



CLINICAL RESEARCH:

Empathic Attitude of Dental Students from a Peruvian Public University Associated with Reading Habit: a Regression Analysis

Actitud empática de los estudiantes de odontología de una universidad pública peruana asociado al hábito de lectura: un análisis de regresión

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ABSTRACT: The present study aims to identify the empathic attitude of dental students from a Peruvian public university, about their reading habits, as well as the level of studies and other sociodemographic variables. 226 first-, fourth-, and sixth-year students registered in the academic year 2022 were enrolled in the study. The Jefferson Empathy scale, which included 20 items, was used with a Likert scale ranging from 1 to 7, i.e., from totally disagree to totally agree. A file containing questions about the sociodemographic data registry was prepared together with the Jefferson Empathy questionnaire. It was found that the profile of the students was mainly feminine, and the average age was 22 years; they came from Lima. They had the habit of reading and a little more than half of the group did not participate in sports activities. The "adequate" level of empathy was the highest (51.77%). By dichotomizing the response variable, it was found that adequate empathy was related to the habit of reading, especially reading dental books. Dental students from this public university mostly have an adequate level of empathy; it is independent of the sociodemographic variables but is related to reading habits.

KEYWORDS: Empathy; Dentistry; Public university; Reading habit.



RESUMEN: En el presente estudio se planteó identificar la actitud empática de los estudiantes de odontología de una universidad pública peruana en relación al hábito de lectura así como al nivel de estudios y variables sociodemográficas. Se consideró a 226 estudiantes de primero, cuarto y sexto año matriculados en el año académico 2022. Se utilizó la escala de empatía de Jefferson que consta de 20 ítems, y cuyas categorías de respuesta val del 1 al 7 que significa totalmente en desacuerdo a totalmente de acuerdo. Se elaboró una ficha que además contenía una primera parte para llenar de acuerdo a sus datos sociodemográficos. Se encontró que el perfil de los estudiantes perteneció al sexo femenino, con una media de 22 años, procedían de Lima, presentaban el hábito de lectura y un poco más de la mitad del grupo no realizan actividades deportivas. El nivel de empatía adecuado fue el más alto (51.77%). Al dicotomizar la variable respuesta se encontro que la empatía adecuada estuvo relacionada con el hábito de lectura y con la lectura de libros de odontología. Se concluye que los estudiantes de odontología de esta universidad pública tienen mayormente nivel de empatía adecuado y que es independiente de las variables sociodemográficas pero se encuentra relacionado a los hábitos de lectura.

PALABRAS CLAVE: Empatía; Odontología; Universidad pública; Hábito de lectura.

INTRODUCTION

In health sciences and dental care, the patient-professional relationship is a very important domain. However, the behavior and personality of the patients represent a challenge; since dental students, who are in the training period, show signs of anxiety during the first treatments they perform, which is why the student is required to demonstrate an empathic attitude towards the patient from undergraduate training and this must be monitored in the process of their training so that in the future, dental professionals can develop a solid foundation of trust, respect, and responsibility in practice.

During dental practice, there is a constant interaction between the professional and the patient; the student carries out his training gradually, based on a series of disciplines in the areas of basic, pre-clinical, and clinical sciences. During this process, the student acquires knowledge, but this knowledge should be fused with his emotions,

personality, and empathy, which results in the treatment that the patient will receive (1).

Empathy is the ability to identify the mental and/or emotional state of people. Empathy includes a cognitive part and an affective part, which allows them to provide a response based on this knowledge (2). It has an impact on improving social relationships in various contexts (1). Empathy is very important during the communication process because it encompasses the knowledge of the subject about the person with whom he/she interacts; it is generally related to personal, work, or other situations (3).

It is based on four fundamental components: knowledge, behavior, emotions, and the moral aspect (4).

Some people claim that empathy is innate. However, it can also be developed in the course of growth of the human being based on the educational level and the experiences of socializing with the

environment that allow them to better understand the feelings of people with whom they interact (5).

