RBEM
Revista Brasileira de Educação Médica

ORIGINAL ARTICLE

DOI: https://doi.org/10.1590/1981-5271v46.3-2021043.ING

Empathy in medical students: analysis as a function of the undergraduate period and sociodemographic profile

Empatia em estudantes de medicina: análise em função do período da graduação e perfil sociodemográfico

Carla Suzane Góes Pachêco[1] csgpacheco@hotmail.com
Antônio Carlos Silva Costa[2] acscosta@gmail.com

ABSTRACT

Introduction: Empathy, considered one of the most remarkable characteristics of great medical professionals, is the central element of the doctor-patient relationship and of person-centered care.

Objective: To investigate how levels of empathy are manifested in medical students throughout their undergraduate course.

Method: This is a quantitative, analytical, observational and cross-sectional study, carried out in a private higher education institution, located in the northeast of Brazil. The research was carried out by applying the Jefferson Scale of Empathy-Student version (JSE-S) and the correlation of the data obtained in the scale with the undergraduate school period and sociodemographic profile of the students, aiming to verify which correlations were significant for the expression of students' empathy levels, as well as whether there is an erosion during training. Data collection took place between the months of October and November 2020. The study assessed 193 participants, including students attending the first year, an intermediate year and last year of the medical course. The sampling method used was by accessibility and convenience.

Results: The global average score of the level of empathy in the group of all study participants (n = 193) was 123.56 ± 11.73. Whereas, by period, it was 124.78 ± 9.85 for first-year students, 124.00 ± 11.87 for intermediate-year students and 120.63 ± 13.57 for last-year students. There was no statistical difference between global scores or by psychometric factor when comparing the three studied groups. As for the correlation of JSE-S with the sociodemographic profile, the variables female gender and reason for choosing the course due to vocation were predictors of higher empathy scores.

Conclusion: There was no evidence of empathy erosion regarding the levels of empathy among medical students throughout their undergraduate course, and female students and those who chose the course because they felt they had a vocation for Medicine showed significantly higher levels of empathy. More studies on this topic are essential, considering the importance of a balanced technical-scientific-humanistic posture to enable a medical practice of excellence.

Keywords: Empathy; Students Medical; Education, Medical; Physician-Patient Relationship.

RESUMO

Introdução: *A empatia, tida como uma das características mais marcantes dos grandes profissionais médicos, é o elemento central da relação médico-paciente e do cuidado centrado na pessoa.*

Objetivo: *Este estudo teve como objetivo investigar como se manifestam os níveis de empatia em estudantes de Medicina ao longo da graduação.*

Método: *Trata-se de um estudo de natureza quantitativa, analítica, observacional e transversal, realizado numa instituição privada de ensino superior, situada no Nordeste do Brasil. A pesquisa se deu por meio da aplicação da Escala Jefferson de Empatia Médica – versão para estudantes (JSPE-vs) e da correlação dos dados obtidos na escala com o período da graduação e o perfil sociodemográfico dos estudantes, a fim de verificar quais correlações se mostram significativas para a expressão dos níveis de empatia dos estudantes, bem como se há erosão dela durante a formação. A coleta de dados ocorreu entre os meses de outubro e novembro de 2020. Contou com 193 participantes entre ingressantes, intermediários e concluintes do curso de Medicina. A amostragem utilizada foi por acessibilidade e conveniência.*

Resultados: *A pontuação média global do nível de empatia no conjunto de todos os participantes do estudo (n = 193) foi de 123,56 ± 11,73. Quanto ao período, obteve-se o seguinte resultado: ingressantes = 124,78 ± 9,85, intermediários = 124,00 ± 11,87 e concluintes = 120,63 ± 13,57. Não se verificou diferença estatística entre os escores global ou por fator na comparação entre os três grupos estudados. E na correlação da JSPE-vs com o perfil sociodemográfico, as variáveis sexo feminino e motivo de escolha do curso por vocação foram preditoras de escores maiores de empatia.*

Conclusão: *Não se evidenciou erosão dos níveis de empatia nos estudantes de Medicina ao longo da graduação, e os discentes do sexo feminino e aqueles que escolheram o curso por se sentirem vocacionados para tal mostraram níveis de empatia significativamente maiores. Mais estudos sobre esse tema são fundamentais, tendo em vista a importância de uma postura técnico-científico-humanística equilibrada para o exercício de uma medicina de excelência.*

Palavras-chave: *Empatia; Estudantes de Medicina; Educação Médica; Relações Médico-Paciente.*

[1]Centro Universitário CESMAC, Maceió, Alagoas, Brasil.
[2]Universidade Federal de Alagoas, Maceió, Alagoas, Brasil.

Chief Editor: Rosiane Viana Zuza Diniz.
Associate editor: Pedro Tadao Hamamoto Filho.

