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***Medicine student's empathy and their medical specialty
perspective of future choice***

***A empatia médica dos estudantes e a perspetiva de escolha de
futura especialidade médica***

ARTIGO CIENTÍFICO ORIGINAL

ÁREA CIENTÍFICA DE MEDICINA GERAL E FAMILIAR

Trabalho realizado sob a orientação de:

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PROFESSOR ASSOCIADO COM AGREGAÇÃO

MARÇO/ 2022

Medicine student's empathy and their medical specialty perspective of future choice

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Abstract

Introduction: Empathy, the ability to understand the patient and to convey it to him, has been shown to have a positive correlation between its higher levels in medicine's students and preference for medical specialties, and less for surgical specialties. However, some studies have not proven this association, thus making it a matter needing further studies. Researchers in Portugal have already attempted to study empathy among medical students, specifically whether there are differences between faculties or the year they are attending; however, there have been no studies to date to link students' levels of empathy with their preference for medical or surgical specialties. This research aimed to determine whether students' empathy levels are related to their choice of future medical specialty in the Faculty of Medicine of the University of Coimbra (FMUC) in the academic year of 2020.

Methodology: Questionnaires were applied through the Google Forms platform to 5th and 6th year Faculty of Medicine of the University of Coimbra's students. The questionnaires included the Jefferson Scale of Physician Empathy - student version (JSPE - vs) and an epidemiological questionnaire about gender, year of attendance, satisfaction with academic path, future medical specialty choice and grade point average. Statistical analysis, descriptive and inferential, was performed.

Results: Students interested in a surgical specialty had the lowest mean empathy score (83.63 ± 5.83), while students interested in Primary Care had the highest score (87.18 ± 5.45). Overall student's average empathy score (84.6 ± 5.9) was lower than in previous studies conducted in Portugal. Male students showed more empathy (85.53 ± 7.43) than female students (84.35 ± 5.40). Students with the highest academic achievement performed worst in empathy (78.50 ± 0.70). Students who were moderately satisfied with their academic performance showed higher empathy (85.14 ± 5.55).

Discussion: Students planning on future choice of surgical specialties may need to maintain some emotional distance from the patient in order to perform surgical acts. To opt for Primary Care, students know that empathy will be needed to help patients holistically. The lower empathy values in general may have been influenced by the COVID19 pandemics. The higher empathy levels by males is probably related to the scarce number of men on the FMUC and to specific higher compassion. Medicine's students Empathy with higher grades may be related to individualistic and perfectionistic traits. Students who are moderately, or more, happy with their academic performance have higher levels of empathy, reflecting their academic parcours.

Conclusion: This study has shown how empathy may influence the specialty choice and provides a new insight about the demographics of the most and least empathic medical students.

Keywords

Empathy, Medical students, Medical Specialty.

Resumo

Introdução: Empatia, a capacidade de compreender o paciente e de lhe transmitir essa mesma compreensão, tem demonstrado correlação positiva entre maior empatia nos alunos de medicina e a preferência por especialidades médicas, o contrário acontecendo com a escolha de especialidades cirúrgicas. No entanto, existem também resultados que não comprovaram esta associação, sendo assim matéria que carece de mais estudos. Em Portugal, apesar de todos os estudos já realizados não os há, até à data que relacionem os níveis de empatia dos alunos com a preferência por especialidades médicas ou cirúrgicas. O objetivo deste estudo é saber se o nível de empatia dos alunos se relaciona com a sua opção futura de especialidade médica.

Materiais e Métodos: Foram aplicados questionários através da plataforma Google Forms a alunos do 5º e 6º anos da FMUC. Nos questionários constava a Escala Jefferson de Empatia Médica – versão para estudantes (JSPE – vs) e um questionário epidemiológico com questões sobre o sexo, ano de frequência, satisfação com o seu percurso académico e média de curso. Depois, foi efetuada a análise estatística dos resultados.

