

Personal, Cultural and Academic Factors Affecting Empathy Score in Third Year Medical Students

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Abstract

Purpose: The study aimed at evaluating the empathy scores in third year undergraduate medical students in King Abdulaziz University; explore the factors which might have an effect on them and how might these factors affect them. **Method:** A cross-sectional study was done on a sample that was taken randomly from 3rd year medical students at King Abdulaziz University (n=163) by giving them the student version of the Jefferson Scale of Physician Empathy (JSPE- S). **Results:** There was no statistically significant difference between female and male students in the total empathy score; female students showed significantly higher scores than males in the compassionate care and the put oneself in patient's shoes (mean scores 44.9 vs 42.2 and 13.7 vs 12.5, respectively; $t = -2.20$ and -2.25 , $p < 0.05$). There was a statistically significant difference on the scores among students who selected "surgery" rather than "medicine" as their future specialties. Students who has a higher GPA showed significantly higher scores in the total score and the put oneself in patient's shoes category (mean scores 13.7 vs 11.6; $t = 2.92$, $p < 0.05$). There was a significant positive correlation between GPA and empathy scores. No statistically significant difference was found in empathy score between students regarding family status. **Conclusion:** Many personal, cultural and academic factors affect students' empathy scores. In this study, students' attitudes towards empathy carry a predominantly emotional rather than a cognitive component. Further studies are needed to evaluate all components of empathy to select those which could be teachable.

1. Introduction

1.1 Literature Background:

Empathy has been described as a concept involving cognitive as well as affective or emotional domains. The cognitive domain of empathy involves the ability to understand another person's inner experiences and feelings and a capability to view the outside world from the other person's perspective. The affective domain involves the capacity to enter into or join the experiences and feelings of another person (Hojat et al., 2001). Although the concepts, empathy and sympathy are used interchangeably, they should be distinguished in patient-care situations (Wispe, 1986). Empathy was also defined by a major group from the Society for General Internal Medicine as "the act of correctly acknowledging the emotional state of another without experiencing that state oneself." (Roter & Hall, 1998 and Davis, 1983). So, an "affective distance" would be desirable to avoid bursts of emotions that might interfere with clinical neutrality and personal durability (Jensen, 1994).

One might argue and say that being empathetic is impractical, not very beneficial and could put a lot of pressure on the physician that is trying to be empathetic towards patients, but literature shows that it actually has many benefits (Suchman et al., 1997). Neumann et al. (2011) stated that "when physicians listen to patients nonverbally, patients feel more relaxed resulting in better history giving". Effective and empathetic communication between the doctor and the patient also has a positive effect on reducing patient's anxiety and depression which correlates with specific symptom reduction (Rakel et al., 2009); it also helps in increasing the patient's compliance (Kim et al., 2004); and in addition, research shows that physicians with an interactive, psychosocially oriented communication style burn out less often than others (Roter et

al., 1997 and Markakis et al., 1999). All these researches indicate that being empathetic does matter, and from this point of view we realized how important clinical empathy is.

Empathy is critical to the development of professionalism in medical students as they progress through their training. The Accreditation Council for Graduate Medical Education (ACGME) endorsed "Professionalism" as one of the core competences of future physicians. In the ACGME- Outcomes Project, professionalism and hence empathy as one of its attributes, could be measurable and teachable and could be incorporated formally in medical curricula (Starfield & Huges, 2007; Stephenson et al., 2006; Dereboy et al., 2005; Shapiro et al., 2004 and Hojat et al., 2003). Studies to date are not consistent regarding changes in empathy by intervention (Vallabh, 2011).

Empathy varies due to many endogenous and exogenous factors including diverse cultures, personalities, and medical education curricula. Political, economical, social and technological changes have led to new needs that require changes to develop an 'effective' physician with appropriate skills including empathic capacity (Fernandez-Olano et al., 2008). Their reliance on technology for diagnosis, and limited bedside interactions with patients may contribute to a decline in empathy through losing their skills to listen and talk to their patients (Crandall et al., 2006 and Vallabh, 2011).