In the domain of health sciences, the cognitive side of empathy allows the professional to understand the doubts, fears, and conditions of their patients (2).

The Jefferson Empathy Scale was built and validated in the United States, Philadelphia. It consists of 20 items and was prepared with three versions that included physicians, health care providers, medical students, and students from other health careers (6,7).

It presents the Cronbach's alpha coefficient in a range between 0.7 to 0.9, which has been obtained in multiple investigations and validated in various languages and applications; it is a reliable measurement scale (4,8).

A study conducted in Costa Rica found that dental students in higher years present greater empathy than in the initial years of the degree and that this was not related to gender (9). Similarly, in an investigation carried out on dental students in Colombia, it was found that the average of the results obtained was variable, with a tendency to decrease in the first year, slightly increase in the fourth year, and an increase in the sixth year, and it was also not related to the gender of the students (10).

Likewise, at the Rafael Núñez University Corporation in the city of Cartagena, an investigation was done to determine the development of an empathic attitude on the part of dental students, which did not find statistically significant differences among students from different years of study and gender. However, an increase in scores was observed in the last year of studies (11).

In a study conducted among the first and third-year students of stomatology at the Medical University of Cienfuegos, in Cuba, the result was not significant in both years of training, but there was a slight increase in empathy in the third-year students, predominantly in females (12).

In Mexico, a study was carried out to determine if empathic ability in dental students decreases with the progress in professional training. The result showed that there is no significant difference in the level of empathy among students at different levels of training. Women proved to be more empathetic than men. Assertiveness is a factor that should be considered along with the level of empathy (13).

In a review of the literature on the subject, it was concluded that more research is required on this topic. The literature also includes predictive variables to identify factors related to the empathic attitude and its association with dental clinical activities (14).

The levels of empathic attitude of dental students and if these are related to the year of study or with other habits such as reading in general and also the implication of their academic training are unknown. On the other hand, because the empathy that the student applies to his patient during his training is identified, improvement strategies can be applied in the patient-operator interaction, based on the development of security and emotions that should guide his actions (15).

Hence, the importance of carrying out the present investigation is due to the strong relationship that an empathic attitude has with the development of the clinical practice of the future dentist. Therefore, the purpose of the present study is to identify the empathic attitude of the dental students

of a public university, according to reading habits and related variables of interest.

MATERIALS AND METHODS

The study design was quantitative, observational, and cross-sectional. To estimate the sample size, the proportions comparison formula was applied using a confidence level of 95%, a statistical power of 80%, and with the estimated proportions of a previous pilot, obtaining a sample size adjusted to drop-out of 160 students. However, 226 students were enrolled in the first, fourth, and sixth years in the academic year 2022 at the Faculty of Dentistry of the Federico Villarreal National University (UNFV) in Lima, Peru, and students who did not belong to these years of study or currently not registration were excluded.

The project was evaluated and approved by the Ethics Committee of the Faculty of Dentistry. An informed consent form was prepared to respect the autonomy of the participants. The survey was anonymous and the data was treated confidentially by the researchers in custody. It complied with the ethical principles of Beneficence and Justice, based on the Declaration of Helsinki and the CIOMS Standards.

The Jefferson Empathy Scale, consisting of 20 items, which was built and validated in the United States, was used as an instrument. It has also been validated in different parts of the world

as well as in various investigations in Latin America and Peru, all including a cultural adaptation. They examined the construct validity and the reliability through Cronbach's alpha coefficient, reaching from 0.7 to 0.9, which demonstrates an adequate level of reliability (9,16,17).

A file was prepared for the data corresponding to the covariates and demography, and the form of the application of the survey was face-to-face.

Initially, the students were informed about the scope of the survey, and they were invited to participate through the use of informed consent. After the students consented, the content of the questions and their relation to empathic attitudes were explained to them. They were told that the answers were based on the intensity of agreement or disagreement concerning the item, with scores ranging from 1 to 7.

