

การศึกษาภาคตัดขวางเรื่องทัศนคติของนักศึกษาแพทย์ต่อการดูแลโดยยึดผู้ป่วยเป็นศูนย์กลาง

Attitudes of Medical Students Toward Patient-Centered Care: A Cross Sectional Study

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บทคัดย่อ:

วัตถุประสงค์: เพื่อประเมินทัศนคติของนักศึกษาแพทย์ต่อการดูแลโดยยึดผู้ป่วยเป็นศูนย์กลางและค้นหาปัจจัยที่มีอิทธิพลต่อทัศนคติ

วัสดุและวิธีการ: การศึกษาวิจัยภาคตัดขวางนี้ทำขึ้นในเดือนมกราคม พ.ศ. 2558 ในนักศึกษาแพทย์ตั้งแต่ชั้นปีที่สองถึงปีที่หก คณะแพทยศาสตร์ มหาวิทยาลัยสงขลานครินทร์ จำนวน 619 คน โดยใช้แบบสอบถาม Patient-Practitioner Orientation Scale (PPOS) ที่ผ่านการแปลย้อนกลับและทดสอบกับผู้ใช้น้อยภาษา เพื่อประเมินทัศนคติต่อความสัมพันธ์ระหว่างแพทย์และผู้ป่วย เพื่อศึกษาความสัมพันธ์ระหว่างคะแนนจากแบบสอบถาม PPOS กับปัจจัยส่วนบุคคล ได้แก่ เพศ ชั้นปีที่กำลังศึกษา เกรดเฉลี่ย ภูมิฐานะ ค่าใช้จ่ายเฉลี่ยรายเดือน และที่พักอาศัยขณะทำการศึกษา โดยใช้สถิติ independent t-test, one-way ANOVA และ multiple linear regression

ผลการศึกษา: จำนวนผู้ที่ตอบกลับแบบสอบถามทั้งหมด 520 คน คิดเป็นร้อยละ 84.0 ค่าเฉลี่ย (ส่วนเบี่ยงเบนมาตรฐาน) ของคะแนน PPOS=3.8 (0.4) เมื่อทำการวิเคราะห์การถดถอยเชิงเส้นพหุพบว่าปัจจัยที่มีความสัมพันธ์กับคะแนน PPOS อย่างมีนัยสำคัญทางสถิติ ได้แก่ เพศ ชั้นปีที่กำลังศึกษา เกรดเฉลี่ย (p -value<0.050) ส่วนปัจจัยภูมิฐานะ ค่าใช้จ่ายเฉลี่ยรายเดือน และที่พักอาศัยขณะทำการศึกษาไม่มีนัยสำคัญทางสถิติ

สรุป: นักศึกษาแพทย์หญิง ชั้นปีการศึกษาที่สูงกว่าและเกรดเฉลี่ยที่มากกว่า มีคะแนนทัศนคติการดูแลโดยยึดผู้ป่วยเป็นศูนย์กลางที่ดีกว่า

คำสำคัญ: การดูแลโดยยึดผู้ป่วยเป็นศูนย์กลาง, ความสัมพันธ์ระหว่างแพทย์และผู้ป่วย, ทัศนคติ, นักศึกษาแพทย์

Abstract:

Objective: To assess the attitudes of medical students toward patient-centered care and explore what the factors that influence these attitudes.

Material and Method: A cross-sectional study was conducted in January 2015. A study population of 619 medical students in their second to sixth academic year in Faculty of Medicine, Prince of Songkla University were invited to answer the Patient-Practitioner Orientation Scale (PPOS) which was translated into Thai by back-translation with bilingual test and was used to assess the attitudes toward the doctor-patient relationship. The associations between the PPOS score and the individual characteristics that included gender, academic year, grade point average (GPA), hometown, mean expenditure per month and residence during the study period were examined by using the independent t-test, one-way ANOVA and multiple linear regression.

