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EMPATHY, COMPONENTS OF EMPATHY, EMPATHY DECLINE AND GENDER IN NURSING STUDENTS. A CROSS-SECTIONAL STUDY

EMPATÍA, COMPONENTES DE LA EMPATÍA, DECLINACIÓN EMPÁTICA Y GÉNERO EN ESTUDIANTES DE ENFERMERÍA. ESTUDIO TRANSVERSAL

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Recibido el 17 de diciembre de 2019 ; aceptado el 2 de marzo de 2020

RESUMEN

Introducción: Una sólida formación empática en los estudiantes de enfermería contribuye con una mejor atención del paciente y al éxito del tratamiento cuando estos estudiantes sean profesionales de enfermería.

Objetivo: Determinar cuál es el tipo de distribución de la empatía a través de los semestres y género en estudiantes de enfermería.

Método: Estudio exploratorio y transversal. Los datos fueron obtenidos mediante la Escala de Empatía Médica de Jefferson, adaptada para estudiantes de enfermería mediante criterios de jueces.

Población: estudiantes de enfermería; Universidad Simón Bolívar, Barranquilla (Colombia). Fue estudiada una muestra constituida por 549 estudiante (59,29% de población, N=926). Esta muestra estuvo formada por 491 mujeres y 58 hombres. La muestra fue examinada de forma estratificada (semestres). Se incluyeron estudiantes de enfermería matriculados en el periodo 2016, los que firmaron consentimiento informado. Los datos fueron recolectados en octubre de 2016. Se empleó Escala de Empatía Médica de Jefferson, versión en español, para estudiantes de enfermería, validada y adaptada en Colombia.

Pruebas empleadas: alpha de Cronbach y coeficiente de correlación intraclase. Análisis de varianza bifactorial, prueba de Breusch-Pagan y T de student. Se empleó el programa SPSS 23.0. Nivel de significación: $\alpha \leq 0,05$ y $B < 0,20$.

Resultados: la confiabilidad de los datos fue satis-

factoria, no existió diferencia en el género y no fue observada la presencia de declinación empática en los estudiantes examinados.

Conclusión: Los resultados observados demuestran que la empatía es un atributo complejo, no se cumple el principio de declinación empática y las mujeres no presentan valores de empatía mayores que los hombres.

Palabras clave: empatía, estudiantes, educación en enfermería.

ABSTRACT

Introduction: Strong empathic training in nursing students will contribute to better patient care and treatment success when these students become nursing professionals.

Objective: To determine the type of distribution of empathy across semesters and gender in nursing students.

Method: Exploratory and cross-sectional study. The Data were obtained using the Jefferson Scale of Physician Empathy, Spanish version, validated and adapted in Colombia for nursing students using judging criteria.

Population: nursing students from Universidad Simón Bolívar, Barranquilla (Colombia). A sample consisting of 549 students (59.29% of population, N = 926) was studied. The sample was made up of 491 women and 58 men. It was examined in a stratified way (semesters). Nursing students who signed informed consent and enrolled in 2016 were included. The Data was collected in October 2016.

Tests used: Cronbach's alpha, intraclass correlation coefficient, Two-way analysis of variance, Breusch-Pagan test and T-student test. The SPSS 23.0 program was used.

Level of significance: $\alpha \leq 0.05$ and $B < 0.20$. Results:

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The reliability of the data was satisfactory, there was no difference in gender and the presence of empathic decline was not observed in the students examined. **Conclusion:** The observed results show that empathy is a complex attribute and the principle of empathic decline is not followed. Women do not have higher empathy values than men.

Key words: *empathy, students, nursing education.*

INTRODUCTION

The nurse-patient relationship is more complex than a simply clinical relationship and encompasses processes that can positively affect the recovery of the patient's health¹⁻⁴. This implies that in the medical sciences and socio-psychological theories must be incorporated: in the explanation of the genesis, maintenance and resolution of diseases, and in the patient's own care process²⁻⁴. As a consequence, nurses must be able to develop an empathic bond with their patients⁴.

Empathy is a cognitive-behavioral attribute that contains the ability to understand that "the patient's experiences and feelings influence and are influenced by the disease and its symptoms, and the ability to communicate that understanding"⁵. It is stated that empathy is associated with various attributes: pro-social behavior, increased degree of patient and doctor satisfaction, better therapeutic relationships and good clinical results. Several studies have been carried out with the aim of measuring levels of empathy in Students in the Health area and few in practicing health professionals. There are instruments with sufficient validity and reliability capable of measuring the levels of empathy in students of Health Sciences in general and nursing in particular^{3,6}. The factors that can influence levels of empathy are: hidden curriculum, family functioning, presence of stress in students, excessive academic work, mistreatment of teachers, presence of burnout, depression, among others.¹⁻⁴

Previous studies in Latin America give results with variability in relation to the levels of empathy and its components, the empathic decline and the levels of empathy between women and men.^{1-4,6-9}

The objective of this study is to determine the levels of empathy (and that of each of its components) in the students who are studying nursing at the University Simón Bolívar, Barranquilla (Colombia), considering two factors: academic year and gender; to check if the principle of empathic erosion is fulfilled and if women are more empathetic than men.

