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Project DABE: Empathy among Spanish Medical Students

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KEYWORDS
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Abstract
Introduction: Empathy refers to an aspect of personality, important in interpersonal relationships and in communication, considered to be an important value in the medical profession. In the present study, we have studied empathy in a sample of more than 5,000 medical students of all 43 medical schools in Spain.
Methods: The data belong to the DABE project, a study that included mental health variables and that was applied through a web survey just before COVID-19 pandemic restrictions started. To measure empathy, we used the Jefferson Empathy Scale (Student Version), which comprises 20 items relating to three underlying components, Perspective Taking, Compassionate Care, and Standing in the Patient's Shoes.
Results: Empathy global score was high and it increased progressively every year during medical school. Empathy score was greater in the female students, with a 20% of participants showed high levels of empathy, again more in women. High empathy was associated with students having greater social support, more interest and participation in everyday experiences and satisfaction with social activities. The three components of empathy were also greater in women than in men. Empathy scores were significantly lower in those students that reported smoking and also in the students that reported use of frequent use of cannabis.
Discussion: Empathy scores are high in the spanish medical students population, with a 20% of them showing high levels. Empathy scores increase longitudinally during medical school, are greater in female students and lower in those smoking either tobacco or cannabis.

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PALABRAS CLAVE
medicina;
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tabaco;
rotaciones clínicas

Proyecto DABE: Empatía en Estudiantes de Medicina de España

Resumen
Introducción: La empatía se refiere a un aspecto de la personalidad, importante en las relaciones interpersonales y en la comunicación, considerado un valor importante en la profesión médica. En el presente estudio, hemos estudiado la empatía en una muestra de más de 5.000 estudiantes de medicina de las 43 facultades de medicina de España.
Método: Los datos pertenecen al proyecto DABE, un estudio que incluyó variables de salud mental y que se aplicó a través de una encuesta web justo antes de que comenzaran las restricciones pandémicas del COVID-19. Para medir la empatía, utilizamos la escala de empatía de Jefferson (versión para estudiantes), que consta de 20 ítems relacionados con tres componentes subyacentes: toma de perspectiva, atención compasiva y ponerse en los zapatos del paciente.
Resultados: La puntuación global de empatía fue alta y aumentó progresivamente cada año durante la estancia en la facultad de medicina. La puntuación de empatía fue mayor en las alumnas, con un 20% de los participantes que mostraron altos niveles de empatía, nuevamente más en las mujeres. La alta empatía se asoció con que los estudiantes tengan un mayor apoyo social, más interés y participación en las experiencias cotidianas y satisfacción con las actividades sociales. Los tres componentes de la empatía también fueron mayores en las mujeres que en los hombres. Las puntuaciones de empatía fueron significativamente más bajas en los estudiantes que informaron haber fumado y también en los estudiantes que informaron el uso frecuente de cannabis.
Discusión: El nivel de empatía es alto en la población de estudiantes de medicina españoles, con un 20% de ellos mostrando niveles muy altos. El nivel de empatía aumenta longitudinalmente durante el tiempo en la facultad de medicina, es mayor en las estudiantes y más bajos en aquéllos que fuman tabaco o cannabis.

Introduction

Empathy is a basic pillar of the doctor-patient relationship[1–3] and as such, is a variable that is analyzed with interest in a multitude of studies, both in medical professionals and in medical or health science students.[4–11] One of the most widely accepted definitions is that of Hojat[12] who proposed that "empathy is a predominantly cognitive (rather than emotional) attribute that involves an understanding (rather than feeling) of the patient's experiences, concerns, and perspectives, combined with an ability to communicate this understanding."

One of the most widely used tests to assess the level of empathy in the health professions is the Jefferson Empathy Scale, and its student version (JSE-S) has been extensively used with health care profession students including medical students, in different countries.[1] In Spain, two important studies[8,10] have analyzed the psychometric characteristics of the JSE-S, supporting its sensitivity, validity and reliability with spanish medical students.

In a previous paper,[11] we have reported empathy scores in a big sample of spanish medical students, together with data on mental health (depression, anxiety and burnout). These data, pertaining to the DABE project, a study carried out by the Spanish Council of Medical Students (CEEM) and the Spanish Society of Medical Education (SEDEM) in 2020, indicated that the global scores were in the upper end of the scale with female students having significantly higher values than their male colleagues and with the values increasing during the stay at the medical school.[11] In the present study, we extend these observations in more detail, exploring their internal components and their relationship with other factors that were not contemplated in the previous paper.[11]

Methods

The DABE project is a multi-center cross-sectional study. The characteristics, methods and a summary of the main results of the study have been previously published.[11] In brief, the instrument used was a self-administered survey developed from a web questionnaire in Google Forms, based on a previously published questionnaire. The participants, all medical students, were recruited through text messages sent by the Student Delegation Offices in each Faculty. They also gave their informed consent before completing the survey. Participation was voluntary and anonymous, and no financial remuneration was offered. The survey was active between February 17 and March 5, 2020.