Results: The total number of respondents was 520 (84.0%). The mean (S.D.) overall PPOS score was 3.8 (0.4). From multiple linear regression analysis, there were three factors that were significantly associated with the PPOS score: gender, academic year and GPA (p -value<0.050). Hometown, mean expenditure per month and residence during the study period were not significantly different.

Conclusions: Female medical students, higher academic year and a higher GPA had greater positive attitudes toward patient-centered care.

Keywords: attitudes, doctor-patient relationship, medical student, patient-centered care

Introduction

The term 'patient-centered care' was introduced by Enid Balint in 1969.¹ Physicians have to understand the individual patient to diagnosis both disease and illness. This makes the difference between patient-centered care and doctor-centered care.

At present, the Thai health care system is well developed. The doctor-patient relationship has become more important in health care. Many times, there are conflicts between doctors and patients that lead to legal or disciplinary problems. This affects the respect and trust

in medical care. Thus, the doctor-patient relationship should become more patient-centered instead of doctor-centered to satisfy the biological, psychological and social needs of the patients. Researchers have recognized the importance of patient-centered care. Therefore, we were interested in researching the attitudes of medical students toward patient-centered care in Prince of Songkla University, Thailand.

Studies related to patient-centered care found that many countries such as the USA, Brazil, Pakistan, Sweden, Greece and South Africa used the Patient-

Practitioner Orientation Scale (PPOS)² to assess the attitude of their own practitioners. However, a study in the USA³ used the Health Beliefs Attitudes Survey. The attitudes toward patient-centered care were associated with gender, academic year and socio-economic status.⁴

Other studies in the USA⁵, Brazil⁶, Greece⁷ and Sweden⁸ showed that female students displayed a significantly higher overall PPOS mean score compared to the male students. The study in Brazil⁶ showed that students in the later semesters were significantly more patient-centered than students in the earlier semesters. Studies in the USA³ and Brazil⁶ showed that lower familial income was significantly associated with more patient-centered attitudes. A study in Pakistan⁹ showed that patient-centered care attitudes in students living in the capital city were significantly lower than others. The PPOS scores of students who live in their own home (day-scholar) in Pakistan⁹ were not statistically significant in comparison with the PPOS scores of those who lived in a dormitory.

As we know well, education in medical schools focuses mainly on biomedical subjects but less on communication skills, humanistic attitudes and professional values.^{5,10} However, there are additional classes for communication skills in each year of study which provides a model of patient-centered care that helps medical students better understand the diseases and illnesses. Therefore, they should be able to assess the true problems of the patients.

There is published research in many countries such as the USA³, Brazil⁶, Sweden⁸, Pakistan⁹, Greece⁷ and South Africa¹¹ that determined the student attitudes toward the doctor-patient relationship. They used the PPOS to assess the beliefs of the medical students and practitioners. The PPOS is an instrument developed by Krupat et al.² in 1999 to measure the attitudes of practitioners, future practitioners and patients toward patient-centeredness. It measures an individual's

attitudes toward the doctor-patient relationship along two dimensions termed 'sharing' and 'caring'

At present, no studies that investigate the attitudes of medical students towards patient-centered care in Thailand have been reported. The main aim of this study was to assess the patient-centered attitudes of medical students at various stages of undergraduate medical education. A secondary aim was to explore the factors that influence the attitudes of medical students toward patient-centered care such as gender, year of studies, socioeconomic status, demographic characteristic and grade point average (GPA). The objective of this study was to determine the factors that influence the attitudes of medical students toward patient-centered care in Prince of Songkla University. The benefit is development of our medical education system to encourage positive attitudes toward patient-centered care in medical.