Received on 10/08/21; Accepted on 06/23/22.

Evaluated by double blind review process.

INTRODUCTION

The quality of the doctor-patient relationship results, above all, from the doctor's perception of the individual who requires their care. In this scenario, doctors who experience empathy for their patients are able to provide better health care than those who have not developed this skill, given that the ability to empathize considerably increases the understanding of each patient's experiences, needs, preferences and expectations and, therefore, contributes to the creation of bonds and to establish a therapeutic alliance[1].

Throughout history, the change in the conception from the Flexnerian (biomedical) model, "disease-centered", with a super-specialized and fragmented view of the individual, which disregards the interference of individual aspects in the illness process, to the biopsychosocial model, which is "person-centered" and sees the person being cared for as a whole, and explores the personal experience, the symbolic and psychic dimension of getting ill, imposed on the physician a much more detailed look at diseases and patients, and an active and refined listening[2].

Following this new model, in 2001 the first National Curriculum Guidelines (NCGs)[3] were implemented for the medical course, aiming at interdisciplinary teaching, the students' active participation and the comprehensive training of these future medical professionals. In 2014, the new NCGs[4], in addition to reaffirming the student-centered teaching, raised the importance of humanistic and sociocultural aspects in clinical practice, and stated a new standard for what the ideal doctor would be: "generalist, critical, reflective, ethical, empathetic, capable of carrying out health prevention, promotion and protection actions, always respecting human dignity"[5].

In this new ideal, empathy, perceived as a multidimensional construct, described by the philosopher Roman Krznaric, "as the art of putting oneself in the other's shoes through imagination, understanding their feelings and perspectives and using that understanding to guide their own actions"[6], emerges as an indispensable element for health care using a humanized approach, where the opinions, points of view, values and beliefs of each person in particular are understood, valued and respected[7].

Far beyond a social skill, empathy stands out as an essential attribute of medical professionalism to establish an adequate and effective doctor-patient communication; as the fundamental humanistic component to establish satisfactory interpersonal relationships for both parties, to develop a good anamnesis, formulate more accurate diagnoses, implement appropriate therapeutic approaches with better results, and to preserve the doctor-patient relationships[5,8].

Given the importance of this topic, in 2001, a group of researchers from Jefferson Medical College, in Philadelphia (USA), led by Professor Hojat, developed the Jefferson Scale of Empathy (JSE), which soon gained wide acceptance, being widely translated and used in research in this area worldwide. Its version for students (JSE-S), acknowledged as the most often used instrument to assess the level of empathy in the context of medical education, was adapted and validated for Brazilian Portuguese in 2012[8,9].

However, even though empathy plays a central role in the doctor-patient relationship, some studies on the subject carried out around the world have shown a significant decline in the empathy score of graduating students when compared to those starting the medical course, a phenomenon known as "empathy erosion", more evident from the third year of undergraduate school onward, during the transition from the basic to the professional cycle[5,9,10].

Factors that are specific to each individual, such as their personality, biography, and external factors, such as the undergraduate school year, for instance, can significantly influence the empathic attitude of these future professionals. Therefore, thinking about the doctor-patient relationship means also reflecting on how this doctor's professional training took place[5,8].

A curriculum dominated almost entirely by intellectual, scientific and technical aspects of learning, apart from the course workload, the greater fragmentation of knowledge as the degree of specialization increases, can have a negative influence on the students' empathy levels. Conversely, the harmony between technical-scientific knowledge and a humanistic training, teachers and preceptors who may be seen as good models that can inspire students, the adoption of educational strategies that go beyond the conventional ones and that reinforce the empathic attitude, can exert a positive influence[5,9-12].

It is true that there are controversies among several authors regarding the transmissibility of empathy; however, many of them defend that, if empathy can be "lost", it can also be "taught", and, therefore, medical schools have the responsibility to work not only on the technical-scientific skills, but also on the humanistic skills of these students. Although one does not known for sure how to proceed, most authors support the importance of learning environments, the use of combined and diversified teaching-learning strategies, in a longitudinal, and not eventual manner, aiming to promote and preserve the levels empathy of these future professionals[2,7,10,13,14].

Thus, the present study aimed to investigate how the levels of empathy manifest in medical students of a private institution of higher education, located in the northeast of

Brazil, during the undergraduate course, and to correlate the results obtained in the sample with the undergraduate school period and these students' sociodemographic profile, aiming to verify which correlations are significant for the expression of the students' empathy levels and whether there is empathy erosion during their training.

METHOD

This is a quantitative, analytical, observational and cross-sectional study, which was carried out by applying the questionnaires to first-year students, intermediate-year students (6th semester) and last-year students attending the medical course of a private university, located in the city of Maceió, state of Alagoas, Brazil. The accessibility and convenience sampling method was used in the study and data collection took place between the months of October and November 2020. Students who were on a leave of absence of any kind and thus, were not attending the course, were excluded from the study.