Descriptive statistics of the sample under study were performed and the scores were obtained with the Jefferson scale (mean, median, and standard deviation). The total scores of the scale were analyzed with the covariates, and the Student's T, Mann Whitney U, and Kruskal Wallis tests were applied for comparison of means. Subsequently, Poisson Regression with Robust Variance was applied as the response variable was dichotomized into adequate empathy and inadequate empathy. A significance level of $\alpha < 0.05$ was used to analyze the data.

RESULTS

The total sample studied consisted of 226 students in the first, fourth, and sixth years of dental school (Figure 1).

Table 1 shows that the majority of the students from Lima were female, with an average age of 22 years. They were single and had the habit of reading and a little more than half of the group did not participate in sports activities. The "adequate" level of empathy was the highest (51.77%).

In Table 2, it can be seen that the highest values were for questions 2, 4, 5, 9, 10, and 20. It is

worth mentioning that item 20 refers to "I believe that empathy is a therapeutic factor in medical treatment."

After analyzing Table 3, it was observed that in the comparison of the empathy scores, there were no statistically significant differences according to the co-variable of the study.

Finally, in Table 4, Poisson Regression with robust variance was applied to dichotomize the variable into adequate empathy and inadequate empathy, and an association was found between the covariates Reading habit ($p=0.001$) and Reading Dentistry Books ($p<0.001$).

Table 1. Participant characteristics.

Variables	n	%
Gender		
Female	165	73.01
Male	61	26.99
Age	22.35	3.91
Year		
1st	107	47.35
4th	38	16.81
6th	81	35.84
Origin		
Lima	166	73.45
Others†	60	26.55
Marital status		
Single	216	95.58
Others ^f	10	4.42
Reading habit		
Yes	135	59.73
No	91	40.27
Dentistry books		
Yes	134	59.29
No	92	40.71
Sport activities		
Yes	107	47.35
No	119	52.65
Empathy	88.9	10.05
Inadequate	109	48.23
Adequate	117	51.77

†Others: categories were clustered.

^fOthers: categories were clustered.

Table 2. Results of the Jefferson Empathy Scale with scores by item.

	Question	Mean	Median	Standard deviation
1.	My understanding of the feelings of my patient and his/her relatives is an irrelevant factor in medical treatment.	3.13	2	2.01
2.	My patients feel better when I understand their feelings.	6.11	7	1.26
3.	It's hard for me to see things from my patients' perspective.	3.81	4	1.51
4.	I believe that my patient's non-verbal language is as important as verbal communication in the doctor-patient relationship.	6.24	7	1.09
5.	I have a good sense of humor that I believe contributes to a better clinical outcome.	5.73	6	1.54
6.	People are different, which makes it impossible for me to see things from my patient's perspective.	4.52	5	1.73
7.	I try not to pay attention to the emotions of my patients during the interview or medical history.	2.18	2	1.62
8.	Attention to the personal experiences of my patients is irrelevant to the effectiveness of the treatment.	2.64	2	1.72
9.	I try to put myself in the place of my patients when I treat them.	5.96	6	1.18
10.	My understanding of my patients' feelings gives them a sense of validity that is therapeutic in itself.	5.74	6	1.24
11.	The diseases of my patients can only be cured with medical treatment; therefore, the affective ties with my patients do not have a significant value in this context.	3.03	3	1.74
12.	I consider that asking my patients about what is happening in their lives is an insignificant factor in understanding their physical complaints.	2.78	2	1.59
13.	I try to understand what is going on in the minds of my patients by paying attention to their non-verbal communication and body language.	5.48	6	1.61
14.	I believe that emotions have no place in the treatment of a medical illness.	2.39	2	1.67
15.	Empathy is a therapeutic skill without which my success as a physician may be limited.	5.34	6	1.64
16.	An important component of the relationship with my patients is my understanding of their emotional state and that of their families.	5.68	6	1.39
17.	I try to think like my patients so that I can give them better care.	5.18	5	1.53
18.	I do not allow myself to be affected by the intense sentimental relationships between my patients and their families.	4.33	4	1.79
19.	I do not enjoy reading non-medical literature or art.	2.54	2	1.68
20.	I believe that empathy is a therapeutic factor in medical treatment.	6.08	7	1.28

Table 3. Comparison of the empathy values according to the study variables.