1.2 Instruments for Measuring Empathy:

There are many instruments for measuring empathy in the general population. Stepien & Baerntein (2006) and Hemmerdinger et al. (2007) found that instruments developed to measure empathy were measuring the affective behavior or aspects of behavior relevant to a specific study. However, the Jefferson Scale of Physician Empathy (HP- version) and the other version which measures students' empathy (JSPE-Student or S- version) are the only measurement tools that are present and validated for capturing the essence of empathetic care rendered by physicians (Hojat et al., 2002). It measures the attitudes of medical students towards physician empathy in patient-care situations. The JSPE has been translated into 25 languages including Arabic, Belgian, Brazilian, Chinese, Chilean, Dutch, French, German, Greek, Hebrew, Hungarian, Italian, Japanese, Korean, Lithuanian, Norwegian, Persian, Peruvian, Filipino, Polish, Portuguese, Romanian, Spanish, Taiwanese and Turkish.

A study was conducted using the JSPE- S on students between the 1st and 5th grades during 2008 and 2009 at Ankara University School of Medicine (AUSM) in Turkey (Gonullu & Oztuna, 2012). While the empathy scores for "perspective taking" were higher for females, those for "compassionate care" and "standing in the patient's shoes" were higher for males. Their results were consistent with (Hojat et al., 2002; Austin et al., 2007; Chen et al., 2007; Hojat 2007; Newton et al., 2008; Hojat et al., 2009 and Kataoka et al., 2009) who explained this difference by that females are more inclined to value interpersonal relationships, have more competent understanding of emotions and caring attitudes and they were believed to develop more caregiving attitudes towards their children. None of the previous studies explained whether this difference in gender on empathy could be attributed to intrinsic or to extrinsic factors.

They also found that only "compassionate care" factor scores were found to be statistically significantly different among the years of study with declines towards the 5th year of the curriculum. These findings are consistent with previous findings of Hojat et al. (2004).

Little empirical evidence is available to link empathy and physician specialty, whereby Harsch in 1989 found no difference in empathy among students with different specialty preferences. On the

other hand, Hojat et al. (2001) found that physicians in people-oriented specialties scored higher empathy score than their peers in technology-oriented specialties.

1.3 Context & Research Questions:

In the Faculty of Medicine in King Abdulaziz University, the undergraduate curriculum consists of two years in the pre-clinical phase, three years in the clinical phase and is complete by an internship year. In 2012, the Quality and Academic Accreditation Unit conducted a comprehensive evaluation of the undergraduate curriculum. It was found that there were no topics in the various courses within the curriculum that tackle empathy. There was no information about empathy conceptualization or level among students and faculty. Through our desire to always give the best care possible to our patients, we used the student's version of the Jefferson Scale of Physician Empathy (JSPE) to assess the current situation and explore some of the factors which might affect the empathy score among medical students in King Abdulaziz University. In addition, the study aimed at creating a baseline data which could be used in future longitudinal studies to measure the changes in empathy levels among medical students. The ultimate aim is to use the results of those studies to induce reforms to the undergraduate medical curriculum in that aspect. The research questions were: (1) What is the empathy score in third year undergraduate medical students in King Abdulaziz University? (2) What are the factors which might have an effect on the empathy score? (3) How might these factors affect the empathy score?

1.4 Ethical Approval:

The study was approved by the Research Ethics Committee (REC) in the Faculty of Medicine with a registration No. (HA-02-J-008) and reference No. (984-12).

2. Method:

This was a cross-sectional survey of third year medical students in the Faculty of Medicine, King Abdulaziz University, in 2013-2014. This is the first study that examined the "empathy dimension" among a group of Saudi medical students.