Resultados: Os estudantes interessados numa especialidade cirúrgica obtiveram em média a pontuação mais baixa de empatia (83.63 ± 5.83), enquanto os estudantes interessados nos Cuidados Primários alcançaram a pontuação mais elevada (87.18 ± 5.45). A média de empatia dos alunos no geral (84.6 ± 5.9) foi inferior aos estudos realizados previamente em Portugal. Os alunos do sexo masculino demonstraram mais empatia (85.53 ± 7.43) que o sexo feminino (84.35 ± 5.40). Os alunos com melhores resultados académicos obtiveram o menor valor de empatia (78.50 ± 0.70). Os alunos moderadamente satisfeitos com o seu percurso académico demonstraram mais empatia (85.14 ± 5.55).

Discussão: Os estudantes que planeiam escolher especialidades cirúrgicas podem precisar de manter alguma distância emocional do paciente para realizarem atos cirúrgicos. Para optar por Medicina Geral e Familiar, os estudantes sabem que será necessária empatia para ajudar os pacientes de uma forma holística. Os valores mais baixos de empatia em geral podem ter sido influenciados pela fase Pandémica. A maior empatia no sexo masculino está provavelmente relacionada com o escasso número na nossa faculdade, tendo estes um perfil único. A menor empatia nos estudantes com notas mais elevadas pode estar relacionada com traços individualistas e perfeccionistas, enquanto os estudantes moderadamente satisfeitos com o seu desempenho académico, revelam maior empatia.

Conclusão: A empatia pode influenciar a escolha da especialidade. Este estudo proporcionou uma nova visão sobre a demografia da empatia dos estudantes de medicina.

Palavras-chave

Empatia, Estudantes, Medicina, Especialidade médica

Background

In the scientific community there has been some disagreement regarding the definition of Empathy. Some authors consider it as a personality trait [1–3], others see it as a predominantly affective concept [4,5], but the thesis that it is a cognitive attribute has gained strength in recent years. Coulehan JL et al described it as “the ability to understand the patient’s situation, perspective and feelings and to be able to communicate that understanding to the patient.” [6].

Empathy is often confused with sympathy, but in fact sympathy is a concept that is based on an affective response to what the other feels, in the case of clinical sympathy the doctor may, for example, feel sadness if the patient is unhappy [7,8]. This notion contrasts with the cognitive nature of empathy, in which an “Accurate empathic responses are unadulterated by a physician’s reactions to a patient and the patient’s experience” [9].

Despite being difficult to define empathy, many agree that it is a multidimensional concept [10], and to better understand it, Hojat et al have identified 3 main components: perspective taking, compassionate care, and the ability to stand in the patient’s shoes [11].

It has already been shown that there are benefits on clinical practice when the physician demonstrates empathy, such as improvement of patient satisfaction and adherence, less anxiety and distress among the patients, better diagnostics, clinical outcomes and improved patient enablement[12–15].

The empathy levels of medical students have been studied in several countries. Some authors have found a decrease in empathy throughout the medical school course (16–19). Some researchers have concluded that empathy improves at the last years of medical school (20) or remain relatively stable [21]. Articles have proven higher levels of empathy in females compared to their male colleagues [16,18–23]. Empathy levels also vary depending on the country, Anderson et al reporting that non-western countries had lower mean empathy scores when compared to Western countries [22]. Some studies found correlate academic success with empathy levels in medical students, but there is some evidence favoring higher levels of empathy in more academically successful students [23]. However, this hypothesis was not confirmed by a study made in Iran that found no significant differences [24].

Positive correlation between higher levels of empathy in students and preference for "people oriented" specialties, and also, a correlation between a lower degree of empathy and a

preference for "skills oriented" specialties have been found [16,19–21]. Still other studies have not shown this association [18,25,26], this matter so deserving further study.

In Portugal, studies have debated the levels of empathy among medical students of two medicine faculties [27], gender [27,28] and year attended [28]. Nevertheless, no studies related the levels of empathy in students and the preference for medical or surgical specialties have been published.

This paper intended to study how medicine student's empathy relates to their choice of future medical specialty, and to study how some characteristics like sex, year of attendance, academic satisfaction and performance, relate to their levels of empathy.

Methodology

A cross-sectional observational study was performed in a convenience sample of the student's population of the Faculty of Medicine of the University of Coimbra in 2021. Anonymity and sigil of the responses were guaranteed. A two-part survey was applied through Google Forms with invitation made via the social media of 5th and 6th years, in March 2021, two reminders having been made in May and July of the same year.