Material and Method

The Thailand undergraduate medical curriculum is comprised of 3 phases: pre-medical phase (first academic year), pre-clinical phase (second and third academic years), and clinic phase (fourth to sixth academic years). The theory and concepts of patient-centered care was first introduced to second year medical students in the fundamental of human interaction subject (Figure 1) which is a weekly half-day integrated patient-centered interview workshop. This workshop in the second academic year uses well-trained simulated patients. Self-evaluation, peer-feedback, patient-feedback and structured formative evaluation by medical staff are done at the end of each interview. All curriculums in the clinical phase were integrated the practices of patient-centered care into various teaching methods such as outpatient care management, bedside teaching and home healthcare services. The researcher designed a cross-sectional survey to assess the patient-centered attitudes in the medical students.

The M.D. Program – Prince of Songkla University (254 Credits)													
Phase I	Yr 1	Introduction to Medical Science I (3)/Life Science Physics (3)/ Fundamental English (L+S, R+W) (6)/Healthy Body and Mind(3)/ Computer Science (3) Humanities and Social Sciences (2)					Introduction to Medical Science II (2)/ Introduction to Human Genome (1)/ Introduction to Molecular Medicine (2)/ English (6)/ Wisdom of Living (3)/ Science, Technology, and Society (3) / Electives (3)						
	Yr 2	History of Med 2 wk	Intro to Medical Science III 4 wk	Body Defense, Immunity and Infection 6 wk	Respiratory Systems 4 wk	Cardiovas- cular Systems 4 wk	Com Med I 4 wk	Digestive System and Nutrition 6 wk	Urinary and Reproductive Systems 6 wk	Clinical Immersion 3 wk			
Phase II		Fundamental Human Interaction					Human Interaction Co-Curricular Activities I						
	Yr 3	Endocrine System & Metabolism 4 wk	Nervous system Locomotor and Behavior I 6 wk	Nervous system Locomotor and Behavior II 4 wk	Com Med II 4 wk	Hematopoietic System & Biology Of Neoplasia 6 wk	Human Life Cycle 4 wk	Introduction to Clinical Medicine I,II 5 wk					
		Fundamental Clinical Practice and Medical Ethics I, II											
Phase III	Yr 4	Com- pre Exam Step I	H & D of Adults & Elderly 10 wk		Preoperative to Postoperative Care 10 wk		Family Med & Com Med 5 wk	Ambulatory Ophthalmology & Otorhino- laryngology 5 wk	Health Promotion 5 wk	Selectives 5 wk			
	Yr 5	H & D from Conception to Adolescence 8 wk		H & D of Women 8 wk		Emer Med & Accidents 4 wk	Electives 4 wk	H & D of Adults & Elderly 6 wk	Preop to Postop Care 6 wk	Family Med & Com Med 6 wk	HD & R in Ortho 3 wk	Ambula- tory Medicine for PCP 3 wk	Com- pre Exam Step II
	Yr 6	Songklanagarind Hospital Internal Medicine & Psychiatry 6 wk/ Surgery 3 wk/Elective 3 wk/Pediatrics 3 wk/ Ob-Gyn 3 wk/Fam Med 3 wk/ER 3 wk					Affiliated Hospital Internal Medicine 6wk/ Ob-Gyn 4 wk/ Pediatrics 4 wk/ Surgery 6 wk /Ortho 4 wk					Com- pre Exam Step III	

Figure 1 The M.D. curriculum program of Prince of Songkla University, Thailand.

Participants

We collected data from the 15th to the 22nd of January 2015. The study survey was conducted in medical students who were in their second to sixth academic year. The numbers of students in each second to sixth academic year were 192, 198, 137, 135 and 132, respectively. The medical students who were trained outside of Songklanagarind Hospital for their clinical phase were excluded from the study. Finally, the numbers of students in each fourth to sixth academic year were 68 (49.6%), 95 (70.1%), and 66 (50.0%), respectively.

