

Comparing Empathy in Medical Students of two Portuguese Medicine Schools

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Abstract

Objectives To evaluate differences in empathy between the Integrated Master's degree in Medicine (MIM) students from the Faculty of Medicine - University of Coimbra (FMUC) and the Faculty of Health Sciences - University of Beira Interior (FCS-UBI). **Methodology** Cross-sectional observational study with the Jefferson Scale of Physician Empathy – students' Portuguese version (JSPE – spv) to 1st, 3rd and 6th year students of the 2017/2018 academic year with descriptive and inferential statistical analysis ($p < 0.05$). **Results** Size representative sample of 795 students. Higher total empathy score (TES) ($p = 0.008$) and "Perspective taking" ($p = 0.001$) in FCS-UBI were found. JSPE-TES was higher in FCS-UBI, 3rd year ($p = 0.038$). Higher FCS-UBI "Perspective taking" in the 1st year ($p = 0.030$) and 6th year ($p = 0.044$), for "Compassionate care" in the 3rd ($p = 0.019$) and for "Standing in the patient's shoes" in the 1st year ($p = 0.018$) and in FMUC for "Compassionate care" in the 1st year ($p = 0.037$) and the "Standing in the patient's shoes" in the 3rd year ($p = 0.002$) were found. Higher levels of empathy were found in FCS-UBI female students, for JSPE-TES ($p = 0.045$) and "Perspective taking" ($p = 0.001$). **Conclusion** Higher empathy levels in FCS-UBI were found, with different results in the third year suggesting influence of the medical course teaching characteristics.

Introduction

Empathy is a fundamental element of the doctor-patient relationship¹, contributing to greater patient satisfaction with their doctor, greater ease in providing relevant information, greater adherence to therapy and better clinical results¹⁻³. Higher levels of empathy are also correlated with lower litigation rates for poor medical practice² and lower levels of stress and professional burnout⁴.

The concept of empathy is comprehensive, complex and multidimensional and its definition is still not consensual^{5,6}. Hojat et al. have described empathy as a predominantly cognitive (rather than emotional) attribute that involves the ability to understand (rather than feel) the patient's experiences, concerns, and perspectives associated with the ability to communicate that same understanding.

Being a concept that encompasses a cognitive component, empathy can be taught and trained through educational processes and reflection⁶⁻⁹. Thus, it is important to promote effective educational interventions that can improve and maintain the levels of empathy in physicians in training, contributing to the strengthening of the doctor-patient relationship and to a better healthcare system^{6,8,9}.

Despite the universal consensus on the importance of empathy in medical education and practice⁶, several international journals reveal a worrying decrease in the empathy of medical students throughout their years in Medicine Faculties^{6,11-15}.

In Portugal, there is little literature on the evolution of empathy in medical students, but there are some publications related to this subject, namely a multi-institutional study that reveals that the empathy and

personality of medical students are closely related⁷ and studies that intend to test the validity of the Jefferson Scale of Physician Empathy—students' Portuguese version (JSPE—spv)^{1,5,16}.

Although the empathy of medical students is a studied subject, there are few studies on the factors that can influence their levels, particularly on the influence of the curricular model practiced in the different Medicine Faculties².

This study stands out by comparing, as far as we know, for the first time in Portugal, the levels of empathy of students of the Integrated Master's degree in Medicine (MIM) of two colleges with different curricular models, allowing investigation of the differences and possible influences of the system at these same levels.

The Faculties selected to partake in this study were the Faculty of Medicine of the University of Coimbra (FMUC) and the Faculty of Health Sciences of the University of Beira Interior (FCS-UBI). The two Medicine Faculties have the same admission process for incoming students, being most of the students admitted directly from secondary education through a competitive national system^{17,18}. In both, the medical course has a duration of 6 years, the first three are mainly theoretical and preclinical and the last three are mainly clinical, with greater contact with medical practice^{17,18}. The differences are essentially centred around the number of students admitted, the student-tutor ratio, the curriculum model and the curriculum of each faculty. FMUC has about 300 students a year, which contributes to a high student-tutor ratio (18.5)¹⁹. It presents a biannual organization and applies a non-integrated "traditional" teaching system, based on the compartmentalization of contents into subjects, emphasizing the "storage" of information^{17,20}. FCS-UBI has about half of the students and a much lower student-tutor ratio (3.1)¹⁹. It presents a quarterly organization and applies an integrated teaching system that promotes self-directed learning using, whenever possible, problem-based learning^{18,21}. Analysing the curriculum of each faculty, it is verified that in FCS-UBI this includes more content in the area of human sciences, more activities based on role-playing and an earlier contact with the clinical practice and with the patients, factors that are associated with the potentiation of the empathic capacity of the students^{8,22,23}.