The first part of the survey aimed to assess the participants' empathy score using the Jefferson Scale of Medical Empathy - student version (JSPE-vs-pt), originally proposed by Hojat [29] et al and validated by Magalhães [30] et al for the Portuguese student population. It is composed by 20 questions, which can be grouped into 3 factors: "Perspective Taking" (10 items), "Compassion" (7 items) and the "Ability to put oneself in the place of the patient" (2 items). The answers were given on a Likert-type scale, from 1 to 7 points, in which 1 corresponded to strongly disagree and 7 to strongly agree.

The second part of the survey was specifically designed for this study, and included questions such as gender, attending degree year, average grade, academic satisfaction, and the perspective of specialty choice - Medical (Primary care), Medical (Hospital), Medical-Surgical, and Surgical.

Sample's size was calculated for a population of 650 students of both Integrated Master on Medicine years for an Interval confidence of 90% and a 5% error margin.

Descriptive and inferential statistical analysis were performed using IBM SPSS® (version 27) statistic analysis software. For variables with non-normal distribution the Mann-Whitney test and Kruskal Wallis were used and for variables with normal distribution the ANOVA and independent student *t*-test models were used. Statistical significance for all statistical tests was set at $p < 0.05$.

This study was approved by the Ethics Committee of the Faculty of Medicine of Coimbra on March 17, 2021 authors authorizations having been obtained.

Results

The sample's size was calculated as of n=190. A sample of n=206 was gathered and studied. Most of the participants were female (78.2%), and approximately half of the pool was attending the 5th year (44.7%). Most of the students had an academic average between 14 and 17 out of 20 points and were moderately satisfied with their academic path (67,0%). Medical (hospital) and medical-surgical specialties were the most preferred ones (70,9%) according to Table1.

Table 1. Participant's Descriptive analysis

		Frequency	%
Sex	Female	161	78.2
	Male	45	21.8
Year	5th	92	44.7
	6th	114	55.3
Average Grade	Up to 12	0	0.0
	12 to 14	61	29.6
	15 to 17	143	69.4
	18 or +	2	1.0
Academic Satisfaction	Low Satisfaction	19	9.2
	Moderate Satisfaction	138	67.0
	Very Satisfied	49	23.8
Specialty Choice	Medical (Primary Care)	33	16.0
	Medical (Hospital)	75	36.4
	Medical-Surgical	71	34.5
	Surgical	27	13.1

The mean empathy score was 84.6 ± 5.9 standard deviation, ranging from 70 to 107. Although no significant differences were found in the empathy score of the different study groups, the mean empathy scores were different. The average empathy score for males was non differently higher than the one for females. The average empathy score for 5th and 6th year were similar. Students who were moderately satisfied with their academic life had a higher empathy mean score than students who were either less satisfied or very satisfied (see table 2).

Regarding the perspective of specialty choice, students who want a surgical specialty had the lowest mean empathy score, and on the other hand, students who want Primary Care obtained the highest score (see table 2).

Table 2. Mean Empathy Scores on each group

		<i>p</i> -value	Mean Empathy Score (SD)
Sex	Female	0.310*	84.35(5.40)
	Male		85.53(7.43)
Year	5th	0.936*	84.79 (6.25)
	6th		84.46 (5.63)
Average Grade	Up to 12	0.183**	-
	12 to 14		85.31(5.90)
	15 to 17		84.40(5.89)
	18 or +		78.50(0.70)
Academic Satisfaction	Low Satisfaction	0.591**	83.68(8.90)
	Moderate Satisfaction		85.14(5.55)
	Very Satisfied		83.49(5.34)
Specialty Choice	Medical (Primary Care)	0.061**	87.18(5.45)
	Medical (Hospital)		84.28 (6.03)
	Medical-Surgical		84.14 (5.79)
	Surgical		83.63 (5.83)

*Mann-Whitney test, **Kruskal Wallis Test, SD-Standard deviation

If we divided the specialties into 2 larger groups -surgical and medical - the first group being surgical and medical surgical specialties, and the second group being hospital and primary care medical specialties, we also find greater empathy in medical specialties (108.27) when compared to surgical specialties (98.34).