Instruments

The demographic characteristics included in the questionnaire were age, gender, academic year, type of hometown, mean expenditure per month, GPA, and type of residence during the study period. The doctor-patient relationship was assessed by using the PPOS which

is a reliable instrument. The PPOS was translated into Thai by back-translation with bilingual test. The PPOS is an 18-item questionnaire with good reliability and validity that is divided into 2 categories: sharing subscales and caring subscales. The sharing subscale reflects the extent to which the responder believes that the patient should receive information and be involved in the decision-making process (sharing items: 1, 4, 5, 8, 9, 10, 12, 15 and 18). The caring subscale evaluates whether the patient's expectations, feelings and lifestyle are taken into consideration during the medical consultation (caring items: 2, 3, 6, 7, 11, 13, 14, 16 and 17). Scoring is based on a 6-point Likert scale that ranges from strongly agrees to strongly disagree. Mean scores (PPOS total score) were calculated and could range from a value of 1 to 6. Lower scores reflect an orientation toward a more doctor-centered relationship, whereas higher scores indicate preference for a more patient-centered relationship.

Process of PPOS translation

The translation methodology was performed by cross-cultural translation. The PPOS questionnaire was translated into Thai by the forward translation technique by the researcher and an English instructor. We then used the questionnaire in this study due to a limitation of time. After that, two Thai translations were reconciled by the researcher and sent to two bilingual translators; one person was a Thai medical professor and the other was a native English speaker medical scientist for back-translation. The two English translations were checked and compared with the original.

In this study, the results of internal consistency were analysed by Cronbach's alpha coefficient which was 0.645. Therefore, the PPOS (Thai version) had adequate reliability.

Statistical analysis

Statistical analysis was undertaken using the Epidata (version 3) software, the R-program (version 3.0.1) and Microsoft Excel. Descriptive statistical analysis was performed to characterize the medical student information (i.e., age, gender, academic year, hometown, mean expense per month, GPA and residence during the study period). We described the continuous data with mean \pm S.D. for normal distribution and median (Q1, Q3) for non-normal distribution. Categorical data were presented by number and percentage. Mean scores (PPOS total score) were calculated and could range from a value of 1 to 6 and compared in the second to sixth academic year of the medical students. Associations between the variables of the medical students and the mean PPOS score were analyzed using the t-test, ANOVA and multiple linear regression analysis. Statistical significance was considered at a p-value less than 0.05 unless otherwise specified.

Results

Student characteristics

The questionnaires were given to 619 medical students and the response rate was 84.0%. The response rates of each academic year are demonstrated in Table 1.

The mean overall PPOS score was 3.8 ± 0.4 . The PPOS score was analyzed by using the Shapiro-Wilk normality test method. The results showed a normal distribution (p -value >0.050).

Female respondents displayed a higher overall PPOS mean score compared to the male respondents (3.8 ± 0.4 , 3.9 ± 0.4 , p -value=0.014, t-test). The sharing and caring scores demonstrated that the female scores were significantly higher than the male scores in all aspects with statistical significance (Table 2).

A study of the association between the mean PPOS score and academic year found that the scores increased significantly in the later years compared with the second academic year except for the fifth academic year (Figure 2).

The relationships of the PPOS scores between the academic year and gender showed that the total PPOS score in females was higher compared with the males. By subgroup analysis, only the third academic year had statistical significance (Table 3).

The median age of the respondents was 21 years (range, 19–35). The GPA was categorized into three ranges: <3.25 , 3.26 – 3.5 and >3.5 which accounted for 32.0%, 25.0% and 30.0%, respectively. The remaining 13.0% of GPA results were not available. The hometowns of the participants were divided into either a municipality (68.0%) or a non-municipality (32.0%). We allocated the mean expenditure per month of each respondent into three ranges: $<6,000$, $6,001$ – $9,000$ and $>9,000$ baht, the percentages for each range were 47.0%, 32.0% and 17.0%, respectively; information from 4.0% of the

Table 1 Response rates separated by academic year.

Year	Number of students who meet the inclusion criteria	Number of the responders	Response rate (%)
2	192	151	78.7
3	198	191	96.5
4	68	59	86.8
5	95	76	80.0
6	66	43	65.2
Total	619	520	84.0

Table 2 Total and subscale PPOS scores according to gender.