Empathy was measured[13] using the Jefferson Scale of Empathy-Student Version (JSE-S) which comprises 20 items relating to three underlying components: Perspective Taking (cognitive empathy, 10 positively worded items), Compassionate Care (emotional empathy, 8 negatively worded

items), and Standing in the Patient's Shoes (2 negatively worded items). The cognitive empathy of the scale reflects the individual's rational understanding of the patient's condition, while the emotional empathy assesses the appearance of feelings similar to those of the patient. The first is a cognitive ability that allows the doctor to assume the role of his patient and is modifiable by learning. The second is more innate. Respondents rate their level of agreement with statements on a seven-point Likert scale, higher scores indicating higher levels of agreement.[14–15] Empathy total score is the sum of all the item scores up to a maximum possible score of 140. We have also analysed another possible cutoff scores and found that the percentiles were also used in some studies, as recommended by the user guide of the scale creators.[7,16] In our study, scores of over 130 were considered indicative of high empathy. This figure represents percentile 80.

Statistical analysis

Descriptive statistics were calculated for all the variables studied, with qualitative variables being expressed in terms of absolute and relative frequency (percentages). Quantitative variables were expressed as means and standard deviations. Subsequently, the inferential statistics were calculated through a series of bivariate analyses designed to test empathy score in accordance with several variables obtained in the study. Finally, a multivariate analysis with binary logistic regression was performed, taking the main variable as the dependent variable (high empathy yes/no) and variables for which statistically significant results had been found previously. The results were expressed in terms of the odds ratio of each independent variable, with a 95% confidence interval. Cronbach's alpha coefficient was also calculated as a means of determining internal consistency. IBM SPSS Statistics (version 24) was used for the calculations. A p-value of <0.05 was considered indicative of statistical significance.

Results

Although a total of 5,216 students participated in the whole survey, 94 of them did not complete the JSE test (n=5122). Most of them (76.3%) were women (Table 1). Out of the total, 4387 studied in a public university (84.1%) whereas 829 studied in a private school (15.9%). The Cronbach's alpha coefficient of the test was 0.81.

Empathy global score was 120.46 ± 11.92 points (maximum 140), and it significantly increased progressively year by year (Table 1). The global score in men was significantly lower (116.9 ± 13.8) than in women (121.0 ± 11.7). An 18.8% of participants showed high levels of empathy (>130) and the percentage of women was significantly higher (20.6%) than that of men (13.2%), also in every year of the medical school (Fig. 1). The percentage of students with high empathy in the private universities was 19.5% and 18.7% in the public ones, without statistical differences among them. A greater number of students with high empathy was also observed in those students having greater social support, more interest and participation in everyday experiences and satisfaction with social activities (data not shown).

Descriptive statistics for the empathy test and for the individual items are shown in Table 2. The distribution is assymetric to the left since all the skewness indexes are negative (mean, -1.38) and with most of the data concentrated around the mean, as indicated by the positiveness of kurtosis (mean, 2.95), thus showing a platycurtic distribution (Fig. 2). Empathy scores in the three subscales or components are shown in Table 3 and they were always significantly greater in women than in men.

Regarding bivariant analysis, only those showing a significant difference are commented here. A significant difference was observed regarding academic performance in relation to the effort, with those having a greater performance showing a lower empathy score (117,89 ± 13.93, n=291). Empathy scores were also significantly lower in those students that reported smoking (119,06 ± 13,38, n=811), and also in the students that reported use of cannabis more than 2 times/week (111,43 ± 22,03, n=68), compared to those that never used it (120,51 ± 11,79, n=3072). No differences were observed with alcohol consumption or other variables.

Finally, the multivariate analysis between empathy and risk predictors showed, as described in our previous paper[11] and suggested by the results above mentioned, that empathy was closely associated with being a woman, engaging in clinical rotations and having a high level of social support.