This study aimed to understand the differences in levels of empathy between FMUC and FCS-UBI medical students, and to compare these levels by gender and MIM year.

Methodology

A cross-sectional observational study was carried out through the application of an instrument to measure the levels of empathy of first, third and sixth-year students attending Medicine's Master course in FMUC and FCS-UBI. The study was approved by the Ethics Committee for Health of the Central Regional Health Administration of Portugal.

The Jefferson Scale of Physician Empathy—students' Portuguese version (JSPE - spv), a self-administered questionnaire that allows evaluation of the student's perception of their own empathic

behaviour in the context of patient care, was adopted.⁵ It is considered a reliable instrument with evidence that supports its validity^{1,5,16,24,25}. It includes 20 items, to be answered on a Likert scale from 1 (strongly disagree) to 7 points (strongly agree) and grouped into three components: "Perspective taking" (10 items; refers to the ability to analyse another person's problem from the outside), "Compassionate care" (8 items, defined by the activity in favour of the one we see suffering) and "Standing in the patient's shoes" (2 items; refers to the act of thinking as if we were in the other person's place)^{5,16,24}. The total score varies from 20 to 140, and the higher the score the higher the level of empathy^{16,24}.

The total sample was calculated after the total number of to be enrolled students in each faculty in the academic year 2017/2018 per year of attendance. FMUC 471 students in the 1st year, 328 in the 3rd year and 314 in the 6th year; For FCS-UBI 186 in the 1st year, 136 in the 3rd year and 141 in the 6th year. The sample size calculation was made using the site "The Survey System - Sample Size Calculator"²⁶ to represent the universe with a 95% confidence level and a 5% margin of error.

The scale was distributed in paper during practical classes of the first, third and sixth curricular year in both universities, in 2018 April and May. Responsible Professors for each randomly chosen class were previously informed and granted consent. The number of classes was drawn from the intended number of students to be studied added of on more for security reasons. Student's participation was individual, voluntary, anonymous and with written informed consent. In addition to the scale, information on gender (male / female) and MIM year (first / third / sixth) was obtained.

The "Statistical Package for the Social Sciences (SPSS®) Software for Windows version 24.0" program was used for storage and descriptive and inferential statistical analysis of data. Checking the non-normality of the data distribution with the Kolmogorov-Smirnov test, non-parametric tests (Mann-Whitney test) was used for statistical analysis. A p value of <0.05 was considered for significant difference.

Results

A sample of 795 medical students, 420 from FMUC and 375 from FCS-UBI was studied. Its description according to the university (FMUC and FCS-UBI), the MIM year (1st, 3rd and 6th year) and gender (female and male) is shown in Table 1. It was estimated that at least 286 questionnaires were required at FMUC and 210 at FCS-UBI to represent the size of the universe. After applying the Kolmogorov-Smirnov test no numeric data had normal distribution ($p < 0,001$ for all), the chi-square tests and the Mann-Whitney U test, no statistically significant differences were found between the two universities for the number of students of each gender ($p = 0.096$) and each year of MIM ($p = 0.408$).

[Table 1]

Table 2 shows the differences in the mean value of the answers between universities for total JSPE and each one of its components ("Perspective taking," "Compassionate care", "Standing in the patient's shoes").

With the Mann-Whitney U test significant differences were found between the two Faculties the overall JSPE score ($p = 0.008$) and in the “Perspective taking” component score ($p = 0.001$) achieving a higher score in FCS-UBI. In the remaining components there were no statistically significant differences.

[Table 2]

Table 3 presents the differences in the mean value of the MIM responses per year between universities for the total JSPE and for each of its components (“Perspective taking”, “Compassionate care”, “Standing in the patient’s shoes”).

The total JSPE score there is significant different in the 3rd year ($p = 0.038$), with a higher score in the FCS-UBI.

For “Perspective taking” there were significant differences in the 1st ($p = 0.030$) and in the 6th year ($p = 0.044$), both scores being higher in the FCS-UBI.