Score (Mean±S.D.)	Male	Female	P-value
Total PPOS	3.8±0.4	3.9±0.4	0.014
Caring	3.9±0.5	4.0±0.4	0.028
Sharing	3.6±0.5	3.7±0.5	0.005

S.D.=standard deviation, PPOS=Patient-Practitioner Orientation Scale

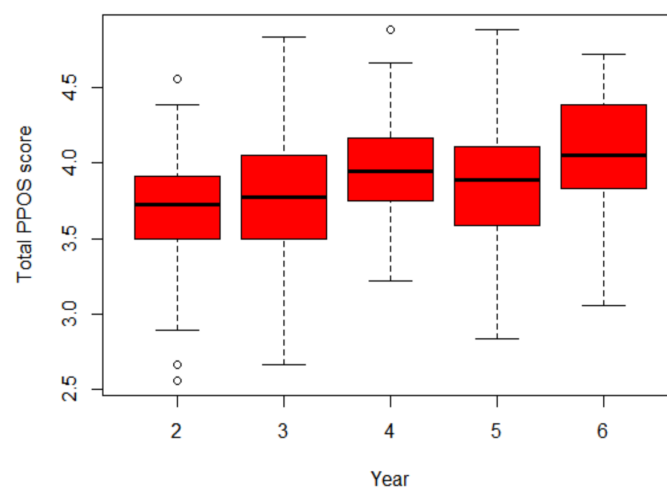
**Figure 2** Boxplot of the PPOS scores according to academic year

Table 3 PPOS scores according to academic year and gender.

Year	PPOS total score (mean±S.D.)	Male PPOS score (mean±S.D.)	Female PPOS score (mean±S.D.)	P-value
2	3.7±0.4	3.6±0.4	3.7±0.3	0.088
3	3.8±0.4	3.7±0.4	3.9±0.4	0.004
4	4.0±0.3	4.0±0.3	4.0±0.4	0.878
5	3.9±0.4	3.8±0.5	3.9±0.4	0.171
6	4.1±0.4	4.1±0.4	4.1±0.4	0.403
Total	3.8±0.4	3.8±0.4	3.9±0.4	0.014

PPOS=Patient-Practitioner Orientation Scale, S.D.=standard deviation

Table 4 Summary of demographic data and total PPOS scores.

Factors	Respondents (%) N=520	PPOS total score (mean±S.D.)	P-value
GPA			0.011
≤3.25	166 (32.0)	3.7±0.4	
3.26-3.50	128 (25.0)	3.8±0.4	
≥3.51	157 (30.0)	3.9±0.4	
NA	69 (13.0)		
Mean expenditure per month (Baht)#			0.472
≤6,000	243 (47.0)	3.8±0.4	
6,000-9000	170 (32.0)	3.8±0.4	
≥9000	87 (17.0)	3.9±0.4	
NA	20 (4.0)		
Hometown			0.914
Municipality*	354 (68.0)	3.8±0.4	
Non-municipality	166 (32.0)	3.8±0.4	
Resident during study period			0.677
Dormitory	409 (79.0)	3.8±0.4	
House	86 (16.0)	3.8±0.4	
Dormitory and house	25 (5.0)	3.9±0.5	

PPOS=Patient-Practitioner Orientation Scale, S.D.=standard deviation, GPA=grade point average, NA=not applicable

#35 baht=1 dollar

*Definition of municipality is an area of more than 50,000 people

respondents was not available. There were three types of residence during the study period: dormitory, house and both. Table 4 summarizes the frequency of demographic data and the mean±S.D. of total PPOS score.

The relationship between the GPA and PPOS score after dividing the GPAs into three groups demonstrated that the group with the highest GPA had the highest mean PPOS score and the difference was significant (one-way ANOVA, p-value=0.011)

The mean expenditure per month in relation to the PPOS score showed that the higher the expenditure, the higher the PPOS score. However, the increase in the PPOS score was not significant (one-way ANOVA, F-test, p-value=0.472)

The PPOS scores in the municipality and non-municipality residents displayed a higher PPOS score in the municipality residents. However, the difference was not significant (t-test, p-value=0.914).