The potential participants were informed about the objective, justification, and relevance of the study and its ethical aspects through the digital environment provided by the Teams platform. The Free and Informed Consent (FIC) or Free and Informed Assent (FIA), term for underage students (it is also necessary, in this case, to obtain the consent of the legal guardian in the FIC - legal guardian), as well as the instruments of the research, were made available online through the Google Forms Platform. The research instruments could be accessed only after the written consent was obtained from the FIC/FIA/FIC – legal guardian.

The first instrument used in the research development was the Jefferson Scale of Empathy - student version (JSE-S), a self- administered questionnaire that allows a more objective view of the medical students' empathy levels in the clinical context, predominantly under a cognitive perspective, but it also addresses affective aspects. It consists of 20 sentences and each sentence is linked to one of the three factors that comprise the scale: compassion or compassionate care (CC), capacity to put yourself in the patient's shoes (CPPS) and perspective taking (PT)[15].

The JSE-S uses a 7-point Likert-type response scale (from 1 = strongly disagree to 7 = strongly agree) and the minimum and maximum possible scores are, respectively, 20 and 140 points for the global score, which is given by the sum of the score assigned to each of the sentences and represents the student's level of global empathy: 11 and 77 points for CC; 2 and 14 points for CPPS; and 7 and 49 points for PT. The answers to sentences 1, 3, 6, 7, 8, 11, 12, 14, 18 and 19 have a "reverse" score in the summation (from 1 = strongly agree to 7 = strongly disagree), to reduce the effect of the known standard response as "acquiescence response style", which would be the tendency for the person to agree or disagree with the items without considering their content[15,16].

There is no established cut-off point from which to consider having or not having a desirable or sufficient level of empathy. The result, therefore, is based on a gradation method and, therefore, the higher the obtained global score, the more empathetic the student being assessed is [15,16].

The second instrument used in the research was a sociodemographic questionnaire, containing a total of 15 questions regarding age group, gender, marital status, number of children, religion, family income, type of housing, student loan, history of severe/chronic illness in the family, illness or any health condition that they consider impacting, parental level of education, paid work, reason for choosing the course and medical area in which they want to work.

The data were tabulated and processed by the Predictive Analytics Software (PASW®) Statistic version 23.0 through the microcomputer application. For data analysis, tabular and graphic presentation of means, standard deviations, confidence intervals and frequencies were used.

After the obtained data were characterized using descriptive statistics techniques, the Shapiro-Wilks adherence test was applied to assess the normality of the numerical variables' distribution. The internal consistency of the JSE-S data was evaluated by Cronbach's alpha test, with a minimum acceptable value for alpha of 0.70.

The numerical and nominal/ordinal variables were correlated using the bivariate correlation test with the degree of linear relationship being observed through Spearman's coefficient. Finally, to compare differences in the level of empathy between the groups, the Mann-Whitney test was used for the gender variable, since the samples calculated using the Shapiro-Wilks test were not normal. Comparisons of more than two groups were performed using the Kruskal-Wallis test and the difference between the pairs was corrected using Bonferroni post-hoc test. Values were considered significant for $p < 0,05$.

The study followed the ethical procedures recommended in CNS Resolution N. 466, of December 12, 2012[17] and was submitted for consideration and approval on Plataforma Brasil of the Ministry of Health, with the consent of the Research Ethics Committee (REC).

RESULTS

Of a total of 213 students, the present study included 193 participants, of which 55 (28.5%) were attending the first year, 100 (51.8%) were attending an intermediate year - in greater numbers because there are two classes in the 6th semester of the course, A and B - and 38 (19.7%) students attending the last

year of medical school, since 20 (9.4%) of them did not agree to participate in the study (did not access the platform within 30 days after the invitation). The highest adherence occurred among those attending the intermediate year (92.6%) and the lowest among those attending the last year of medical school (84.4%). More than half, 110 (57%) participants, were aged between 18 and 24 years and there was a predominance of females, with 134 (69.4%) women and 59 (30.6%) men.

Cronbach's alpha test, performed on the 20 items of the scale for the assessed group, resulted in a value of 0.82, which shows the internal validity of the data, as it exceeds the value of 0.70 established as reference.

The global score and the score by factor were measured in the analysis of the JSE-S. In the group of all study participants (n=193), the scores were as follows: global (123.56 ± 11.73); CC (72.32 ± 6.23); CPPS (9.49 ± 2.83); and PT (41.76 ± 5.91) (Table 1).