2.1 Participants:

The sample size was calculated using a SamplePlanner2007. xls software derived from Agresti & Coull (1998) equation to estimate sample sizes required to achieving a specified margin of error and confidence level for a single sample. The sample was estimated to be (163) from a population size of (350) students, with a

maximum error of measurement (5%) and a confidence interval of (95%) (Agresti & Coull, 1998). Students were invited to voluntarily participate in the study. They anonymously completed and returned the student version of the Jefferson Scale for Physician Empathy (JSPE-S).

2.2 Measurement Tool:

Every student was given a copy of the (JSPE-S) questionnaire. The scale included 20 Likert-type items answered on a 7-point scale (1=strongly disagree, 7=strongly agree). Items were categorized under four categories: The first category is "Perspective taking" and represents the understanding from physician's perspective; it carries the cognitive component of empathy. The second category is related to the emotional component of empathy, "Compassionate care". "Standing in the patient's shoes" is the third category; and the "Other" category is related to reading non-medical literature and enjoying arts, patients' perception of valuing physician's understanding of their feelings and physicians attitude of being influenced by the family bonds of patients. Of the 20 items, ten are positively worded; seven of them are linked to 'perspective taking', two to 'compassionate care' and one to the 'other' category. The other ten items are negatively worded, six out of which are concerned with 'compassionate care', and two are concerned with 'standing in the patient's shoes' and the remaining two to the 'Other' category. Negatively worded items are usually used in psychological tests to decrease the confounding effect of the tendency to constantly agree or disagree (Hojat et al., 2002). The minimum possible score on the JSPE is 20 and the maximum possible score is 140. The higher score indicates a more empathic behavioral orientation (Hojat et al., 2005). The scale was validated psychometrically for construct validity and internal consistency reliability (Hojat et al., 2001). The scale was used after permission from Dr. Mohammadreza Hojat, the Director of the Jefferson Longitudinal Study in the Center for Research in Medical Education and Health Care in Jefferson Medical College. Additional data was collected as gender, preferred specialty, any family events that might affect the students' personality as well as the GPA, in order to correlate the findings with the calculated empathy score.

2.3 Statistical Analysis of Data:

The collected data was analyzed using the Statistical Package of Social Sciences (SPSS)- version 14.0 (SPSS Inc. Chicago). The score of the negatively worded items were first reversed. Quantitative data as empathy scores was summarized and presented as mean and standard deviation ($X \pm SD$). The unpaired t-student's test was used to compare the total empathy score as well as the score in each of the four categories of the scale between opposite genders, different GPAs and specialty preferences. Significance was set at the 95% confidence interval (CI). In case the t-test was significant, the effect size was calculated using Cohen's equation: $d = (X_2 - X_1) / S_{average}$ where: X_2 is mean of group 2, X_1 is mean of group 1, and $S_{average}$ is the average of both standard deviations. Cohen's d of 0 to 0.2 standard deviations indicates small effect, 0.2 to 0.5 medium effect, and > 0.5 large effect (Soper, 2013).

The qualitative data either nominal or ordinal such as (gender, specialty preference or GPA) was summarized and presented as frequency and relative frequency.

The correlation between the GPA and the total, as well as the empathy score in each of the four categories of the scale was done using Pearson's correlation coefficient. Significance was set at the 95% confidence interval.

3. Results:

Table- 1: Descriptive statistics of nominal data

(n= 163)		Frequency	Percentage (%)
Gender	Male	63	38.6
	Female	100	61.4
Preferred Specialty	Medicine	14	8.50
	Surgery	21	12.8
Family Status	Separated	14	8.50
	Married	146	89.5
GPA	4	125	77.0
	3	27	23.0