When analyzing the 3 factors of empathy - perspective taking, compassion, and ability to put oneself in the place of the patient- several significant differences were found. As for the gender of the students, in all 3 factors, males obtained higher values than females. About the choice of specialty, there was more perspective taking in primary care, followed by medical specialties and, with lower values, medical-surgical specialties, and lastly surgical specialties. The 6th grade students showed lower values of compassion than 5th grade students. Also, the higher the students' satisfaction was with their academic path, the lower was their compassion value (see table 3, 4 and 5).

Table 3. Empathy – Perspective Taking

		Mean Perspective Taking (SD)	p-value
Sex	Female	61.78 (6.38)	0.023*
	Male	59.29 (6.57)	
Year	5th	60.45 (7.03)	0.118*
	6th	61.87 (5.98)	
Average Grade	Up to 12	-	0.075**
	12 to 14	61.33 (5.62)	
	15 to 17	61.25 (6.87)	
	18 or +	57.00 (6.49)	
Academic Satisfaction	Low Satisfaction	58.32 (7.68)	0.651**
	Moderate Satisfaction	61.25 (6.46)	
	Very Satisfied	62.31 (5.84)	
Specialty Choice	Medical (Primary Care)	64.36 (4.53)	0.013**
	Medical (Hospital)	60.25 (6.19)	
	Medical-Surgical	61.32 (6.08)	
	Surgical	59.89 (6.49)	

SD- Standard Deviation, * T Test, **ANOVA

Table 4. Empathy- Compassion

		Mean Compassion Score (SD)	p-value
Sex	Female	13.46 (3.71)	0.003*
	Male	15.56 (5.32)	
Year	5th	14.67 (4.72)	0.020*
	6th	13.31 (3.61)	
Average Grade	Up to 12	-	0.886**
	12 to 14	13.98 (4.71)	
	15 to 17	13.90 (3.99)	
	18 or +	12.50 (2.12)	
Academic Satisfaction	Low Satisfaction	15.32 (5.96)	0.026**
	Moderate Satisfaction	14.18 (4.15)	
	Very Satisfied	12.63 (3.13)	
Specialty Choice	Medical (Primary Care)	13.36 (3.30)	0.719**
	Medical (Hospital)	14.32(4.11)	
	Medical-Surgical	13.77(4.41)	
	Surgical	13.85(4.87)	

SD- Standard Deviation, * T Test, **ANOVA

Table 5. Empathy- Ability to put oneself in the place of the patient

		Mean Ability to put oneself in the place of the patient (SD)	p-value
Sex	Female	7.25 (2.51)	0.003
	Male	8.53 (2.71)	
Year	5th	7.58 (2.54)	0.817
	6th	7.49 (2.66)	
Average Grade	Up to 12	-	0.479
	12 to 14	7.87 (2.80)	
	15 to 17	7.38 (2.53)	
	18 or +	7.50 (0.71)	
Academic Satisfaction	Low Satisfaction	8.11 (3.02)	0.064
	Moderate Satisfaction	7.71 (2.54)	
	Very Satisfied	6.80 (2.52)	
Specialty Choice	Medical (Primary Care)	7.88 (2.47)	0.583
	Medical (Hospital)	7.64 (2.52)	
	Medical-Surgical	7.20 (2.66)	
	Surgical	7.67 (2.87)	

SD- Standard Deviation, * T Test, **ANOVA

Discussion

The mean level of empathy of our students was (84.6 ± 5.9 standard deviation) inferior to the one found on other countries like USA, Iran, UK, China and Brazil [17,20,21,23,24]. Even when we compare our results to other studies previously made on other Portuguese faculties [27,28], our mean empathy score was lower. These lower values may be due to several factors, such as a curriculum plan that places more emphasis on the teaching and practice empathy in these med schools. Also, some of these studies included students who were at an earlier stage of their course, which may have contributed to their higher values, since in the literature some studies point to a deterioration of empathy throughout the course [16–19]. It is also possible that these lower empathy values have been influenced by the Pandemic, with studies already showing an increase in the student's levels of anxiety, stress and depression [31,32] and a decrease in the levels of empathy during this pandemic phase [33].

Contrary to expectations [16,18–23], empathy levels were higher in males. We did not find any recent study that obtained these results. This may be due to the fact that there are fewer and fewer males on this course, and those who opt for the health area may have a more empathetic profile than others. We also theorize that women following longer and more "elitist" courses may be more career-focused, more ambitious, and less empathetic.