For the “Compassionate care” component, there was difference in the 1st year ($p = 0.037$), with a non-significant higher score in the FMUC and in the 3rd year with higher different score in the FCS-UBI ($p = 0.019$).

Regarding the “Standing in the patient’s shoes” component, significant difference was found in the 1st year ($p = 0.018$), FCS-UBI scoring better, and in the 3rd year ($p = 0.002$) with higher score in the FMUC.

[Table 3]

Table IV shows the differences in the mean value of the answers by gender between universities for total JSPE and for each of its components (“Perspective taking”, “Compassionate care”, “Standing in the patient’s shoes”).

The Mann-Whitney U test revealed a statistically significant value only for female students for the total JSPE score ($p = 0.045$) and the “Perspective taking” component score ($p = 0.001$), again with a higher score in FCS-UBI.

[Table 4]

Discussion

Comparing the overall results between the two Faculties of Medicine, significantly higher levels of empathy were found in FCS-UBI students for the total score of JSPE and for the “Perspective taking” component and for 3rd year students of each university still with higher scores in FCS-UBI.

These results are in line with those obtained in the only study we found also comparing the levels of empathy in two universities with different curricular models²⁷. Such Pakistan study, showed higher levels of empathy among university students with an integrated modular system (with formal teaching in the various domains of empathy) compared to university students with a “traditional” teaching system. Another multi-institutional study revealed that the type of course influences the levels of medical students empathy but did not specify the curricular model of each of the studied institutions²⁸.

Some reasons can explain higher levels of empathy in FCS-UBI students. In a national survey evaluating pedagogical conditions, the student-tutor ratio and student satisfaction in the various Medicine Faculties of Portugal, found that FMUC had a student-tutor ratio of 18.5 (the largest in the country and more than twice the national average, which is 7.53), contrasting with a 3.1 ratio in FCS-UBI, the second lowest in Portugal²⁹. By students opinions, FMUC is the national medicine faculties with the worst levels of overall satisfaction and with clinical teaching and study conditions, whereas FCS-UBI has the highest levels of satisfaction in regard to these parameters²⁹. Highest student-tutor ratio at FMUC contributed to lower satisfaction with the teaching, less clinical contact and less opportunities to develop empathic relationships with patients^{19,29}.

Analysing the curricula of both faculties several differences can contribute to the inequality in the levels of empathy^{17,18}. FCS-UBI integrates a larger number of curricular units relating to the area of humanistic sciences, with emphasis on the development of interaction and communication skills. Early contact with clinical practice is encouraged (through internships in hospitals and primary health care centres since the 1st year of MIM) and is integrated in the syllabus the curricular unit of Primary Health Care (which contemplates empathy as one of the learning objectives) in the 2nd, 4th and 5th years of MIM. In addition, role-playing activities are conducted regularly with discussion and specific assessment of students’ communicative and empathic abilities^{8,22,23}. FMUC lacks subjects related to the humanistic sciences and has a more superficial and limited approach to clinical practice (started in the 4th year of MIM). The curricular unit of General Practice/Family Medicine, which includes the discussion of topics such as empathy and communication and the performance of role-playing activities, is taught in the 5th year of the MIM. These multiple differences may explain the higher levels of empathy in FCS-UBI. The same reasons may support statistically significant differences in overall levels of empathy that occur in the 3rd year of MIM. By the 3rd year, FCS-UBI students already have had contact with clinical practice, whereas FMUC students have not^{17,18}.

Another possible reason is suggested in several studies that show that empathy is positively influenced by quality of life and negatively by stress, fatigue, and burnout²⁹⁻³¹. Studies carried out in both the universities that partook in this study showed that, compared to FMUC students, FCS-UBI students have a better quality of life and are less vulnerable to stress and fatigue, which may justify higher levels of empathy in this institution^{32,33}.

There are also differences in the profiles of the students that initiate MIM in the two Medicine Faculties and contributing to the present results. FMUC is chosen by about half of those students entering each year as the first choice, due to very high in a 20 grade marks, while at the FCS-UBI that ratio is of about 7%^{34,36,37}. Further studies are needed to evaluate the intrinsic characteristics of the students at each medicine faculties, such as the family economic environment and place of residence, versus the characteristics of teaching and also different characteristics of the placement of both Universities³⁸.