Table- 2: The mean values of the empathy scores compared between opposite gender

Category	Gender	X ± SD	t	p	Cohen d
Perspective Taking	Male	37.0 ± 7.69	0.57	0.56	-
	Female	36.4 ± 6.01			
Compassionate Care	Male	42.2 ± 9.1	-2.2	0.029	0.34357
	Female	44.9 ± 6.38			
Put oneself in patient's shoes	Male	12.5 ± 3.32	-2.25	0.025	0.35981
	Female	13.7 ± 3.35			
Other	Male	13.4 ± 3.25	-1.35	0.17	-
	Female	14.1 ± 2.84			
Total Score	Male	100.1 ± 17.3	-1.54	0.125	-
	Female	103.7 ± 12.2			

There was no statistically significant difference in the mean values of the total empathy score between males and females. A significant difference was found between both genders in the 'compassionate care' and the 'put oneself in patient's shoes' categories being more in female students.

Table- 3: The mean values of the empathy scores compared between students according to the preferred future specialty

Category	Preferred Specialty	X ± SD	t	p	Cohen d
Perspective Taking	Medicine	37.1 ± 7.25	-0.51	0.61	-
	Surgery	38.2 ± 5.43			
Compassionate Care	Medicine	41.9 ± 9.59	-0.49	0.62	-
	Surgery	43.3 ± 7.84			
Put oneself in patient's shoes	Medicine	12.2 ± 4.07	-0.54	0.59	-
	Surgery	12.9 ± 3.84			
Other	Medicine	11.5 ± 3.45	-2.42	0.021	0.82612
	Surgery	14.2 ± 3.05			
Total Score	Medicine	98.0 ± 16.3	-0.99	0.32	-
	Surgery	103.4 ± 15.2			

There was no statistically significant difference in the final empathy score between students who preferred internal medicine and those who preferred surgery. However, there was a significant difference between them in the 'Other' category whereby students who preferred surgery as their future specialty scored higher than those who preferred medicine.

Table- 4: The mean values of the empathy scores compared between students according to their GPA

Category	GPA	X ± SD	t	p	Cohen d
Perspective Taking	4	36.9 ± 6.71	0.926	0.356	-
	3	35.6 ± 7.18			
Compassionate Care	4	44.3 ± 7.54	1.837	0.068	-
	3	41.4 ± 8.18			
Put oneself in patient's shoes	4	13.7 ± 3.35	2.92	0.004	0.63724
	3	11.6 ± 3.24			
Other	4	14.0 ± 3.05	1.35	0.176	-
	3	13.1 ± 3.10			
Total Score	4	103.7 ± 14.4	2.31	0.022	0.48794
	3	96.6 ± 14.7			

There was a statistically significant difference in the total empathy score between students with a GPA of four and those with a GPA of three which means that students who perform better academically are more likely to be more empathetic towards their patients. There also was a statistical difference in the "put oneself in patients shoes", whereby students with a GPA of four had a mean score more than those with a GPA of three.

Table- 5: Correlation between GPA and empathy scores

		Perspective Taking	Compassionate Care	Put oneself in patient's shoes	Other	Total Score
GPA	r	0.136	0.194	0.220	0.084	0.225
	p-value	0.090	0.015	0.006	0.295	0.005

r : Pearson's correlation coefficient

A significant positive correlation was found between the GPA and total empathy score, and with "compassionate care" and the "put oneself in patient's shoes" categories.

Table- 6: The mean values of the empathy scores compared between students according to their family status

Category	Parents	X ± SD	t	p
Perspective Taking	Separated	35.8 ± 8.1	-0.512	0.609
	Married	36.8 ± 6.65		
Compassionate Care	Separated	43.2 ± 9.83	-0.255	0.799
	Married	43.8 ± 7.50		
Put oneself in patient's shoes	Separated	13.1 ± 3.80	-0.181	0.856
	Married	13.3 ± 3.35		
Other	Separated	12.6 ± 3.15	-1.531	0.128
	Married	13.9 ± 3.01		
Total Score	Separated	100 ± 17.5	-0.611	0.542
	Married	102.5 ± 14.3		

Students with married parents and those with divorced parents got similar empathy scores.