Studies on empathy throughout the medicine school show a tendency for empathy to decrease throughout the course [16–19], however, our 5th and 6th year students showed similar levels of empathy. Perhaps since there was only 1 year gap between the students, or because both the 5th and 6th years are clinical years at our college, no difference was found.

In contrast to previous research on the topic [23,24], students with higher academic performance demonstrated lower levels of empathy. We believe that this is because students who are more focused on study are more individualistic and perfectionistic, thus devoting less time to developing communicative and empathic skills and more time to learning academic concepts.

Students who were moderately satisfied with their academic path had the highest empathy scores. We consider that some of the factors that negatively influence empathy in students at the extremes of satisfaction (and dissatisfaction), are that students who are displeased with their academic path may not be totally happy with their career choice or, on the other hand, are too perfectionist and demanding of themselves. Students who are very satisfied with their

academic journey are largely the same as those with high academic performance, who, as previously discussed, also scored lower on the empathy test than their peers.

In terms of the relation of empathy to the medical specialty selection, our study found a trend in median empathy levels that corresponds to the hypothesis that empathy levels are higher in students who choose medical specialties and lower in students who prefer surgical specialties. These results are consistent to other studies previously made on the subject [16,19–21]. The lower average among students planning to pursue surgical specialties may be explained by the need to maintain some emotional distance from the patient in order to perform surgical acts on other human beings. Primary Care, on the other hand, is the medical specialty with the highest average empathy among students. This is most likely because students understand that it is a specialty with a lot of contact with patients, allowing them to be followed throughout the different stages of their lives, requiring an excellent level of empathy from the physician, in order to better deal with the challenges they will encounter in their clinical practice, providing better solutions for their patients' problems, even if not directly related to physical issues. It is well known that social and economic problems also affect the patients' health and to solve those difficulties clinical knowledge will not suffice.

When we examined the three empathy factors, we discovered some statistically significant results that should be discussed. Male students performed better on all three components, which is understandable given their higher levels of empathy overall. About perspective taking, it is not surprising that Primary Care is the specialty with the highest values, since patient-centered medicine, with shared therapeutic decision making, is extremely valued in the management of patients who often suffer from multimorbidity or chronic diseases, with great impact on their quality of life. There was a loss of compassion in the sixth year compared to the fifth year, which we suspect is due to it being a particularly stressful stage in the student's life, with the end of the course, the approach of the final exam and finishing the master's degree. Still about compassion, students who were very satisfied with their academic path showed less compassion, which can be justified by the same reasons previously discussed for these students obtaining lower empathy values.

We acknowledge that our study has some limitations. A larger sample size would be desirable, and we believe this was the reason behind not obtain significant differences in the analysis of empathy and specialty choice. Using only one scale to assess empathy, that is relies on self-

report, is also not ideal. Finally, there may always be more factors not asked in the questionnaire that may affect the students' choice, such as the income perspective.

According to the findings of this study, there is still room for improvement in empathy education in Portugal. It also leaves some room for reflection on Portugal's current specialty selection method, the "PNA" (Prova Nacional de Acesso à Especialidade), which does not include for instance interviews, as in other countries, to assess candidates' empathy.

Conclusion

Through this study we can add some important notions to the previously existing knowledge about medical empathy. The results on empathy confirm that, there is a difference in empathy levels according to future specialty preference.

We also draw important conclusions about other matters that may influence students' higher empathy level, such as male gender, sufficient academic performance, moderate satisfaction with academic course. As for year of attendance, there is no significant difference on the empathy score between the 5th and the 6th year.

It will be interesting to conduct future studies in more Portuguese medicine faculties and in larger samples as well as to perform them in specialty interns from various specialties to compare the levels of empathy among the various areas and thus confirm the trends found in this study.

Acknowledgments

I would like to thank all my colleagues who volunteered to take part in this study, without them it would have been impossible to conduct this study.

I would also like to thank my tutor, who has been a tremendous help to me throughout this journey and has been truly unwavering.

Finally, I would be negligent if I did not express my gratitude to my parents, boyfriend, other family members, and friends who provided constant and priceless emotional support.

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