Patient Interviews Improve Empathy Levels of Preclinical Medical Students

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ABSTRACT

Objective: In order to cultivate and maintain empathy during medical school, an experiential learning program, "A Patient as a Human Being", was designed to promote empathy in second-year medical students through interviews with patients focusing on their suffering and the difficulties arising from their illnesses and hospital stays.

Methods: The second-year medical students were divided into groups of three and four. Each group was assigned a patient to interview under close supervision. The selected patients were informed beforehand about the interview and voluntarily agreed to participate. The Thai version of the Jefferson Scale of Physician Empathy–Student Version (JSPE-SV) was used to assess the students' empathy levels.

Results: The baseline JSPE-SV score (n = 310) was 114.10±10.20. After the interview, the scores significantly increased (1.19 [0.21-2.18], P = 0.009). Students in the lower-half group of baseline scores showed a higher improvement (2.64 [1.14–4.15], P < 0.001) than those in the upper-half group. The difference coefficient by multivariate analysis of the improved JSPE–SV scores between the two groups was 3.03 [1.08-4.98] (p = 0.002), accompanied by a correlation between the pre-activity empathy score and the improved score (p = - 0.21, P-value < 0.01).

Conclusion: The patient interviews improved the empathy levels of the preclinical medical students, especially those with lower baseline empathy levels.

Keywords: Empathy; preclinical medical student; experiential learning; patient interview (Siriraj Med J 2019;71: 44-51)

INTRODUCTION

Empathy has been described as the ability to understand and accept the feelings of other people.[1-3] In medicine, empathy may be defined as the capability of physicians to accurately comprehend the mental status of their patients.[1] Importantly, empathy has been described as one of the important components of the doctor-patient relationship in the provision of holistic patient care.[4–8] Nevertheless, the empathy level of medical students tends to decline during medical school.[8-14] Therefore, empathy maintenance and improvement during a course of medical training has been emphasized.[5,7, 15-18] Various activities have been created to enhance empathy among medical students, including communication-skill training in various formats, such as didactic lectures, experiential learning, role-playing, and reflective writing after a learning session with standardized patients. However, students' empathy levels were not measured as part of those activities.[19, 20]

To study empathy in medicine, various questionnaires have been developed as a measurement tool, such as the Jefferson Scale of Physician Empathy (JSPE)[21], the Empathy Test (ET)[22], the Balanced Emotional Empathy

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Scale (BEES)[23], and the Consultation and Relational Empathy (CARE).[24] Among those tools, the JSPE is the most widely used instrument for assessing the empathy of healthcare professionals, including medical students. The JSPE–Student Version (SV) has been developed and validated into many languages, including Thai.

To cultivate empathy in preclinical medical student, the development program entitled "A Patient as a Human Being" was designed as a mandatory activity in the Humanistic Medicine course for second-year medical students. Through a group interview of a patient admitted to Siriraj Hospital, students focused on the patient's suffering and the difficulties arising from the illness and hospital stay. After the interview, each student submitted a piece of reflective writing exploring the interview experience. To evaluate the effects of this experiential learning on students' empathy, the Thai version of the JSPE–SV was utilized.

MATERIALS AND METHODS

Participants

The Thai medical school system has implemented a 6-year curriculum for the bachelor's degree in Doctor of Medicine (M.D.). The first year, referred to as the pre-medicine year, focuses on general education and/or the liberal arts. The next two years are the preclinical years, and the remainder of the course is the clinical years. The present study focused on preclinical medical students at the Faculty of Medicine Siriraj Hospital, in particular, the second-year medical students (n = 325) participating in the activity "A Patient as a Human Being", which is a part of the compulsory Humanistic Medicine course. In all, 310 students (n = 310) voluntarily participated in the study. However, 14 of those students were subsequently excluded because their questionnaires were incomplete.