The characteristics of the tutors influence the levels of student's developed levels of empathy^{15,22,39}. Thus, the differences between the two universities can also be so explained, and that deserves future study, and Faculty's intervention in their tutors upgrading them.

Significant differences are only found in feminine gender and only in the total JSPE score and in the "Perspective taking" component, with a higher scores in FSC-UBI. It seemed that female students of FCS-UBI have higher levels of empathy than male ones even though it is suggested that female students are more susceptible to stress and fatigue and have a worse perception of their quality of life than male students^{30,40,41}. Combining these data with the information that FCS-UBI students present higher quality of life and less vulnerability to stress and fatigue theses were reasonable results to expect^{32,33}.

The existence of differences in empathy between the two universities supports the need to consider the impact of the curriculum model and other MIM characteristics on the development of the empathic capacities of medical students. So several changes can be considered in order to increase the levels of empathy in medical students, in the long term, in order to improve and maintain the levels of empathy in medical students:

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Educational interventions focused on empowering empathic capacities by role-playing, video-watching and real consultations with patients with analysis and discussion of medical communication²³. Also lectures and practice of the importance of empathy and communication in the doctor-patient relationship and early integration of more contents of the human sciences area into the study plan, with a more reduced student-tutor ratio, preferably a one to one even if for shorter period of time^{8,9}.

Tutors must also be integrated in training programs aimed at promoting empathy so making an example to followed.

As stress negatively influences student's levels of empathy, it is important to provide "tools" that help students deal with such promoting extra-curricular activities^{8,9,42}.

It is advisable that research is continued in this area, including comparisons with more national and international medical Faculties, all years of MIM and more variables (such as, grade and order of

application, university region, socioeconomic class and personality traits of the students and the characteristics of the tutors).

In spite of the attempts to minimize bias, there may have been distraction in reading the questionnaires. Attempts were made to close the selection bias through the random selection of the classes included in the study. The scale used evaluates the student's self-perception of their level of empathy, which may be different from their actual empathic behaviour.

Conclusion

The levels of empathy of FCS-UBI medical students were higher than those found in FMUC students this study concluded.

Comparing the results per year of MIM, the difference was mainly in the 3rd year and better in FCS-UBI where students had already had contact with patients and experienced tutors.

By gender the female score statistically different between the two institutions.

The results support the need to reassess the curriculum and other particularities of the medical course, with the objective of promoting effective educational interventions in the development of student empathy.

Since empathy is an essential aspect of the doctor-patient relationship, it is essential to continue research into this topic and to include other medical faculties in order to identify the characteristics of teaching that determine levels of empathy. The intrinsic characteristics of the student population should also be studied because they may interfere with the results obtained.

Practice Points

1. Empathy, a paramount element of the doctor-patient relationship, can be trained through an educational process.
2. Student's were higher when more precocious contact with patients was developed.
3. So reassessment of curricular particularities must bare in mind practical activities in real world context, bearing the intrinsic characteristics of the student's population.

Glossary Terms

MIM: Integrated Master's degree in Medicine

FMUC: Faculty of Medicine of the University of Coimbra

FCS-UBI: Faculty of Health Sciences of the University of Beira Interior

JSPE—spv: Jefferson Scale of Physician Empathy—students' Portuguese version

TES: total empathy score

Declarations

Ethics committee approval:

This study has had an ethics committee approval, by the “Comissão de Ética da ARS-C”.

Consent to participate:

All data were obtained after written informed consent to answer and for data to be analysed.

Availability of data

All data will become available if requested.

Fundings:

No funding were obtained for this study which was been made in out of authors working job hours.

Competing Interests:

None of the authors states competing interests.

Previous presentations:

No presentation of this work has yet been made.

Notes on Contributors

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Tables

Table 1. Studied sample according to the Faculty, year of frequency of Master In Medicine (MIM) and gender.

	FMUC n (%)	FCS-UBI n (%)	Total n (%)
Year of MIM (p=0,408)			
1º	152 (36.2)	153 (40.8)	305 (38.4)
3º	164 (39.0)	137 (36.5)	301 (37.9)
6º	104 (24.8)	85 (27.7)	189 (23.8)
Total	420 (100)	375 (100)	795 (100)
Gender (p=0,096)			
Female	278 (69.8)	282 (75.2)	560 (72.4)
Male	120 (30.2)	93 (24.8)	213 (27.6)
Total	398 (100)	375 (100)	773 (100)

Note: FMUC Faculty of Medicine of the University of Coimbra; FCS-UBI - Faculty of Health Sciences of the University of Beira Interior

Table 2. Differences in the mean value of the answers per university for the total JSPE and for each one of its components "Perspective taking", "Compassionate care" and "Standing in the patient's shoes" by Faculty of Medicine.