4. Discussion and Conclusion:

Halpern (2001) proposed a model of clinical empathy as 'emotional reasoning'. She argued that empathy requires the "ability to resonate emotionally so that the physician can imagine how it feels to experience something". Some authors stated that empathy is a cognitive skill not translated into practice and that it is an inherent trait. However others reported that empathy is a personal trait that could be expressed and taught through targeted educational activities. The struggle that faces students is their inability to communicate it to patients (Rosenthal et al., 2011; Fernandez-Olano et al., 2008 and Klitzman, 2006). Empathy is however believed to be measurable and teachable and has been incorporated formally in some medical curricula (Kanter et al., 2007; Satterfield & Huges., 2007; Stephenson et al., 2006; Dereboy et al., 2005; Rosenfield & Jones, 2004; Shapiro et al., 2004 and Hojat et al., 2003).

Hojat et al. (2002) suggested that physician empathy is a multidimensional concept involving at least three components. The most important is the cognitive component 'Perspective taking'. The other two are the emotional reasoning components of empathy; these are 'compassionate care' and 'standing in the patient's shoes', which are both specific to the patient-physician relationship.

Based on the findings of this study, we found that female students outscored their male peers in the category of 'Compassionate Care' and 'Put oneself in patient's shoes', both of which constitutes the emotional component of empathy. Many other studies have concluded the same finding of gender difference as Mestre (2009). Davis (1983) also reported that gender differences are not just found in the emotional realm of empathy but also in the capacity of understanding the other person's state and situation. These findings are in line with those obtained by Hojat et al. (2003). We think that could be due to the fact that women by their very own nature are inclined to interact and listen to other people and be companionate with them. Females also bear and care about their children; which will incumbent her to be more empathic towards others. A meta-analysis by Roter et al. (1998) found that female physicians were more likely to devote time to psychosocial and preventative counseling, encouraging and reassuring their patients, and explicitly asking about feelings while providing statements of empathy and concern. Another factor that has been harmonious with our findings is in Jahoda's study (Jahoda, 2005), which shows the difference between male and female in empathy from the neurological aspect; as men more often use the left cognitive hemisphere in empathy and women use the more emotional parts such as the mirror neurons in the right hemisphere. In a more recent study by Calabrese et al. (2013), women scored higher than men on the JSPE.

We have noticed also that the total final empathy score of JSPE between male and female students are not significantly different. This could be attributed to the Islamic culture in general and the Saudi culture in particular. In Saudi Arabia, males, even when they are too young, have to take care of the family members and relatives; and have to be able to understand them and solve their problems. This sprang on one hand from the Islamic values infused in both genders throughout their education, family, and society. Saudis also grow up in a cosmopolitan community which infuses exposure to and understanding of diversity. Also, Saudi Arabia, unlike Arab or Islamic countries in the region, has not been colonized by the West and so the Saudi community sticks to the value of empathy as emphasized in Islam in all our behaviors. Consequently, this encourages both males to be relatively as empathic as females towards other people. This is emphasized by Morling & Lamoreaux (2008) who reported that South Africa being occupied by the Dutch and British colonization, has a predominantly Western culture that is characterized by its individualistic rather than a collectivistic nature. This resulted in a rather low empathy score among its medical students.

In his study, Harsch found that no difference was observed in empathy among medical students with different specialty preferences (Harsch, 1989). However, Newton et al. (2000), found that medical students who planned to pursue specialties such as family medicine and pediatrics scored higher on empathy measures than their counterparts who planned to pursue radiology or pathology. In a study by Hojat et al. in 2001, they stated that physicians in "people-oriented" specialties (primary care, obstetrics and gynecology, emergency medicine, psychiatry, and medical subspecialties) scored a significantly higher average empathy rating than their counterparts in "technology-oriented" specialties (hospital-based specialties, surgery, and surgical subspecialties).