Variable	Mean	Median	SD	IQR	p-value
Gender					
Female	88.6	89	9.41	10	0.4669†
Male	89.7	89	11.66	11	
Age	-0.0133				0.842\$
Year					
1st	88.72	88	10.71	15	0.813*
4th	89.76	89.5	9.49	8	
6th	88.74	90	9.5	7	
Origin					
Lima	89.34	90	9.98	10	0.208^
Others†	87.68	87	10.24	8.5	
Marital status					
Single	88.82	88.5	10.25	10.5	0.3494^
Others ^f	90.6	90.5	3.34	2	
Reading habits					
Yes	88.49	88	9.51	10	0.2013^
No	89.51	90	10.83	12	
Dentistry books					
Yes	88.42	88	9.51	10	0.1519^
No	89.59	90	10.81	12	
Sport activities					
Yes	89.22	88	10.31	12	0.9618^
No	88.61	90	9.85	10	

† Others:

^fOthers:

† t de Student

\$ Spearman correlation

* Kruskal Wallis

^ Mann Whitney U

Table 4. Association of empathy with the study variables.

Variable	Empathy		Raw	p valor	Adjusted	p valor
	No adecuada n (%)	Adecuada (%)	PR (IC 95%)		PR (IC 95%)	
Gender						
Male	30(49.18)	31(50.82)	1		1	
Female	79(47.88)	86(52.12)	1.02(0.769;1.367)	0.863	0.99(0.728;1.351)	0.959
Age*	0.1	0.123	1.03(0.999;1.058)	0.06	1.005(0.961;1.053)	0.799
Study year						
1st	58 (54.21)	49(45.79)	1		1	
4th	17(44.74)	21(55.26)	1.21(0.847;1.718)	0.297	1.09 (0.711; 1.675)	0.687
6th	34(41.98)	47(58.02)	1.27(0.959;1.672)	0.095	0.99 (0.645; 1.521)	0.967
Origin						
Others	36(60)	24(40)	1		1	
Lima	73(43.98)	93(56.02)	1.40(0.998;1.965)	0.051	1.32(0.932;1.881)	0.117
Reading habit						
No	36(39.56)	55(60.44)	1		1	
Yes	73(54.07)	62(45.93)	0.76(0.593;0.973)	0.03	1.77(1.266;2.475)	0.001
Dentistry books						
No	36(39.13)	56(60.87)	1		1	
Yes	73(54.48)	61(45.52)	0.75(0.583;0.958)	0.022	0.45(0.329;0.609)	<0.001
Sport activities						
No	54(45.38)	65(54.62)	1		1	
Yes	55(51.40)	54(48.60)	0.89(0.689;1.148)	0.369	0.92(0.704;1.206)	0.555

Poisson regression with robust variance.

* Spearman correlation test (Rho, p-value)

DISCUSSION

The purpose of this research was to identify the empathic attitude of dental students at a public university and to search for its possible relationship with sociodemographic variables. The Jefferson scale instrument was used for the present investigation, which has been validated in multiple countries and also in the national context (9,16,17).

The interaction between the health professional and the patient involves many elements because each person has very subjective aspects and the needs are different in both subjects. Therefore, it is necessary to develop skills in behavior and knowledge that allow for the optimization of this relationship (18).

Patients can develop certain attitudes due to the presence of the disease and the symptoms. Consequently, the professional must be involved and should develop their ability to understand and tolerate these ailments (19).

Currently, issues of empathy, responsibility, and social justice have emerged in the dental field. Some universities even incorporate it into their study plans; however, not enough has been studied about these issues (14).

This capacity or attitude of empathic behavior in students should be monitored throughout their training so that they develop good relationships with their patients in the future.