Instrument

The Thai version of the Jefferson Scale of Physician Empathy–Student Version (JSPE–SV)[25] was used to evaluate the empathy level of each medical student before and after participating in the activity "A Patient as a Human Being". The JSPE–SV comprises twenty self-reported statements. Students rated each statement from one to seven, which represented the spectrum from "strongly disagree" to "strongly agree", respectively. The total score could range from 20 to 140 points. Participants with a higher score were regarded as having a higher level of empathy than those with a lower score. The development of the Thai version of the JSPE–SV by the back-translation procedure had been previously examined, and it had demonstrated acceptable validity and reliability.[25]

Intervention

"A Patient as a Human Being" is one of the learning activities in the Humanistic Medicine course for second-year medical students at the Faculty of Medicine, Siriraj Hospital. It provides them with first-hand experience in interviewing a patient regarding the suffering arising from having a disease and the difficulties associated with a hospital stay. In other words, this activity provides the opportunity for the preclinical medical students to explore and to feel suffering and hardship from a patient's perspective. Before the activity, the professional manners to be employed during the interview were introduced. Each group of three or four medical students subsequently met with an assigned faculty member and a fifth-year medical student to prepare for the patient interview. The recruitment of each selected inpatient was based on voluntary permission to participate in the activity. A thirty-minute interview was conducted by a group of preclinical students under the supervision of a senior medical student or faculty member. After the interview, the second-year students reflected on their experiences through conversation with an assigned faculty member and reflective writing.

To investigate the effects of the activity on the empathy levels of second-year medical students, a study protocol was submitted to, and approved by the Siriraj Institutional Review Board (Si 759/2016). Details of the research were subsequently explained to second-year medical students. Each student who voluntarily decided to participate later anonymously completed the Thai version of the JSPE-SV. This was done before and after their patient interview, using a web-based questionnaire created by the Undergraduate Medical Education Unit of the Faculty of Medicine, Siriraj Hospital. The empathy scores before and after the interview and reflection tasks were designated as the pre-activity and post-activity scores, respectively.

Data analysis

Data acquired from the electronic database consisted of the pre- and post-activity scores, and demographic information such as gender and grade point average (GPA). These underwent a quantitative analysis using the R Statistical System, version 3.2.5, with the built-in library and significance threshold set to 0.05.

To determine the effects of the interview-reflection activity on the empathy scores, the pair-wised difference between the pre-activity and post-activity scores (which represents improvement) was examined with the one-tailed dependent *t*-test. To determine the factors associated with an improvement in the empathy scores, further

analyses were performed on subgroups of students in terms of their gender, GPA, participation in university activities, experience in taking care of patients with chronic illnesses, and their having heard the word "empathy" before admission to the medical school.

To transform the GPA and the pre-activity score from numerical data to categorical data, the median cut-point was applied to classify these samples into two subgroups. For instance, with the "Higher GPA" vs. the "Lower GPA" subgroups, the cut point was the median of the GPAs of the participants. As a further example, in the case of the "Higher pre-activity score" vs. the "Lower pre-activity score" subgroups, the cut point was the median of the pre-activity scores of the participants. Since the data were categorized into at most two subgroups for each variable, the difference between the subgroups for each variable was evaluated by the two-tailed independent *t*-test. The Pearson correlation coefficient was applied to evaluate any association between the numerical factor and the pre-activity empathy score.

To study the factors determining the pre-activity empathy scores, a comparison was made of the score for each subgroup within the same variable (e.g., the "Higher GPA" vs. the "Lower GPA" subgroups). A univariate analysis was performed on each variable using a two-tailed independent t-test for categorical factors. Multivariate analyses were performed on the between-subgroup difference using a multivariate linear regression model to adjust for confounding effects.

RESULTS

Of the 325 second-year medical students, 310 students (95.38%) undertook the web-based questionnaire, with 296 (91.08%) of the questionnaires being fully completed. The 14 students with incomplete data were excluded from this study. The demography of the categorical and numerical variables is presented in Tables 1 and 2, respectively.

Association factors determining pre-activity scores

Unadjusted associations between the pre-activity empathy scores and the candidate variables demonstrated no statistically significant differences. The detailed results of the association factors that determined the pre-activity scores are in Table 3.