Calabrese et al. (2013) found that there is no statistically significant difference on the scores among students who planned to pursue "people-oriented" specialties compared with those interested in "technology/procedure-oriented" specialties. In our study, none of the students selected the technology-oriented specialties. For statistics to be meaningful, we compared the empathy scores of students who selected the surgery and medicine specialties. We found that the students who selected surgery as their future specialty did not differ from those who selected medicine in their overall empathy scores. However, those who selected surgery significantly outscored their peers who selected medicine in the fourth category which measured their attitudes related to reading non-medical literature and enjoying arts, patients' perception of valuing physicians' understanding of their feelings and physicians' attitude of being influenced by the family bonds of patients. Taking into consideration that students in the third year of the medical curriculum are not yet exposed to training in interpersonal skills and not involved in patient care, then their selection is considered a personal inclination which reflects the notion that different individuals with different degrees of interpersonal skills, are attracted to different specialties and this is reflected in their empathy scores. Further studies on these students later in the clinical phase of the curriculum are required to detect any changes in their attitudes towards specialty selection and its relation to empathy score.

In this study we addressed the relationship between empathy scores and performance measures in medical school represented by the students' GPA. We found that students who had a GPA of four got significantly higher overall empathy scores and higher scores in the third category of the scale concerning "Putting oneself in the other's shoes", than those who got GPA of three. We also found that there is a significantly positive correlation between the GPA and the overall empathy score as well as with the second and third categories of empathy scale, namely "Compassionate care" and "Putting oneself in the other's shoes". This could be explained if we consider that a high GPA is related to a cognitive as well as the emotional aspects and hence students with higher GPA have more understanding of the overall empathy concept. Searching the literature for a relation between empathy levels in medical students and their GPA in the last five years was not found. A qualitative study is required to provide an explanation for the effect of academic performance on the students' attitudes towards empathy.

Lastly, the study tried to reveal the relation between students' empathy score and their family status as regards the parents being separated or not. There was no statistically significant difference in empathy scores between students who have a coherent family and those with separated parents. This requires further qualitative research to explore in depth the relation between family and social status of students and their effects on the moral and emotive components of empathy.

Aomatsu et al. (2014) conducted a qualitative study that compared medical students' and residents' conceptual structures of empathy. The study revealed a qualitative difference, whereby residents showed more empathy to their patients by a cognitive decision as clinicians than medical students do. They recommended that communication skills training should consider the qualitative change of students' and residents' empathy with clinical experience. Also, when we evaluate learners' empathy, we must consider the change that happens and introduce methods that cover the qualitative range of empathy. Hence, quantitatively measuring empathy using scales as JSPE alone could not give a true reflection of the concept of empathy that might change in quality throughout the learners' learning experience.

In our study, it could be concluded that many factors affect empathy level among medical students. We could assume that the students' attitudes towards empathy carry a predominantly emotional rather than a cognitive component. Morse et al. (1992) classified empathy components into four categories: emotive; cognitive; moral and behavioral, hence in the future studies we should use a combination of tools to evaluate empathy among learners at different levels to cover all four components and not only the emotive or the cognitive ones.

Further research is needed to explore the relation between empathy level and the multiple exogenous and endogenous factors which might affect it; and as well, define the empathy components which are teachable and include them in the formal curriculum in a way which considers the changes that occur along the empathy continuum.

5. Limitations of the Study:

Due to the lack of baseline data or cut off scores that could judge high or low scores, the results could not be compared. Results were based on a single cross-sectional study on third year medical students in one school in Saudi Arabia, which limits the generalization of the results. Further studies are required to unveil the role of cultural and social factors in more than one institute in Saudi Arabia.

A longitudinal study should be conducted to evaluate whether empathy changes over time throughout the learners' learning experience. To secure the validity of the results, a mixed methods design (qualitative and quantitative) is required. As all studies that use questionnaires to measure perceptions and attitudes, the results could not guarantee that attitudes could be translated into actual behavior in the future.

Declaration of interest: The authors report no declarations of interest.

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