Discussion

In the present study we have analyzed in deeper detail the empathy data obtained in our previous study about mental health, carried out in 2020 in all 43 medical schools in Spain.[11] As reported, this is the first nationwide analysis of these mental health variables in this particular population,

Table 1 Frequency, gender, empathy score and interval of confidence of medical students by year of study.

Year of study	Frequency (%)	Male (%)	Female (%)	Empathy score	Empathy CI95%
1st	19.74	18.6	78.6	118.13 ± 12.25	117.4-118.9
2nd	18.63	16.9	79.2	119.30 ± 12.51	118.5-120.1
3rd	18.02	23.1	76.0	121.05 ± 11.57	120.3-121.8
4th	16.38	25.0	74.3	121.72 ± 11.20	121.0-122.5
5th	17.24	24.5	74.2	121.71 ± 11.62	120.9-122.5
6th	10.00	25.1	73.3	121.90 ± 11.57	120.9-122.9
Total	100	22.9	76.3	120,46 ± 11.92	120,1-120.8

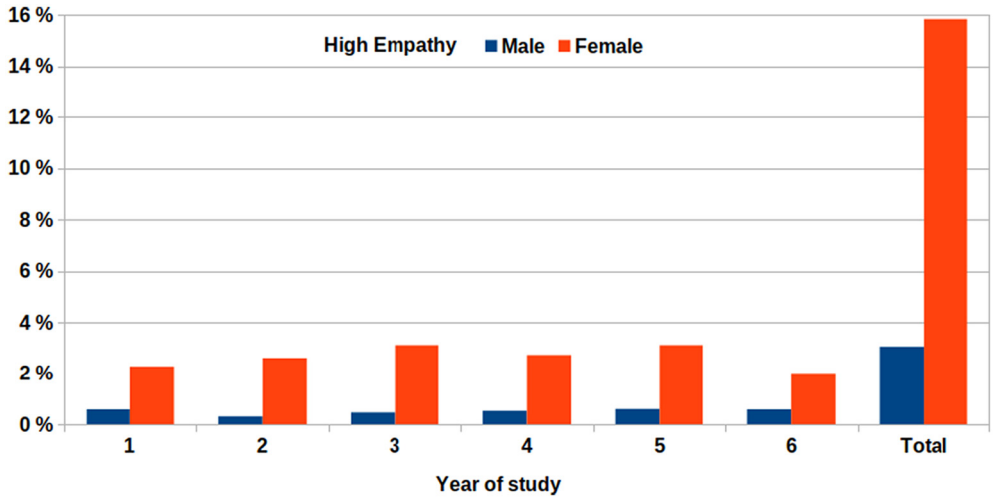

Fig. 1 Percentage of high empathy students according to gender and course in medical school.

and in this paper we aimed to analyze specifically the data obtained with empathy.

In previous papers,[8,10] a group of professors from Spain analyzed the psychometric characteristics of the JSE-S, used in the present study, and found it to be valid and reliable, confirming also the validity of the three factor model composed by the subscales perspective taking, compassionate care and standing in the patient's shoes. In our data, similar values to those previously measured in only one medical school[10] for these subscales were obtained. However, our data were obtained in a much bigger sample of spanish medical students from all the medical schools in Spain, thus adding further value for the use of these scores in further studies. Thus, the first factor (perspective taking) would be the central ingredient of empathy and the other two would be components specific to the patient-doctor relationship.[15]

Table 2 Descriptive statistics for empathy test and for individual items.

	Mean	Standard Deviation	Skewness	Kurtosis
Item 1	6.02	1.98	-1.88	1.84
Item 2	6.65	0.77	-3.18	13.85
Item 3	5.55	1.47	-1.09	0.43
Item 4	6.49	0.92	-2.42	7.46
Item 5	5.06	1.48	-0.53	-0.24
Item 6	5.82	1.31	-1.44	1.96
Item 7	6.18	1.33	-2.10	4.35
Item 8	6.28	1.20	-2.17	4.97
Item 9	6.20	1.09	-1.77	3.84
Item 10	5.89	1.20	-1.09	1.07
Item 11	6.33	1.08	-2.15	5.36
Item 12	5.99	1.81	-1.84	2.02
Item 13	6.24	1.06	-1.91	4.66
Item 14	6.58	0.95	-3.23	12.42
Item 15	6.36	1.14	-2.45	6.87
Item 16	6.41	0.91	-2.04	5.63
Item 17	5.90	1.22	-1.20	1.43
Item 18	3.89	1.51	0.08	-0.39
Item 19	5.96	1.64	-1.57	1.44
Item 20	6.48	0.91	-2.28	6.70