Improvements in empathy scores

Overall, the statistical analyses revealed a significant increase in the empathy scores from the pre- to the post-activity scores (1.19 [0.21–2.18], P-value = 0.009). The unadjusted comparisons within the subgroups showed significant improvements in the empathy scores of the following subgroups: male students (1.31 [0.01–2.62], P-value = 0.025); students with a higher GPA (1.60 [0.35–2.85], P-value = 0.007); students with no participation in the extracurricular activities of the Mahidol University (2.06 [0.25–3.87], P-value = 0.014); students who had experience of taking care of a patient with chronic illness (1.84 [0.37–1.31], P-value = 0.008); students with no experience of hearing the word "empathy" before admission to the medical school (1.81 [0.11–3.51], P-value = 0.020); and students with a lower pre-activity empathy score (2.64 [1.14–4.15], P-value < 0.001). When the improved empathy scores were compared between the subgroups, the only statistically significant factor was the pre-activity score. From the multivariate analysis, the students in the "Lower pre-activity" group had a significantly higher improvement in empathy score than those in the "Higher pre-activity" group (P-value = 0.002). When the GPA and pre-activity empathy score were considered as a scale variable, there were significant degrees of correlation between the improvement and GPA (p = 0.13, P-value = 0.03) and between the improvement and pre-activity empathy score (p = - 0.21, P-value < 0.01). These correlations supported the findings of the categorical groups' comparison. The details of the statistical analyses are given in Tables 4 and 5.

DISCUSSION

"A Patient as a Human Being", a truly experiential learning activity that improves the empathy levels of preclinical medical students, involves authentic patients. This distinguishes it from previously reported activities using simulated medical consultations with standardized patients[26] or clinical interview training with simulated situations[27] Through direct communication with authentic patients, "A Patient as a Human Being" offers a unique learning experience designed to cultivate empathy among preclinical students participating in an otherwise traditional medical curriculum. Well-developed communication skills are essential for a doctor to express empathy and to give high quality care.[28-30] Conversations with real patients have previously been reported to increase and maintain the empathy levels of medical students.[31,32]

The JSPE is an instrument that has been used by many previous studies to measure levels of empathy as well as to evaluate the effects of learning activities designed to improve and maintain empathy[13,15,26,33-35] Importantly, the JSPE has been translated into Thai and validated on Thai medical students.[25] Therefore, the Thai version of the JSPE was the best available tool to study empathy levels in Thailand.

TABLE 1. Demographic information of the numerical data.

Numerical variables	Min. - Max.	Mean	S.D.
Age (years)	18 - 21	19.58	0.59
Grade point average	2.13 - 4.00	3.48	0.33
Pre-activity empathy score	76 - 140	114.10	10.20
Post-activity empathy score	72 - 140	115.30	11.88

Abbreviations: min. = the minimum value, max. = the maximum value, S.D. = standard deviation of the mean

TABLE 2. Demographic information of the categorical data.

Categorical variables	N (% of total)
Gender	
Male	181 (61.15)
Female	115 (38.85)
Grade point average	
High (Mean = 3.75, S.D. = 0.13)	149 (50.34)
Low (Mean = 3.20, S.D. = 0.24)	147 (49.66)
Participation of university activities	
Yes	183 (61.82)
No	113 (38.18)
Experience in caring for a patient with chronic illnesses	
Yes	135 (45.61)
No	161 (54.39)
Having heard the word 'empathy' before admission to the medical school	
Yes	186 (62.84)
No	110 (37.16)

Abbreviations: N = numbers of subject, S.D. = standard deviation of the mean

In this study, the baseline empathy score of the second-year medical students was 114.10±10.20, which was similar to the mean score of the second year medical students at another medical school in Thailand.[25] The Faculty of Medicine, Siriraj Hospital, introduces the word "empathy" to first-year medical students through the mandatory course entitled Medical Profession. Therefore, the term "empathy" was not considered a new word for the second-year medical students.