The discrimination of scores by course period was carried out as follows: global (first-year students = 124.78 ± 9.85, intermediate-year students = 124.00 ± 11.87 and last-year students = 120.63 ± 13.57); CC (first-year students = 73.02 ± 5.00, intermediate-year students = 72.40 ± 6.90 and last-year students = 71.08 ± 5.97); CPPS (first-year students = 10.11 ± 2.53, intermediate-year students = 9.24 ± 3.01 and last-year students = 9.24 ± 2.67); PT (first-year students = 41.65 ± 5.93, intermediate-year students = 42.36 ± 4.87 and last-year students = 40.32 ± 7.95).

The comparison between first-year, intermediate-year and last-year students, performed using the Kruskal-Wallis test, showed a normal distribution; on the other hand, it was observed there was no statistically significant difference between the global scores and scores by factor between the three assessed medical school periods.

The sociodemographic profile of the participants is described in Table 2. Most of them are single (88.6%), do not have children (93.8%), do not have a paid job (75.6%) and do not have any disease, or are exposed to health problems they consider to be impacting (89.6%). On the other hand, 110 of them (57%) said they had a history of severe and/or chronic illness in the family. More than half declared being Catholic (59%), having a family income between 5 and 15 minimum wages (56%) and having student loans (53.9%).

About a third of the students (35.3%) live with their parents. As for the parents' level of education, in both cases almost half of them, 44.5% of the fathers and 42% of the mothers, have a higher education degree and, of these, 41.4% of the mothers had a postgraduate degree, in comparison to 20.2% of the fathers. Regarding the reason for choosing the course, more than half of them (58%) said it was because they felt the vocation to attend medical school. Almost half of them (45.1%) consider working in the clinical area and the other half is divided between not knowing (29.5%) or working in the surgical area (25.4%).

The correlation of the JSE-S results obtained in the sample with the undergraduate school period and with the sociodemographic data that showed to be significant for the expression of the students' empathy levels, namely, age group, gender, family income and reason for choosing the medical course, is shown in Table 3. It is noteworthy that the answer option "others" for the variable "reason for choosing the course" was detailed according to the participants' responses.

In order to correlate the average JSE-S score obtained by undergraduate school period with the data that stood out in the sociodemographic questionnaire, the normality test (Shapiro-Wilks) was applied, which revealed a non-normal distribution for the sample ($p < 0.05$). Therefore, the Mann-Whitney test and the Kruskal-Wallis test were applied for the gender variable and to compare the pairs of responses between the groups, respectively.

Table 1. JSE-S data represented by factors and the global score

Factor	JSE-S items	JSE-S Average Score	95% Confidence Interval		Standard deviation	p-value
			Lower Limit	Upper Limit		
Compassionate Care (CC)	1,2,7,8,11,12,14,15,16,19,20	72.32	71.43	73.20	6.23	0.999
Capacity to put yourself in the patient's shoes (CPPS)	3,6	9.49	9.09	9.89	2.83	0.178
Perspective Taking (PT)	4,5,9,10,13,17,18	41.76	40.92	42.60	5.91	0.687
Global Score	All (n = 193)	123.56	121.89	125.23	11.73	0.314

JSE-S: Jefferson Scale of Empathy - Student version.
Source: prepared by the authors.

Table 2. Sociodemographic profile of the research participants

Variables	First-year students (n=55)		Intermediate cycle-students (n=100)		Last-year students (n=38)		Total (n=193)	
	F	%	F	%	F	%	F	%
Age group (years)								
<18	3	5.5	0	0	0	0	3	1.6
18-24	38	69.1	62	62	10	26.3	110	57
25-29	7	12.7	26	26	22	57.9	55	28.5
30-35	4	7.3	10	10	2	5.3	16	8.3
36-40	2	3.6	1	1	4	10.5	7	3.6
>40	1	1.8	1	1	0	0	2	1
Gender								
Male	16	29.1	37	37	6	15.8	59	30.6
Female	39	70.9	63	63	32	84.2	134	69.4
Marital status								
Married	6	10.9	7	7	4	10.5	17	8.8
Separated	0	0	1	1	0	0	1	0.5
Single	47	85.5	91	91	33	86.9	171	88.6
Stable relationship	2	3.6	0	0	1	2.6	3	1.6
Widowed	0	0	0	0	0	0	0	0
Other	0	0	1	1	0	0	1	0.5
Do you have children?								
No	52	94.5	93	93	36	94.7	181	93.8
Yes	3	5.5	7	7	2	5.3	12	6.2
Religion								
Catholic	30	54.6	63	63	21	55.2	114	59
Spiritist	5	9.1	6	6	3	7.9	14	7.3
Evangelical	7	12.7	10	10	4	10.5	21	10.9
None	11	20	20	20	8	21.1	39	20.2
Jehovah's Witness	1	1.8	0	0	0	0	1	0.5
Other	1	1.8	1	1	2	5.3	4	2.1
Family Income (in minimum wages)								
Up to 4	11	20	12	12	4	10.5	27	14
5-10	15	27.2	40	40	13	34.2	68	35.3
11-15	14	25.5	18	18	8	21.1	40	20.7
16-20	6	10.9	13	13	4	10.5	23	11.9
>20	9	16.4	17	17	9	23.7	35	18.1
Type of Housing								
Student residence	1	1.8	0	0	0	0	1	0.5
Lives with parents	23	41.8	33	33	12	31.6	68	35.3
Rented Residence	6	10.9	18	18	7	18.4	31	16.1
Financed residence	3	5.5	3	3	1	2.6	7	3.6
Own residence	21	38.2	46	46	18	47.4	85	44
Other	1	1.8	0	0	0	0	1	0.5