In the present investigation, an average global empathic attitude of 89.15 was found, which is similar to what was found by a private university in Lima (20), which reports an average score of 89. These results are quite similar to an investigation carried out at the University Metropolitana in Colombia, which found an average score of 92 in dental students (10). However, it

is possible to observe lower scores in dentistry students, such as the average of 85.60 found in a Cuban university (12). On the other hand, there are results with much higher averages, as in the case of a study carried out at a private university in Peru (20), which reports an empathy average of 108.66; an average of 104.06 was found in dental students at the University of Jos in Nigeria (21) and an average score of 106.2 was reported at the Goethe University in Frankfurt (22). According to this variability of results, even when this instrument does not mention a cut-off point, a higher score is expected since this would indicate a better empathic attitude. It is probable that in the present investigation in which the students come from two years only with virtual classes, as a result of the COVID-19 pandemic, there has not been much interaction with academic, social, and even family groups, which is reflected in the values obtained in the study sample. The research reports from other developed countries that present higher scores have probably been carried out before the lockdown that occurred in many countries in the world but have been published in recent years.

When the empathy scores were compared with the sociodemographic variables, no significant differences were found according to gender, age, origin, and marital status. No studies have been found that review these types of variables; most of the published research only analyzes the gender variables, and it can be observed that studies such as the one carried out in Barranquilla by Larios (10) did not find differences across gender, which was similar to what was expressed by Lermen (22) who also did not report differences according to sex and similarly, and the report by Okhiabigie (21) at a university in Nigeria finds similar values for both men and women.

Regarding the years of study in the present investigation, the sample was diverse and consisted of first-year, fourth-year, and sixth-year students; being in greater quantity, than the first-year ones,

no significant differences were observed when comparing the scores obtained according to the academic year. This was similar to what was mentioned by Lerner (22) about students in Frankfurt and also coincides with the results found at the University of Cienfuegos in Havana (12); this differs from what was reported by Torres (18) who found significant differences in a sample of Chilean students from first to fifth grade, finding a tendency of increase in the level of empathy with the higher the year of study. The last study mentioned, unlike the ones mentioned above, includes the entire student population of the dental school, while in other studies only two or three years of study were chosen. This trend can be probably due to the characteristics of the sample.

Finally, in this study, a Poisson regression with robust variance was performed to dichotomize the response variable into adequate empathy and inadequate empathy as proposed in a study at a private university in Lima (20); an association could be observed between adequate empathy and the covariates of reading habits and reading dental books. In this investigation, these covariates as well as those of sports activities were considered because it is likely that other types of activities can improve this interaction and empathic attitudes of the dental students in different groups. It is suggested that more longitudinal research be carried out with other types of covariates to better identify their relationship with a good level of empathy.

The highest scores found in the responses of the Jefferson scale were in item 2, "My patients feel better when I understand their feelings" and in item

4, "I consider that my patient's non-verbal language is as important as the verbal communication in the doctor-patient relationship," which reflects the interest and positive attitude of the student towards the patient. No studies have been found that specifically analyze the scores by questions.

Various publications suggest that identifying empathic attitudes in students can lead to improvements in their training, enhancing their interpersonal skills, and generating positive attitudes (22, 23).

Comprehensive training with a vision towards art, culture, sports, and the formation of academic groups for better socialization are suggested as strategies to increase the level of empathy. Encouraging the formation of reading clubs and offering practices in multiple sports disciplines will allow the students a better development and foster qualities of responsibility and respect, among others, that will help them form an empathetic attitude towards others.

CONCLUSION

It is concluded that the dental students in this research had a medium to high average (89 points), and according to the analysis carried out, it was independent of the sociodemographic variables; however, "adequate" empathy was found associated with reading habits.

INTEREST CONFLICT

The authors declare they have no conflicts of interest.

AUTHOR CONTRIBUTION STATEMENT

Preparation of the research project and reports on the progress of the research. Preparation of the scientific article: C.R.G.R.

Data collection. Collaboration in the preparation of the scientific article: D.M.CH.G.

Statistical analysis, Collaboration in the preparation of the scientific article: C.S.C.G.

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