Between the students who lived at the dormitory and those who lived at home during the study, there was no significant difference in the PPOS scores (one-way ANOVA, p-value=0.677)

Multiple linear regression analysis

Table 5 shows the multiple regression analysis predicting the PPOS score by the socio-demographic characteristics of the medical students. The results of the multiple linear regression analysis using all data for factor analysis found that the three factors of gender, academic year and GPA were associated with the PPOS score in a low level because R was a low value (0.394) and R-squared was 15.5%. Nonetheless, the relationships were significant (p-value=0.000) while the standard error was ±0.125. The factors that didn't relate with the PPOS score were hometown, mean expenditure per month and residence during the study period. Finally, the equation for the PPOS score estimation was constructed (Box 1).

Table 5 Multiple regression analysis of PPOS scores by demographic characteristics.

Factor	Estimate	SE	P-value
Gender	0.089	0.038	0.021*
Academic year	0.090	0.016	0.000*
GPA	0.069	0.023	0.003*
Hometown	-0.003	0.043	0.947
Mean expenditure per month	0.015	0.026	0.566
Residence during study period	-0.007	0.038	0.859

Estimate=3.219; SE_{est}=±0.125

R=0.394, R²=0.1546; p-value=0.000

SE=standard error, GPA=grade point average

*Statistically significant

Box 1 Equation for PPOS score estimation

$$\text{PPOS score} = 3.219 + 0.089(G) + 0.090(A) + 0.069(\text{GPA}) - 0.003(H) + 0.015(M) - 0.007(R)$$

***G=Gender, A=Academic year, H=hometown, M=mean expenditure per month, R=residence during study period

Discussion

From 619 medical students, 520 respondents completed the questionnaires. The response rate was 84.0% because the questionnaires were given directly to the medical students after they finished a class and spent about 15–20 minutes to complete the PPOS (Thai version). The non-responders were medical students who didn't attend the class or refused to participate. The response rate in the females (87.8%) was more than in the males (79.3%) because the learning behavior in females was better than in males.¹²

The overall PPOS scores reflect the attitudes of patient-centered care which is more important these

days. The results of Prince of Songkla University in Thailand, when compared to other countries using the same instruments, found that the overall PPOS scores at Prince of Songkla University were greater than the PPOS scores in Pakistan⁹ but less than the scores in the USA⁵, Brazil⁶ and South Korea¹³ which total PPOS more than 4.

The previous studies in Brazil and the USA showed overall PPOS scores in the females were higher than in the males. In this study, the females also had significantly higher overall PPOS scores than the males. When considering the overall PPOS scores in each year, only the third-year medical students had a significant difference in the PPOS score between the males and females. For an explanation, the proportion of third-year respondents to the total number of respondents was the highest (37.0%). This possibly influenced the result of the overall PPOS score.

The increase in the PPOS scores in the higher academic years suggests that the students in the later years have better attitudes in patient-centered care than in the earlier years which corresponded to the study in Brazil. In the clinical phase the medical students had interaction with real patients which was unlike the preclinical phase where the students had interaction with simulated patients. Moreover, there were more hospital hours in the clinical phase.

A positive association between the GPA and PPOS score was seen. The result indicated that a higher PPOS score was related to a higher GPA. A literature review found that this factor has not been reported. This study is apparently the first study to discover a statistical relationship between the GPA and PPOS score. In our opinion, finding the answer as to why a higher GPA was related to a higher PPOS score would be a challenge for future research. However, this data is helpful to inform the students that a low GPA is related to the attitude of patient care, and therefore, an improvement in their GPA may improve their attitude of patient care.

The results of this study showed that the mean expenditure per month was not related to the PPOS score because the mean expenditure per month did not represent well the economic status because the medical students weren't able to accurately provide this information and the expenditures could vary over a period of time.

