

Evaluating the relationship between empathy and motivation for medical education in medical student at the Faculty of Medicine Vajira Hospital

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Background : *Empathy is considered as a crucial part of a doctor's profession that should be mastered by medical graduates. Recently, however, many studies reported the medical students' empathy declines during their time at medical school. Thus, the development of empathy in the period of formal education is essential. The involvement of factor such as motivation for medical education might play a role in the development of empathy.*

Objective : *To evaluate the relationship between empathy and motivation for medical education among medical students.*

Methods : *This descriptive prospective study was conducted regarding first to fifth year medical students of the Faculty of Medicine Vajira Hospital, Thailand (n = 215). We used the Jefferson Scale of Empathy-Student Version to measure empathy and the Strength of Motivation for Medical School (SMMS) questionnaire to determine students' motivation for medical education. The data were statistically analyzed by SPSS program.*

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Results : *The results showed that the empathy score was positively correlated to motivation for medical education score ($r = 0.226$, $P = 0.001$). Mean scores of empathy and SMMS were 102 ± 12.34 (maximum = 140) and 51.85 ± 7.76 (maximum = 75), respectively. SMMS score detected significant difference between first and third year medical student ($P < 0.05$). However, educational level, GPA, and gender were not found related to the two concepts.*

Conclusion : *Our study provides an empirical evidence to support the contention that level of empathy is positively-related to motivation for medical education in medical student.*

Keywords : *Empathy; motivation for medical education; medical student; Vajira Hospital.*

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เบญจมาศ ประทุมไทย, ธิรวาสต์ พุ่มอยู่, บงกช อูระธรรม, วรัญญา อิ่มประสิทธิ์ชัย, กัญญา อนันตสมบุญ, กนกพร ฉายะบุระกุล. การประเมินความสัมพันธ์ระหว่างการร่วมรู้สึกต่อผู้ป่วยและแรงจูงใจในการเรียนแพทย์ของนักศึกษาแพทย์ คณะแพทยศาสตร์วชิรพยาบาล. จุฬาลงกรณ์เวชสาร 2561 พ.ศ. – ม.ย.; 62(3): 525 – 33

