical students, which could be because these students have had relatively less exposure to various communication situations than other students. In addition, Korean medical college freshmen have very little time for and experience with interpersonal relationships during their high school years because they must prepare for the college entrance exam; thus, some cultural issues may have affected the result. Similarly, for higher education, deliberate consideration is needed on the programs' contents, levels, and related instructional methods according to the subject.

This study does have some limitations and suggests a number of further areas for research. First, the subject was limited to certain academic levels, and second, the questionnaire was voluntary and thus the response rate was quite low. In particular, without the empathy scores of the year 3 students, it was not possible to conduct more precise difference analysis by academic level, which somewhat limits the generalizability of our results. We suggest that future studies survey students from all representative academic years for more accurate findings. Second, because of the limitations of the tool itself, we

could only analyze the students' verbal expressions of empathy. However, as Mehrabian [20], McDermott [21], and Padula [22] nonverbal, nonverbal expression is very important in communication. In another words, how you say it is more important than what you say. Thus, using standardized patients and video recording observations can also aid in identifying nonverbal expressions, which will help us to evaluate empathy expression more precisely. Third, using both the Jefferson scale of Empathy-Medical Student version tool to assess attitudes and the Pencil-and-Paper Empathy Rating Test to assess expression, we will be able to identify the correlations between the results from the two instruments. This research will tells us whether empathy expression actually differs based on students' acknowledgement of the importance of empathy and will give us directions for future medical education regarding empathy.

But our findings lead us to the significant conclusion that there is a need for empathy enhancement training, and any such program should contain practical contents. Our results also offer information on the current status of medical students, which can validate the current medical curriculum and also serve as the foundation for designing and developing future empathy training programs.

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Appendix 1. Instructions and Trigger Statements Used in the 10-Item Empathy Scale

In order that we may assess the effectiveness of this practical in teaching basic medical communication skills, students are asked to complete the task below. Your participation is voluntary, anonymous, and designed to allow evaluation of this project. Please help. Imagine that each of the following statements has been made to you by someone you care about. Beneath each one, fill in what you regard as an appropriate verbal response. (Two lines were allowed beneath each item.)

1. My parents really get me down. They insist I study physics and chemistry, when I'm not at all interested in those subjects.
2. I thought I'd have a talk with you because you did well in that subject. But, you've been no help to me at all.
3. My children tell me I'm old-fashioned. After all I've done for them! However hard I try, they just don't appreciate me.
4. So, I studied hard for years, and now, nobody wants to give me a job. Perhaps I'll go back and work on the farm.
5. If my exam marks don't improve, I'm going to fail and lose my government allowance. I don't know what to do.
6. I just can't communicate with my parents. Whenever I try to explain how I feel about things, they get all upset and call me a fool.
7. I finally got up courage to tell him that we all think he's big-headed. Then, he turned on me and made me feel so stupid, I ended up apologizing and slinking away.
8. I try so hard to please everybody, but it always seems to go wrong. Nobody seems to care whether I'm around or not.
9. Whenever I try to get close to someone of the opposite sex, I always mess it up. Am I so physically unattractive? How do I turn them off?
10. My brother has started to act so strangely. He's very, very nervous—I'm wondering if I should do anything.

Adapted from Winefield and Chur-Hansen. *Med Educ* 2000; 34: 90-94 [14].

Appendix 2. Coding Rules of Pencil-and-Paper Empathy Rating Test

Scale	Coding rule
0	Aggressive or derogatory response
1	Nonempathetic: does not acknowledge feeling or content of trigger; includes advice, reassurance, closed question
2	Partially acceptable: open-ended question or response that acknowledges feeling or content of trigger
3	Interchangeable/empathetic: acknowledges both the feeling and the content of the trigger (i.e., some variation of the classic 'you feel...because...')
4	Facilitative: reflects but also adds deeper feeling and meaning to the trigger statement in a way that encourages self-exploration (not really to be expected after a brief statement of the problem)

Adapted from Winefield and Chur-Hansen. *Med Educ* 2000; 34: 90-94 [14].