A result of this study indicated no significant difference in the PPOS scores between the students who lived at home and students who lived in the dormitory because most participants in this research lived at home (78.0%); therefore, it is not appropriate to apply this result to the entire population.

From the evaluation by multiple linear regressions, the results showed that R-squared was low because the PPOS measured the attitudes of the human mind which is hard to predict.

This study has several limitations. This research was done in Family Medicine clerkship. Therefore, there was limited time to collect the data and many of the fourth, fifth and sixth year medical students worked outside of Prince of Songkla University. Therefore, the clinical year population was too small to represent the population of the whole year. The data represent a cross-sectional study rather than a longitudinal study. It is possible that uncontrolled factors may have influenced the students as they moved through their different years in school. In addition, the PPOS (Thai version) had no space to permit.

Conclusion

In this study, we assessed the attitudes of Thai medical students toward patient-centered care and found that the three factors of gender, year of study and GPA significantly impacted the attitudes of the medical students. Female and higher academic year had greater positive attitudes toward patient-centered care than the male medical students and lower academic year. Moreover, we found a positive

association between GPA and attitude. Medical students who had a higher GPA also had greater positive attitudes toward patient-centered care.

References

- Balint E. The possibilities of patient-centered medicine. *Br J Gen Pract* 1969; 17: 269 – 76.
- Krupat E, Hiam CM, Fleming MZ, Freeman P. Patient-centeredness and its correlates among first year medical students. *Int J Psychiatry Med* 1999; 29: 347 – 56.
- Hardeman RR, Burgess D, Phelan S, Yeazel M, Nelson D, van Ryn M. Medical student socio-demographic characteristics and attitudes toward patient centered care: do race, socio-economic status and gender matter? A report from the Medical Student CHANGES study. *Patient Educ Couns* 2015; 98: 350 – 5.
- Crosson JC, Deng W, Brazeau C, Boyd L, Soto-Greene M. Evaluating the effect of cultural competency training on medical student attitudes. *Fam Med* 2004; 36: 199 – 203.
- Haidet P, Dains JE, Paterniti DA, Hechtel L, Chang T, Tseng E, et al. Medical student attitudes toward the doctor-patient relationship. *Med Educ* 2002; 36: 568 – 74.
- Ribeiro MM, Krupat E, Amaral CF. Brazilian medical students' attitudes towards patient-centered care. *Med Teach* 2007; 29: e204 – 8.
- Tsimtsiou Z, Kerasidou O, Efstathiou N, Papaharitou S, Hatzimouratidis K, Hatzichristou D. Medical students' attitudes toward patient-centered care: a longitudinal survey. *Med Educ* 2007; 41: 146 – 53.
- Wahlqvist M, Gunnarsson RK, Dahlgren G, Nordgren S. Patient-centered attitudes among medical students: gender and work experience in health care make a difference. *Med Teach* 2010; 32: e191 – 8.
- Ahmad W, Krupat E, Asmaa Y, Fatima NE, Attique R, Mahmood U. Attitudes of medical students in Pakistan toward the doctor-patient relationship. *PeerJ PrePrints* 2014; 2: e606v1.
- Haidet P, Dains JE, Paterniti DA, Chang T, Tseng E, Rogers JC. Medical students' attitudes toward patient-centered care and standardized patients' perceptions of humanism: a link between attitudes and outcomes. *Acad Med* 2001; 76 (10 Suppl): S42 – 4.
- Archer E, Bezuidenhout J, Kidd M, Van Heerden BB. Making use of an existing questionnaire to measure patient-centered attitudes in undergraduate medical students: a case study. *AJHPE* 2014; 6: 150 – 4.
- Zusman M, Knox D, Lieberman M. Gender differences in reactions to college course requirements or "why females are better students". *Coll Stud J* 2005; 39: 621 – 6.
- Choi CJ, Kim JM, Park YG. Patient-centered attitudes and communication skills in medical student after clerkship. *Korean J Med Educ* 2004; 16: 169 – 77.