- เหตุผลของการทำวิจัย** : การร่วมรู้สึกต่อผู้ป่วยถือเป็นส่วนสำคัญของวิชาชีพแพทย์ ซึ่งผู้สำเร็จการศึกษาทางการแพทย์ควรให้ความสำคัญ อย่างไรก็ตามเมื่อเร็ว ๆ นี้มีการศึกษาจำนวนมากรายงานว่ามีการลดลงของการร่วมรู้สึกต่อผู้ป่วยของนักศึกษาในช่วงเวลาที่เรียนในโรงเรียนแพทย์ ดังนั้นการสร้างการร่วมรู้สึกต่อผู้ป่วยในช่วงของการเรียนจึงเป็นสิ่งสำคัญ ปัจจัยที่เกี่ยวข้องเช่น แรงจูงใจในการเรียนแพทย์ อาจจะมีความบทบาทสำคัญในการที่จะพัฒนาการร่วมรู้สึกต่อผู้ป่วย
- วัตถุประสงค์** : เพื่อศึกษาความสัมพันธ์ระหว่างการร่วมรู้สึกต่อผู้ป่วยและแรงจูงใจในการเรียนแพทย์ของนักศึกษาแพทย์
- วิธีการทำวิจัย** : เป็นการศึกษาระยะยาว ทำการศึกษาในนักศึกษาแพทย์ชั้นปีที่ 1 - 5 ของคณะแพทยศาสตร์วชิรพยาบาล มหาวิทยาลัยนวมินทราธิราช (จำนวน 215 ราย) พวกเราใช้ Jefferson Scale of Empathy-Student Version ในการวัดการร่วมรู้สึกต่อผู้ป่วย และ Strength of Motivation for Medical School questionnaire ในการวัดแรงจูงใจในการเรียนแพทย์ของนักศึกษา วิเคราะห์ข้อมูลโดยใช้โปรแกรม SPSS
- ผลการศึกษา** : ผลการศึกษาพบว่าการร่วมรู้สึกต่อผู้ป่วยมีความสัมพันธ์ในเชิงบวกกับแรงจูงใจในการเรียนแพทย์ ($r = 0.226, P = 0.001$) โดยคะแนนเฉลี่ยของการร่วมรู้สึกต่อผู้ป่วย คือ 102.00 ± 12.34 (เต็ม 140 คะแนน) และคะแนนเฉลี่ยของแรงจูงใจในการเรียนแพทย์ คือ 51.85 ± 7.76 (เต็ม 75 คะแนน) ในการศึกษาครั้งนี้พบความแตกต่างอย่างมีนัยสำคัญของคะแนนแรงจูงใจในการเรียนระหว่างนักศึกษาชั้นปีที่ 1 และชั้นปีที่ 3 ($P < 0.05$) อย่างไรก็ตามผลการศึกษาพบว่าระดับชั้นปีการศึกษาเกรดเฉลี่ย และเพศ ไม่มีความสัมพันธ์กับการร่วมรู้สึกต่อผู้ป่วยหรือแรงจูงใจในการเรียนแพทย์
- สรุป** : การศึกษาของเราเป็นหลักฐานเชิงประจักษ์เพื่อสนับสนุนว่าการร่วมรู้สึกต่อผู้ป่วยมีความสัมพันธ์เชิงบวกกับแรงจูงใจในการเรียนแพทย์ของนักศึกษาแพทย์
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Empathy is defined as an ability to understand the feeling, emotions and behavior of another person and the capacity to communicate these feelings.⁽¹⁾ Previous studies provided evidence that empathy is significantly related with increasing satisfaction of the patient, good clinical outcomes, better compliance, and reduction of medical-legal issues or litigation.⁽²⁾ Thus, educational and professional organizations recommended that empathy has been considered as one of a good doctor's profession.⁽³⁾ Recently, however, many studies reported the medical students' empathy declines during their time in medical schools. Thus, empathy is included in a curriculum for medical education that is one of the goals to improve the medical profession.⁽⁴⁾ Several studies reported the involvement factors including gender, educational levels, grade point average (GPA) affect to the empathy levels in medical students.⁽⁵⁻⁸⁾

Motivation drives behavior and effort towards success.⁽⁹⁾ Motivation for medical education was used as the selection tool for screening students to enter the medical school due to previous studies which suggest that motivation for medical education is recognized as a significant predictor for learning, academic success, determination, continuity in a program, and a good performance in clinical levels.⁽¹⁰⁻¹³⁾

Although, the motivation for medical education was used as a future predictor, few studies reported the association between empathy and motivation for medical education. The purpose of this study was therefore to investigate the relationship between empathy and motivation for medical education among medical students through questionnaires of medical student at the Faculty of Medicine Vajira Hospital.

Methods

Sample

A descriptive cross-sectional study was conducted among medical students in Thailand, from first to fifth year at the Faculty of Medicine Vajira Hospital, Navamindradhiraj University in the end of second semester 2016. Sample size was 215 medical students. The research has been approved by the Ethics Committee of the Faculty of Medicine Vajira Hospital (approval number COA 66/2560). The only inclusion criterion was being a student of the Faculty of Medicine from first to fifth year; whereas, the exclusion criteria were being a guest, drop-out, or withdrawn student from the study. All participants were informed that participation in the study was voluntary and anonymity was guaranteed.

Instruments

For data collection, a Thai translation of Jefferson Scale of Empathy-Student (JSE-S) Version was used.⁽¹⁴⁾ This scale consists of 20 items, each item on a 7-point Likert scale. Three subscales including adopting a view, empathetic care, and putting oneself in patients' positions. Ten negative items of this scale are scored reversely. The total score falls in the range of 20 to 140. Previous studies show that the internal consistency of these 20 items is extremely high ($\alpha = 0.89$) along with high degree of validity and reliability ($r = 0.78$).