Continues...

Table 2. Continuation

Variables	First-year students (n=55)		Intermediate cycle-students (n=100)		Last-year students (n=38)		Total (n=193)	
	F	%	F	%	F	%	F	%
Student loan								
No	41	74.5	41	41	7	18.4	89	46.1
Yes	14	25.5	59	59	31	81.6	104	53.9
History of severe/chronic disease in the family								
No	32	58.2	40	40	11	28.9	83	43
Yes	23	41.8	60	60	27	71.1	110	57
Do you have a disease or are exposed to any health condition that you consider to be impacting?								
No	51	92.7	89	89	33	86.8	173	89.6
Yes	4	7.3	11	11	5	13.2	20	10.4
Father's level of education								
Higher Education	24	43.7	47	47	15	39.4	86	44.5
Postgraduate studies	13	23.6	20	20	6	15.8	39	20.2
Elementary school	5	9.1	8	8	2	5.3	15	7.8
Preschool	0	0	1	1	0	0	1	0.5
High school	13	23.6	23	23	13	34.2	49	25.4
Did not attend school	0	0	1	1	2	5.3	3	1.6
Other	0	0	0	0	0	0	0	0
Mother's level of education								
Higher Education	23	41.8	40	40	18	47.4	81	42
Postgraduate studies	26	47.3	40	40	14	36.8	80	41.4
Elementary school	1	1.8	4	4	0	0	5	2.6
Preschool	0	0	0	0	0	0	0	0
High school	5	9.1	16	16	5	13.2	26	13.5
Did not attend school	0	0	0	0	1	2.6	1	0.5
Other	0	0	0	0	0	0	0	0
Do you have any paid activity								
No	44	80	87	87	15	39.5	146	75.6
Yes	11	20	13	13	23	60.5	47	24.4
Reason for choosing the medical course								
Social Contribution	19	34.5	29	29	8	21.1	56	29
Vocation	31	56.4	59	59	22	57.8	112	58
Labor market	3	5.5	6	6	5	13.2	14	7.3
Other people's influence	1	1.8	3	3	1	2.6	5	2.6
Financial advantage	0	0	1	1	0	0	1	0.5
Other	1	1.8	2	2	2	5.3	5	2.6
In which area of medicine do you want to work?								
Surgical area	22	40	21	21	6	15.8	49	25.4
Clinical area	15	27.3	46	46	26	68.4	87	45.1
I do not know	18	32.7	33	33	6	15.8	57	29.5

F: frequency; %: percentage.
Source: prepared by the authors.

Table 3. Results of the JSE-S score according to the variables undergraduate school period, age group, gender, family income and reason for choosing the medical course

Variables	Frequency	Percentage (%)	JSE-S Average Score	95% Confidence Interval		Standard deviation
				Lower Limit	Upper Limit	
Undergraduate school period						
First-year students	55	28.5	124.78	122.12	127.44	9.85
Intermediate-year students	100	51.8	124.00	121.64	126.36	11.87
Last-year students	38	19.7	120.63	116.17	125.09	13.57
Age group (years)						
<18	3	1.6	126.33	113.59	139.08	5.13
18-24	110	57.0	123.25	121.13	125.36	11.21
25-29	55	28.5	124.18	120.85	127.51	12.33
30-35	16	8.3	125.00	118.46	131.54	12.27
36-40	7	3.6	117.43	101.98	132.88	16.70
>40	2	1.0	129.50	34.20	224.80	10.61
*Gender**						
Female	134	69.4	124.69	122.78	126.60	11.18
Male	59	30.6	121.00	117.71	124.29	12.61
Family Income (in minimum wages)						
Up to 4	27	14.0	125.15	120.42	129.88	11.95
5-10	68	35.2	123.84	120.66	127.02	13.14
11-15	40	20.7	122.30	118.58	126.02	11.62
16-20	23	11.9	122.70	118.78	126.61	9.06
>20	35	18.1	123.80	120.11	127.49	10.73
*Reason for choosing the medical course***						
Vocation	112	58.0	125.88	123.93	127.83	10.41
Social Contribution	56	29.0	122.45	119.77	125.12	9.99
Labor market	14	7.3	117.07	108.71	125.44	14.49
Other people's influence	5	2.6	116.40	93.68	139.11	18.29
Personal wish	1	0.5	...	...	...	...
Vocation and Social Contribution and Labor market	1	0.5	...	...	...	...
I like it	1	0.5	...	...	...	...
Financial advantage	1	0.5	...	...	...	...
Social Contribution and Labor Market	1	0.5	...	...	...	...
Total	193	100	140			