Previous studies have demonstrated associations between empathy levels and factors such as gender and education level. For example, female students have been shown to have a higher mean empathy score than male students.[14,15,25,35,36] In contrast, in the current study, the relatively limited number of female medical students might have been responsible for there being no significant difference in the empathy levels of the genders. In addition, it has been demonstrated that higher education levels result in higher empathy scores.[37] However, a high GPA has also been associated with lower empathy scores.[38] Furthermore, it has been demonstrated that medical students attending any service activity (such as the free clinic for patients without insurance) have a higher empathy score than those who have never attended.[35]

In contrast to the findings of the other studies, the present study did not find any association between

TABLE 3. Associations of the pre-activity empathy score with corresponding subgroup analysis for each candidate variable.

Variables	N	Mean	S.D.	Between Subgroup Difference	Lower 95% CI	Upper 95% CI	P-value
Gender				0.29	-2.07	2.65	0.808
Male	181	114.20	10.55				
Female	115	113.91	9.73				
Grade point average				0.21	-2.13	2.55	0.861
High	149	114.19	10.89				
Low	147	113.99	9.53				
Participation of university activities				- 0.17	- 2.54	2.20	0.889
Yes	183	114.03	10.53				
No	113	114.19	9.75				
Experience in taking care of a patient with chronic illnesses				- 0.79	- 3.12	1.53	0.501
Yes	135	113.66	9.47				
No	161	114.45	10.83				
Having heard the word 'empathy' before admission to the medical school				0.71	- 1.73	3.15	0.567
Yes	186	114.35	10.14				
No	110	113.65	10.39				

Abbreviations: N = numbers of subject, CI = Confidence Interval

the empathy scores and gender, GPA, participation in university activities, experience of taking care of a patient (e.g., a family member) with chronic illnesses, or having heard the word "empathy" before admission to the medical school. According to the current study, for each subgroup comparison (Table 3), male gender, having a higher GPA, the non-participation in university activities, no experience of taking care of a patient with chronic illnesses, and having heard the word "empathy" before medical school admission showed a positive trend to having a higher baseline empathy score. However, the differences in the empathy scores of all factors were without statistical significance.

"A Patient as a Human Being" was designed to improve and maintain the empathy levels of preclinical medical students. From the empathy scores measured by the JSPE–SV, Thai version, the student participants in the present study demonstrated an improvement of 1.19 [0.21–2.18] in the effect size, and with statistical significance (P = 0.009). Many activities[19] have been reported by other studies to improve empathy levels, for example, simulated medical consultations using standardized patients with subsequent reflection by students on the patients' feelings about their diseases and the doctors' feelings towards the patients.[26] In addition, participation in communication skills workshops[27] has also been demonstrated to improve empathy levels. Even though there was not much improvement in the scores, the current study strengthened the finding of many previous studies that experiential learning gained from authentic situations, simulations, or workshops is effective in improving empathy.

"A Patient as a Human Being" had a statistically significantly greater impact on the students who had a lower baseline empathy level than those with a higher level. The students with the lower baseline empathy level had a statistically significant improvement in effect size of 2.90 by univariate analysis and 3.03 by multivariate analysis. This study demonstrated that a medical school could improve the empathy levels of preclinical medical students through a patient interview and subsequent reflection on the patient's suffering. Moreover, a previous study found that medical students with a higher empathy level demonstrated a lower rate of empathy decrease than those with a lower baseline empathy level[14] Therefore, medical schools could sustain the empathy levels among students by providing an interview-reflection activity throughout their curriculum.

TABLE 4. Univariate analysis of within subgroup improvement of the empathy score after participation in 'A patient as human being' activity. Statistical analyses of empathy score within subgroup improvements and corresponding univariate subgroups were demonstrated.