In relation to the global score of empathy, the results obtained by our sample were at the upper end of the scale[5,10,16–17] and the mean value observed is consistent with that reported by previous studies both in Spain and abroad,[5,8,10,16–18] and even slightly higher than in some. As it is also widely reported, women scored higher than men, as did those engaging in clinical rotations and those with strong social support, as indeed has been reported previously by other authors.[9,18–19] It therefore appears that empathy levels increase over time and specially when students enter into contact with patients during their clinical rotations.[20–22]

As it has been previously observed and also confirmed in the present study, empathy differs with gender since women showed much greater empathy score than men, both in the total score and in each one of the three subscales. The reasons behind these data are beyond the scope of the present study but it has been suggested that both evolutionary, biological, and psychological reasons are involved.[23–26]

Another point of interest is related to the question whether empathy increases or declines during the stay in the medical school. While there are studies showing a decline in empathy during medical education,[27] there are also some others, including the present one, showing a clear longitudinal increase with time which has been related to a good and empathetic academic climate, even in the absence of formal empathy training.[28–29]

Also of interest is our finding that students smoking had lower empathy values and even more striking is the great decrease in empathy in those using cannabis. Although the effects of these two drugs on empathy are known, we believe this is the first time that these data are reported in medical students. Although the amount of students using these drugs is not very high (tobacco, 15% and cannabis, 5%), efforts should be done in order to reduce their influence on both empathy and, of course, health in our students.

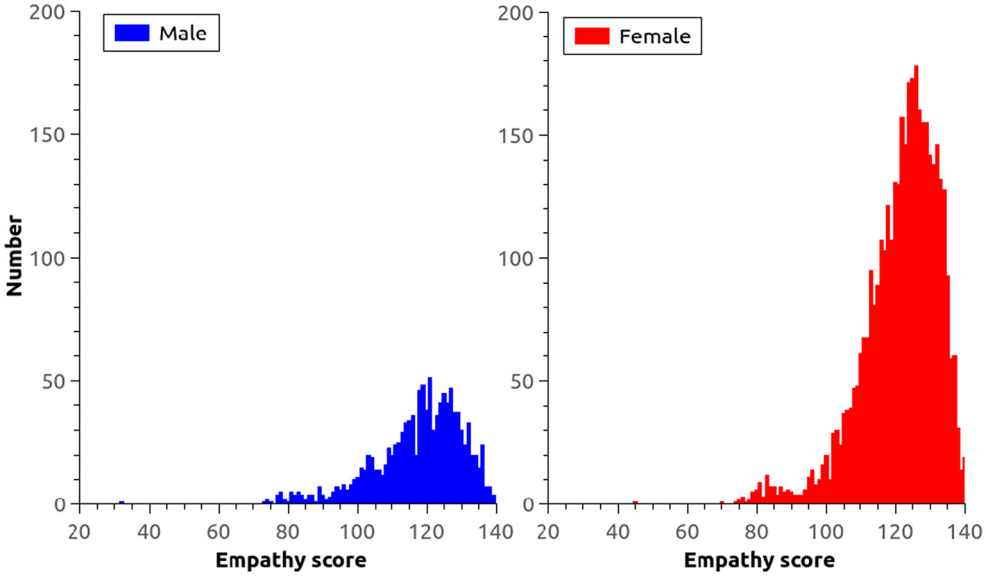

Fig. 2 Distribution of empathy scores according to gender.

Table 3 Empathy scores for the 3 subscales of the JSE-S.

		Mean	Standard Deviation	95% CI	
				Low limit	High limit
Perspective Taking	Men	60,11	7,64	59,67	60,54
	Women	61,96	6,54	61,75	62,16
	Total	61,53	6,85	61,34	61,72
Compassionate Care	Men	45,92	6,43	45,55	46,28
	Women	47,59	5,74	47,42	47,77
	Total	47,21	5,95	47,05	47,37
Standing in the Patient's Shoes	Men	10,83	2,51	10,69	10,97
	Women	11,45	2,40	11,37	11,52
	Total	11,30	2,44	11,24	11,37

Conclusions

In the present study, we report the empathy levels in a sample of more than 5000 medical students of Spain from all the medical schools in the country. Empathy scores increased longitudinally with time and were greater in women than in men, both globally and in the three subscales of the empathy test.

Declaration of Competing Interest

The authors do not have nothing to report.

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To all the students that participated in the study. The copyright of JSE belongs to © Thomas Jefferson University, 2001.

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