JSE-S – Jefferson Scale of Empathy - student version.
Note1: Conventional Signs ... the variable is constant, with only one response.
Note 2: *Significant Mann-Whitney U-test; **Significant Kruskal-Wallis test.
*significant p values < 0,05; **very significant values p < 0,001.
Source: prepared by the authors.

No significant differences were observed regarding the average JSE-S score in relation to the undergraduate school period. And regarding the data from the sociodemographic questionnaire, there was a significant difference for the variables gender and reason for choosing the medical course. As for the reason for choosing the course, the difference between the pairs was corrected using the Bonferroni *post-hoc* test. Table 4 shows the p values found in the analysis of the difference between the pairs of the variable "reason for choosing the medical course".

Tabela 4. Análise da diferença entre os pares da variável "motivo de escolha do curso"

Reasons for choosing the medical course	p-value
Social contribution versus Vocation	0.328
Social contribution versus Labor market	0.597
Vocation versus Labor market	0.028*
Other people's influence versus Vocation	0.346
Other people's influence versus Social contribution	0.999
Other people's influence versus Labor market	0.999

Bonferroni *post-hoc* test; *p< 0,05.
Source: prepared by the authors.

DISCUSSION

As the biomedical model, focused on the disease and its diagnostic process, totally devoid of an interactive potential and the reach of the individual experience of "being-patient", proved to be insufficient considering people's emotional and subjective needs, the search for a model in which the patient was the protagonist and actively participated in the management of their health status and the definition of their therapeutic plan has increased [2].

Therefore, the training of excellence of future doctors also started to require the acquisition of high moral and ethical standards, the solid structuring of an empathic attitude, the integration of technical-scientific knowledge with the art of medicine. What used to be "not getting involved", "not feeling anything", started to make room for rapport, the adoption of the perspective of the other, to be able to understand and welcome the dimension of the human being affected by the disease and, little by little, it gained legitimacy in practice, humanizing care, creating the basis for a unique doctor-patient relationship, with respect for autonomy, individual rights and human dignity[18,19].

In the present study, the global empathy score, as well as that of the three factors analyzed in the Jefferson Scale of Empathy - student version (JSE-S), did not show significant variation between first-year, intermediate-year and last-year students attending the assessed medical course and, in general, the study participants showed levels of empathy close to those reported for the global score and score by factor, not replicating, therefore, the tendency of declining levels of empathy, the hardening of students throughout undergraduate school, as demonstrated in some studies[5,9,10].

The inclusion of the discipline of Medical Psychology in the curricular matrix of the assessed medical course, as part of the Mental Health module, taught in the fourth period of the course, exactly when the transition from the basic cycle to the clinical cycle occurs, focusing on working self-knowledge, the management of emotions, the training of humanistic skills, using teaching methodologies that provide significant learning and, in addition to this, extension programs, extramural scenarios and, the encouragement of the formation of academic leagues such as the Academic League of Slow Medicine of Alagoas (LASMAL), which throughout graduation make this into an experience of living learning, are some of the assumptions for maintaining the levels of empathy observed in the participants of this study.

The fact that the sociodemographic variable "female sex" was predominant in our sample may also have had a positive impact on the results of this study, considering that, according to the already established cultural and social context, the roles assigned to men and women in our civilization, since the beginning of it, women have maintained the "natural" role of caring for their offspring and family, which favors their development of a greater capacity and empathic ability to deal with others and, therefore, with their patients. And perhaps, also because of this fact, there has been a process of feminization of the profession, demonstrated in studies of medical demography[9,20,21].

The results of a study carried out by the University of Cambridge, in England, published in the academic journal 'Proceedings of the National Academy of Sciences', in November 2018, which involved more than half a million people, being considered the largest survey ever carried out on the subject,

that is, about women being more empathetic and men being more rational, corroborated this assumption. According to the authors, the "theory of sexual differentiation based on empathy" may be due to genetic conditions, the influence of hormonal exposure to which women are submitted, and also due to environmental experience[22].