Categorization	N	Within subgroup improvement	Lower 95% CI	Upper 95% CI	P-value
Overall	296	1.19	0.21	2.18	0.009
By Gender					
Male	181	1.31	0.01	2.62	0.025
Female	115	1.01	- 0.46	2.48	0.091
By GPA					
Higher	149	1.60	0.35	2.85	0.007
Lower	147	0.78	- 0.73	2.30	0.157
By experience of participation in university activities					
Yes	183	0.66	- 0.47	1.80	0.127
No	113	2.06	0.25	3.87	0.014
By experience of taking care of a patient with a chronic illness					
Yes	135	1.84	0.37	3.31	0.008
No	161	0.65	- 0.66	1.97	0.166
By experience of hearing the word 'empathy' before admission					
Yes	186	0.83	- 0.36	2.02	0.088
No	110	1.81	0.11	3.51	0.020
By pre-activity empathy score					
High score	148	- 0.26	- 1.47	0.96	0.660
Low score	148	2.64	1.14	4.15	< 0.001

Abbreviations: N = numbers of subject, CI = Confidence Interval

In the subgroup division of an unadjusted comparison (Table 5), differences between each subgroup were demonstrated using both univariate and multivariate analyses. In the case of the male medical students, a lower baseline empathy level, a high GPA, and no participation in university activities showed an improvement in empathy scores after participating in "A Patient as a Human Being". These observations imply that the benefits of this activity were not homogenous among medical students from different subgroups. In agreement with previous studies, there would appear to be no single activity capable of improving the empathy levels of students from diverse backgrounds, but the personal and professional development activities (such as communication skills workshops, interpersonal skills workshops, and literature and medicine programs) would help students realize the importance of empathy in the medical profession.[36]

One of limiting factors of this study was the differences among the patients participating in the interviews. To illustrate, some patients shared their stories with humor, whereas others were highly emotional, expressing their feelings tearfully through a large part of the interview. Furthermore, through the self-reflective writing, it was apparent that students from the same interview session demonstrated different degrees of perception regarding patients' sufferings and difficulties. Another possible limitation could be that "A Patient as a Human Being" is an intra-curricular activity. Therefore, there was no control

TABLE 5. Univariate and multivariate analysis of between subgroup difference of the empathy score after participation in 'A patient as human being' activity. Statistical analyses of empathy score between subgroup and corresponding univariate and multivariate subgroups were demonstrated.

Categorization	Univariate Analysis				Multivariate Analysis			
	Difference*	Lower 95% CI	Upper 95% CI	P-value	Difference* coefficient	Lower 95% CI	Upper 95% CI	P-value
By Gender								
Male > Female	0.30	- 1.68	2.28	0.765	0.41	- 1.60	2.42	0.691
By GPA								
Higher > Lower	0.82	- 1.16	2.79	0.417	1.24	- 0.73	3.20	0.217
By experience of participation in university activities								
No>Yes	1.41	- 0.74	3.55	0.197	1.44	- 0.59	3.47	0.164
By experience of taking care of a patient with a chronic illness								
Yes>No	1.19	- 0.80	3.16	0.240	1.64	- 0.34	3.61	0.104
By experience of hearing the word 'empathy' before admission								
No>Yes	0.98	- 1.12	3.07	0.356	0.97	- 1.06	2.99	0.348
By pre-activity empathy score								
Low score > High score	2.90	0.95	4.84	0.004	3.03	1.08	4.98	0.002

Note: Difference* refers to between subgroup difference
Abbreviation: CI = Confidence Interval

group to emphasize the true effect of this experiential learning. Last but not least, this study demonstrated only the short-term effect of the patient interviews and subsequent reflection; no long-term assessment was made.

CONCLUSION

"A Patient as a Human Being", a mandatory learning activity in a traditional six-year medical curriculum, provided first-hand experience for the preclinical medical students to feel patients' suffering from their current illnesses and hospital stays. After the interviews with the patients, through an experiential learning cycle, students reflected on what they had learned during the interviews and how they could help the patients as preclinical medical students. Participation in "A Patient as a Human Being" increased the second-year medical students' empathy levels, especially in the case of students with lower baseline empathy levels.

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