The motivation for medical education in this research was measured using the Strength of Motivation for Medical School (SMMS) questionnaire (Thai-version)⁽¹⁵⁾ that consists of 15 items, and each item has 5 Likert scale options of responses. SMMS is divided into three motivation types including willingness to sacrifice, readiness to start, and

persistence. High validity and reliability ($r = 0.87$) was reported in a previous study.⁽¹⁵⁾ The construct validity of both JSE-S version and SMMS questionnaires were evaluated on 10 medical students and proved appropriate.

Statistical analyses

Data were analyzed according to the distribution and characters of each data, and the research question. Data distribution was assessed statistically using the Shapiro-Wilk normality test. Normal data distribution was analyzed by using t-test or one-way ANOVA that were continued by Duncan post hoc test. Non-normal data distribution was analyzed by using Mann-Whitney U test or the Kruskal-Wallis differential test followed by Mann-Whitney post hoc test. To evaluate the correlation between two numeric variables, the Pearson correlation test was conducted. Statistical analysis was performed in SPSS 19 (SPSS Inc, Chicago, IL, USA) and $P < 0.05$ was considered as the significant level.

Results

Characteristics

Of respondents of the 409 surveys distributed, 215 surveys were returned for an overall response rate of 52.57%. These 215 respondents including 65 (30.23%) first year students, 44 (20.46%) second year, 35 (16.28%) third year, 34 (15.81%) fourth year, and 37 (17.21%) fifth year students; 124 students were female (57.68%) and 91 male (42.32.21%). The number of medical students according to their GPA is shown in Table 1.

Empathy scores

Mean of empathy score in medical students at Vajira Hospital was 102 ± 12.34 . There were no statistically significant difference regarding the empathy scores among the students with different gender and GPA. The score was highest in the first year and lowest in the third year medical student. However, no significant difference was found among the medical students with different the education levels ($P > 0.05$) (Table 1).

Motivation for medical education

The mean total score of SMMS in medical students was 51.85 ± 7.76 . There were no statistically significant difference regarding SMMS score among students with different gender and GPA (Table 1). The score was highest in first year and lowest in third year medical student and the statistically significant difference was found as showed in Table 1. The mean score of willingness to sacrifice subscale was significant higher than the other subscales. No significant differences were found between readiness to start scores and persistence score among students (Table 2).

Correlation of empathy and motivation for medical education

As showed in Table 3, empathy score was positively significant correlated to SMMS score ($r = 0.226$, $P = 0.001$). The correlation was highest in willingness to sacrifice and persistence, and lowest in readiness to start subscale, however, no significantly different was found.

Table 1. Characteristics comparison on empathy and Motivation for Medical School (SMMS) scores.

Characteristics	n	Empathy score		P - value	SMSS score		P -value
		Mean	SD		Mean	SD	
Gender				0.542*			0.895**
Male	91	101.08 ^a	13.66		52.13 ^a	8.08	
Female	124	102.65 ^a	11.37		51.85 ^a	7.30	
Total	215						
Educational level (Year)				0.372***			0.000****
First	65	103.98 ^a	12.65		54.36 ^a	7.09	
Second	44	102.83 ^a	12.19		53.32 ^{a,b}	7.85	
Third	35	99.40 ^a	12.05		48.71 ^c	7.56	
Fourth	34	100.53 ^a	11.65		49.82 ^c	7.11	
Fifth	37	102.03 ^a	12.96		50.57 ^{b,c}	8.11	
Total	215						
GPA				0.072***			0.056***
<2.50	6	92.33 ^a	8.41		53.67 ^a	8.21	
2.50 – 2.99	33	100.03 ^a	12.45		51.67 ^a	8.66	
3.00 – 3.49	123	103.67 ^a	12.37		50.80 ^a	8.10	
3.50 – 4.00	53	100.27 ^a	11.97		54.23 ^a	5.66	
Total	215						

The same superscripts in the characteristic indicate no statistical significance, $P < 0.05$. * *t*-test, ** Mann-Whitney U, ***one-way ANOVA, ****Kruskall-Wallis test

Table 2. Mean and standard deviation (SD) of SMMS subscale.