Aside from gender, another sociodemographic variable that showed to be significant for the expression of levels of empathy in our study was "reason for choosing the medical course". More than half of the participants said they had chosen to study medicine because they felt they had the vocation to do so and, in these individuals, the levels of empathy were significantly higher when compared to those who chose to take the course aiming at the labor market.

It is known that the choice for a medical course may be due to several factors, many of which have been previously studied by different medical schools in different countries, and others that are still being debated and assessed, aiming to know the personal reason that led to the preference for this or that professional option. It is important to point out that these factors, both conscious and unconscious, also related to the particular characteristics and personality of each individual, to their personal and family context, to the desire for financial ascension and achievement of social status, are in permanent conjunction, influencing this decision-making process[23].

The concept of "vocation", although controversial, is said to be an innate propensity of the individual to accomplish something, which makes them more skilled to practice a certain craft. The conception of the existence of a "medical vocation", whether early or late, is what generates, in many students, a professional identification, the recognition of "being a doctor". Belief in this natural ability, the wish to be useful to society, help to face the profession without the mantle of idealization, to circumvent the dissonance between expectation and reality, to overcome everyday challenges, to be resilient in the mind and heart, to preserve empathy and a genuine interest in the patient and to alleviate their suffering [23,24].

Moreover, in general, for these individuals, economic success is seen as a natural consequence of good professional practice and not as the main objective to be achieved[23,24].

CONCLUSION

Although many studies have shown a decrease in the level of empathy among medical students during undergraduate school, especially at the transition from the basic cycle to the clinical one, others have reported an improvement in empathy, and it is assumed that this fact is due to a curriculum that also favors the humanistic training of these future professionals[5,9-12].

The present study showed no significant difference in empathy scores, global and by factor, between first-year, intermediate-year and last-year students of the assessed medial course; however, although we did not observe a "hardening" of these students during the course of their training, there is a pressing need to continually address this issue, considering the importance of the empathic construct in the development of one's professional identity.

And since empathy is shaped by several variables, the individual's own characteristics and those external to them, which can positively and negatively interfere in the expression of their empathic attitude towards the patient, also need to be observed.

The increasingly frequent finding of continuously empathetic medical students throughout the most diverse stages of the course may be an indication that institutions are going in the right direction and, if not, it may suggest the need to invest in medical humanism and professionalism, improving the curriculum, training teachers and using new approaches to work on this skill.

More studies should be carried out to better investigate the aspects that can positively influence the empathy levels of future medical professionals during undergraduate school, considering the importance of a balanced technical-scientific-humanistic posture for the practice of medicine of excellence.

It is our hope that the present study can corroborate to propose additional studies, as well as increase the interest in working on teaching-learning strategies that will favor the transmission, development and consolidation of the empathic construct in medical students and, above all, prevent its loss.

AUTHORS' CONTRIBUTION

Carla Suzane Góes Pachêco, main author of the article resulting from the performed research. Antônio Carlos Silva Costa oriented the performed research.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

SOURCES OF FUNDING

The authors declare no sources of funding.

REFERENCES

1. Ikeda LH, Barbosa MRC, Oliveira RA, Bernardo MO. Empatia no cotidiano do curso de graduação de medicina a partir de uma revisão integrativa. Braz J Develop. 2019;5(3):2068-79.
2. Barbosa MS, Ribeiro MMF. O método clínico centrado na pessoa na formação médica como ferramenta de promoção de saúde. Rev Med Minas Gerais. 2016; 26 (supl 8):S216-22.