	FMUC	FCS-UBI	p
JSPE total (Max=140)			
N	420	375	0.008
Mean ± SD	89.2 ± 7.6	90.6 ± 7.6	
95% ic	88,2 to 89,14	89,75 to 91,34	
Perspective taking (Max=70)			
N	420	375	0.001
Mean ± SD	59.4 ± 5.8	60.7 ± 6.7	
95% ic	58,44 to 59,21	60,04 to 61,39	
Compassionate care (Max=56)			
N	420	375	0.800
Mean ± SD	15.1 ± 4.1	15.2 ± 4.3	
95% ic	14,71 to 15,21	14,75 to 15,61	
Standing in the patient's shoes (Max=14)			
N	420	375	0.399
Mean ± SD	7.4 ± 2.3	7.3 ± 2.5	
95% ic	7,32 to 7,59	7,01 to 7,52	

Note: FMUC - Faculty of Medicine of the University of Coimbra; FCS-UBI - Faculty of Health Sciences of the University of Beira Interior

Table 3. Differences in the mean value of the responses per university and per year of MIM for the total JSPE and for each of its components "Perspective taking", "Compassionate care" and "Standing in the patient's shoes".

	FMUC			FCS-UBI			p (between universities)		
	1º	3º	6º	1º	3º	6º	1º	3º	6º
JSPE total (Max=140)									
N	152	164	104	153	137	85	0.215	0.038	0.308
Mean ±	90.3 ±	90.4 ±	85.7 ±	91.8 ±	91.5 ±	86.8 ±			
SD	9.1	5.7	6.9	7.4	7.6	7.1			
Pererspective taking (Max=70)									
N	152	164	104	153	137	85	0.030	0.108	0.044
Mean ±	59.0 ±	60.4 ±	58.5 ±	60.8 ±	61.0 ±	60.1 ±			
SD	6.1	5.6	5.8	7.3	6.5	5.8			
Compassionate care (Max=56)									
N	152	164	104	153	137	85	0.037	0.019	0.741
Mean ±	16.8 ±	13.9 ±	14.5 ±	15.9 ±	14.9 ±	14.5 ±			
SD	4.5	3.6	3.1	5.0	3.7	3.6			
Standing in the patient's shoes (Max=14)									
N	152	164	104	153	137	85	0.018	0.002	0.611
Mean ±	6.6 ± 2.3	8.2 ± 2.2	7.2 ± 2.2	7.3 ± 2.4	7.4 ± 2.6	7.0 ± 2.5			
SD									

Note: FMUC Faculty of Medicine of the University of Coimbra; FCS-UBI - Faculty of Health Sciences of the University of Beira Interior

Table 4. Differences in the mean value of the responses by university and by gender for the total JSPE and for each one of its components "Perspective taking", "Compassionate care" and "Standing in the patient's shoes".

	FMUC		FCS-UBI		p (between universities)	
	Female	Male	Female	Male	Female	Male
JSPE total (Maximum=140)						
N	278	120	282	93	0.045	0.071
Mean ± SD	89.0 ± 8.1	89.8 ± 6.8	90.4 ± 7.7	91.0 ± 7.4		
Perspective taking (Max=70)						
N	278	120	282	93	0.001	0.777
Mean ± SD	59.7 ± 5.7	58.9 ± 6.1	61.3 ± 6.4	58.8 ± 7.0		
Compassionate care (Max=56)						
N	278	120	282	93	0.874	0.174
Mean ± SD	14.8 ± 3.9	15.9 ± 4.1	14.7 ± 4.1	16.6 ± 4.4		
Standing in the patient's shoes (Max=14)						
N	278	120	282	93	0.321	0.704
Mean ± SD	7.3 ± 2.4	7.6 ± 2.3	7.1 ± 2.5	7.7 ± 2.4		

Note: FMUC Faculty of Medicine of the University of Coimbra; FCS-UBI - Faculty of Health Sciences of the University of Beira Interior