SMMS Subscale	Mean	SD
Willingness to sacrifice	16.90 ^a	3.05
Readiness to start	15.75 ^b	3.30
Persistence	15.82 ^b	3.25
Total SMMS score	51.85	7.76

The same superscripts indicate no statistical significance ($P < 0.05$)

Table 3. Correlations (*r*) of empathy score and SMMS subscales.

SMMS Subscale	r	P - value
Willingness to sacrifice	0.190 ^a	0.005
Readiness to start	0.135 ^a	0.049
Persistence	0.190 ^a	0.005
Total SMMS score	0.226	0.001

The same superscripts indicate no statistical significance ($P < 0.05$)

Discussion

This study, we investigated the relationship between empathy and motivation for medical education in medical students at Faculty of Medicine Vajira Hospital. Firstly, regarding the empathy score in medical students. We found that the mean score was close to previous studies found in medical students from Iraq, Japan, and Iran, but lower than those in Western countries such as USA and Europe.⁽¹⁶⁻¹⁹⁾ Hojat⁽²⁰⁾ suggested about the difference of empathy scores between the Asian and Western medical students may be caused by the differences in cultural and social factors. In this study, we found no statistically significant relation between changes in empathy and gender, educational level or GPA. However, other studies showed that empathy to patients in first year medical students (before clinical levels) was higher than those in the final year (clinical levels). This indicates that the physicians' empathy may be reduced by clinical training.^(7,19) The different of these findings is may be caused by the differences in medical education systems; however, there has been insufficient number of studies to illustrate that such a causal relationship exists.

Next, we investigated the motivation for medical education using SMMS questionnaires and we found no statistically significant relation between changes in motivation for medical education and gender or GPA. However, SMSS score was highest in the first year and slightly decreased in the second year and reached the lowest in the third year and increased again in the fourth and fifth year of medical students. Our result was similar to the previous study in medical student of Chulalongkorn University, Thailand. This study suggested that it is possible that

first year students just came to medical school, so they need to learn a new thing that may relate to the increase of motivation.⁽¹⁵⁾ Whereas, the decreasing of motivation in third year is related to the harder leaning and more stress than the first year medical students as describe in previous study.⁽²¹⁾

Finally, the positive-correlation between empathy and motivation for medical education was found in our study. These results supported the previous study in medical student at the Faculty of Medical Sciences, Nova University, Portugal.⁽²²⁾ Other studies have also found the positive-relation between empathy and motivation for medical education in medical student. However, their results are not directly comparable to those of the present study. One concerned applicants to medical school⁽²³⁾ and another involved sixth-year medical students, using qualitative methods.⁽²⁴⁾ Thus, it is recommended that the more attention should be paid to the motivation for medical education which plays a significant part in the increasing of empathy.

There are several limitations of this study. Firstly, a cross-sectional study was used in this study, which did not allow for demonstration of causal relationships. Lack of significant clinical exposure may also have affected how the students answered the questions on the survey as the first three years of medical school include only partial clinical exposure; this may have influenced empathy. Secondly, participation in the survey and understanding of the questionnaire items may have been biased by events during data collection. Thirdly, as this study was limited to the Faculty of Medicine Vajira Hospital, the results cannot be generalized to other medical colleges in Thailand.

In summary, our study provides an empirical evidence to support the contention that level of empathy is positively-related to motivation for medical education in medical student. This finding suggests that educators ought to advertise to potential medical students by focusing on empathy-related messages.