3. Brasil. Resolução CNE/CES nº 4, de 7 de novembro de 2001. Institui Diretrizes Curriculares Nacionais do Curso de Graduação em Medicina. Diário Oficial da União; 2019 [acesso em 27 jun 2021]. Disponível em: http://portal.mec.gov.br/cne/arquivos/pdf/CES04.pdf.
4. Brasil. Resolução nº 3, de 20 de junho de 2014. Institui Diretrizes Curriculares Nacionais do Curso de Graduação em Medicina e dá outras providências. Diário Oficial da União; 2014 [acesso em 20 jul 2021]. Disponível em: http://portal.mec.gov.br/index.php?option=com_docman&view=download&alias=15874- rces003-14&category_slug=junho-2014-pdf&Itemid=30192.
5. Vaz BMC, Paraízo VA, Almeida RJ. Aspectos relacionados a empatia médica em estudantes de medicina: uma revisão integrativa. RBMC. 2021;7(17):43-49. doi: https://doi.org/10.36414/rbmc.v7i17.90.
6. Krznaric R. O poder da empatia. Rio de Janeiro: Zahar; 2015.
7. Jeffrey D, Downie R. Empathy – can it be taught? J R Coll Physicians Edinb. 2016;46:107-12.
8. Nascimento HCF, Ferreira Júnior WA, Silva AMTC, Carvalho IGM, Bastos GCFC, Almeida RJ. Análise dos níveis de empatia de estudantes de Medicina. Rev Bras Educ Med. 2018;42(1):150-8. doi: https://doi.org/10.1590/1981-52712018v42n1rb20170057.
9. Fontana NS, Vilela AAF, Ribeiro AA, Ferreira VC, Peres GM, Macedo MR, et al. Estudo das variáveis que contribuem para o nível de empatia nos acadêmicos de medicina. BJHBS. 2020;19(1):57-62. doi: https://doi.org/10.12957/bjhbs.2020.53532.
10. Moura EP, Moura TP, Cordeiro JC, Chaves TF, Peixoto AB, Peixoto JM. Estratégias atuais utilizadas para o ensino da empatia na graduação médica: revisão sistemática. REAS. 2021;13(2):e6374. doi: https://doi.org/10.25248/reas.e6374.2021.
11. Garcia MAA, Nascimento GEA. Aplicação do portifólio nas escolas médicas: estudo de revisão. Rev Bras Educ Med. 2019;43(1):163-74. doi: http://dx.doi.org/10.1590/1981-52712015v43n1rb20180134.
12. Batista NA, Lessa SS. Aprendizagem da empatia na relação médico-paciente: um olhar qualitativo entre estudantes do internato de escolas médicas do Nordeste do Brasil. Rev Bras Educ Med. 2019;43(1 supl 1):S349-56. doi: https://doi.org/10.1590/1981-5271v43suplemento1-20190118.
13. Catarucci FM, Carvalho TH, Andrews S, Burdmann EA, Patrício KP. Empatia em estudantes de Medicina: efeitos de um programa de gerenciamento do estresse. Rev Bras Educ Med. 2022;46(2):e056. doi: https://doi.org/10.1590/1981-5271v46.2-20210290.
14. Peixoto JM, Moura EP. Mapa da empatia em saúde: elaboração de um instrumento para o desenvolvimento da empatia. Rev Bras Educ Med. 2020;44(1):e030. doi: https://doi.org/10.1590/1981-5271v44.1-20190151.
15. Paro HBMS, Daud-Gallotti RM, Tibério IC, Pinto RMC, Martins MA. Brazilian version of the Jefferson Scale of Empathy: psychometric properties and factor analysis. BMC Med Educ. 2012; 12(73):1-7. doi: https://doi.org/10.1186/1472-6920-12-73.
16. Caires VV. Análise da empatia no estudante de medicina da Faculdade de Medicina – Unifenas-BH ao longo da graduação [dissertação]. Belo Horizonte: Universidade José do Rosário Vellano; 2019.
17. Brasil. Resolução CNS nº 466, 12 de dezembro de 2012. Trata de pesquisa em seres humanos e atualiza a Resolução nº 196. Diário Oficial da União; 2013 [acesso em 21 jul 2021]. Disponível em: https://conselho.saude.gov.br/resolucoes/2012/Reso466.pdf.
18. Rios IC. Humanidades médicas como campo de conhecimento em medicina. Rev Bras Educ Med. 2016;40(1):21-29.
19. Moreto G, Federici VP, Silva VR, Pacheco FM, Blasco PG. O profissionalismo e a formação médica de excelência: desafios encontrados na academia e na prática clínica. Arch Fam Med. 2018;20(4):183-9.
20. Gosling FJ, Bellodi PL. Alterações de rota na medicina – reescolhendo a especialidade médica. Saúde Soc. 2021:30(4):e200677. doi: https://doi.org/10.1590/S0104-12902021200677.
21. Kamijo ED, Lima MVS, Pereira AP, Bonamigo EL. Escolha da medicina como profissão e perspectiva laboral dos estudantes. Rev Bras Educ Med. 2021;45(4):e216. doi: https://doi.org/10.1590/1981-5271v45.4-20210093.
22. Greenberg DM, Warrier V, Allison C, Baron-Cohen S. Testing the Empathizing–Systemizing theory of sex differences and the Extreme Male Brain theory of autism in half a million people. Proc Natl Acad Sci U S A. 2018;115(48):12152-7. doi: 10.1073/pnas.1811032115.
23. Azevedo AG, Tollendal CB, Nogueira DG, Bartels FP, Paula FC, Beraldo FMM. Fatores que orientam a escolha do curso médico. Rev Bras Educ Med. 2005;29(03):217-21. doi: https://doi.org/10.1590/1981-5271v29.3-031.
24. Fernandes IFC, Aleluia IMB. Percurso do estudante de medicina na formação da identidade profissional desde o curso médio até o meio do curso. Rev Inter Educ Saúde. 2020;4(1):8-22. doi: https://doi.org/10.17267/2594-7907ijhe.v4i1.2640.