Conflict of interest

The authors, hereby, declare no conflict of interest

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References

1. Kaplan SH, Greenfield S, Ware JE Jr. Assessing the effects of physician-patient interactions on the outcomes of chronic disease. *Med Care* 1989;27:S110-27.
2. Epstein RM, Siegel DJ, Silberman J. Self-monitoring in clinical practice: a challenge for medical educators. *J Contin Educ Health Prof* 2008;28:5-13.
3. Stephenson A, Higgs R, Sugarman J. Teaching professional development in medical schools. *Lancet* 2001;357:867-70.
4. Stepien KA, Baernstein A. Educating for empathy. *J Gen Intern Med* 2006;21:524-30.
5. Hojat M, Gonnella JS, Nasca TJ, Mangione S, Veloksi JJ, Magee M. The Jefferson Scale of Physician Empathy: Further psychometric data and differences by gender and specialty at item level. *Acad Med* 2002;77:S58-60.
6. Roh MS, Hahm BJ, Lee DH, Suh DH. Evaluation of empathy among Korean medical students: A cross-sectional study using the Korean Version of the Jefferson Scale of Physician Empathy. *Teach Learn Med* 2010;22:167-71.
7. Chen D, Lew R, Hershman W, Orlander J. A cross-sectional measurement of medical student empathy. *J Gen Intern Med* 2007;22:1434-8.
8. Bertram K, Randazzo J, Alabi N, Levenson J, Doucette JT, Barbosa P. Strong correlations between empathy, emotional intelligence, and personality traits among podiatric medical students: A cross-sectional study. *Educ Health (Abingdon)* 2016;29:186-94.
9. Mann KV. Motivation in medical education: how theory can inform our practice. *Acad Med* 1999;74:237-9.
10. Hojat M, Zuckerman M, Magee M, Mangione S, Nasca T, Vergare M, et al. Empathy in medical students as related to specialty interest, personality, and perceptions of mother and father. *Pers Individ Dif* 2005;39:1205-15.
11. Elliot AJ, McGregor H.A, Gable S. Achievement goals, study strategies, and exam performance: A mediational analysis. *J Educ Psychol* 1999;91:549-63.
12. Kusurkar RA, Ten Cate TJ, Vos CM, Westers P, Croiset G. How motivation affects academic performance: a structural equation modelling analysis. *Adv Health Sci Educ Theory Pract* 2013 ;18:57-69.
13. Kusurkar RA, Croiset G, Galindo-Garré F, Ten Cate O. Motivational profiles of medical

- students: association with study effort, academic performance and exhaustion. *BMC Med Educ* 2013;19:87.
14. Jumroonrojana K, Zartrungpak S. Development of the Jefferson Scale of Physician empathy- Student Version (Thai Version). *J Psychiatr Assoc Thailand* 2012;57:213-24.
 15. Lawanont N. Motivation to study medicine of medical students at Faculty of Medicine [dissertation]. Bangkok: Chulalongkorn University; 2015.
 16. Kataoka HU, Koide N, Ochi K, Hojat M, Gonnella JS. Measurement of empathy among Japanese medical students: Psychometrics and score differences by gender and level of medical education. *Acad Med* 2009;84: 1192-7.
 17. Tavakol S, Dennick R, Tavakol M. Psychometric properties and confirmatory factor analysis of the Jefferson Scale of Physician Empathy. *BMC Med Educ* 2011;2:11:54.
 18. 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:e471-8.
 19. Raof AM, Yassin BA. Measuring Empathy Levels among Kurdish Medical Students in Erbil City, Iraq. *Sultan Qaboos Univ Med J* 2016; 16:e62-7.
 20. Hojat M. Empathy in patient care: antecedents, development, measurement, and outcomes. New York: Springer; 2007.
 21. Sacks MH, Frosch WA, Kesselman M, Parker L. Psychiatric problems in third-year medical students. *Am J Psychiatry* 1980;137:822-5.
 22. Gonçalves-Pereira M, Loureiro J, Trancas B, Papoila A, Caldas-de-Almeida JM. Empathy as related to motivations for medicine in a sample of first-year medical students. *Psychol Rep* 2013;112:73-88.
 23. McManus IC, Livingston G, Katona C. The attractions of medicine: the generic motivations of medical school applicants in relation to demography, personality and achievement. *BMC Med Educ* 2006;6:11.
 24. Turczynska K, Ksiezopolska-Kaczorowska A, Hebanowski M, Komorowska-Szczepanska W. Empathy and motives in choosing medical studies as possible predictors of future physician's career performance. *Pol Merkur Lekarski* 2003;14:243-7.