MATERIALS AND METHODS

This was an exploratory and cross-sectional study and was carried out on the basis of Helsinki's ethical standards.¹⁰ Approved by the Ethics Committee of the Dental Faculty of University San Sebastián, Chile: Resolución 2020-83. The population was made up of students from the first to the eighth semester of nursing.

The inclusion criteria were all those students who agreed to answer the instrument in person, while the exclusion criteria were students who did not attend classes, those absent due to illness or personal reasons on the day of application of the instrument.

The data was collected in October 2016. The Jefferson's Scale of Physician Empathy (JSPE) was applied to the students in the Spanish version for medical students (S version). JSPE is made up of three factors: CC: Compassionate Care with 7 items PA = Perspective Adoption with 10 items; AUO = Ability to Understand Others with 3 items. The total number of items is 20. There are no cut points so far. This factor structure was originally validated in the United States.⁵ The questions of this instrument are constructed with a Likert scale and our answers are associated with values between 1 and 7. These questions have been described and explained in various papers^{1-3,5,6-9,11-18}. PA and AUO are associated with the cognitive sphere and CC with the effective sphere. Before being applied, the JSPE was submitted to the criteria of judges (five relevant academic professors of nursing, psychologists and experts in higher education) in order to verify the cultural validity. The application was confidential with a neutral operator and the students' understanding of the culturally adapted scale was performed using a pilot test. Each student had to sign an informed consent. The final sample was made up of all those subjects who answered the instrument on the day the scale was applied.

The data was subjected to normality tests (Kolmogorov-Smirnov) and homoscedasticity tests (Levene). The internal reliability of the data was estimated using the general Cronbach's alpha and the values of this statistic to the extent that each of the elements (questions), intraclass correlation coefficient and T2 of Hotteling were eliminated.

The mean and standard deviation were estimated. A two-factor analysis of variance (ANOVA) (model III): Semester (S) and Gender (G) was applied in order to find differences in the means between academic years, between genders and in the interaction of these two factors and considers, for the estimates, the sample sizes of the different levels of the factors studied.

Heteroscedasticity between genders was estimated using the modified Breusch-Pagan test (BPT).

In cases where this last test was significant, the t-student test was used to compare groups with unequal variances. The data was described using arithmetic graphs and processed using the SPSS 23.0 statistical program. The level of significance used was $\alpha \leq 0.05$ and $B < 0.20$ in all cases.

The neutral operator did not accept instruments that had incomplete answers and guaranteed the absence of missing data. The number of students who were examined (59.29%) does not allow extrapolating the results to the entire population, but it does allow establishing consistent trends.

RESULTS

The total population consisted of 926 students (N) and the sample was 549 students (n) constituting 59.29% of the population.

The sample had the following stratification (semesters): first= 88; second= 77; third= 76 and fourth= 60; fifth= 59; sixth= 69; seventh= 64 and eighth= 56. According to Gender it was as follows: female= 491 and male= 58.

The general mean and standard deviation of empathy

and each of its dimensions in the semester and gender factors are presented in Table I. The Kolmogorov-Smirnov and Levene tests were not significant ($p > 0.05$); there was normality and homoscedasticity. Cronbach's alpha was satisfactory (not typed= 0.754; typed= 0.768): there was internal reliability. The total Cronbach's Alpha value, if an item (question) is removed, fluctuated between 0.728; 0.767: the test demonstrated reliability. The intraclass correlation coefficient was 0.754 ($F = 4.072$; $p = 0.0001$): it confirms the reliability of the data. Hotelling's T2 test ($F = 64.46$; $p = 0.001$) allows us to infer that the means of the questions are different from each

Table I. Results of the estimation of the descriptive statistics of Empathy (E) and that of its components, Compassionate Care (CC), Perspective Adoption (PA), Ability to Understand Others (AUO) in nursing students from Barranquilla, Colombia, 2016.

Semester	Gender	Mean (E)	SD	Mean (CC)	SD	Mean (PA)	SD	Mean (AUO)	SD	n
First	Female	102.95	14.589	35.99	8.307	55.62	9.458	11.34	4.003	80
	Male	111.88	16.19	35.75	9.647	64	5.831	12.13	4.673	8
	Total	103.76	14.866	35.97	8.375	56.39	9.478	11.41	4.045	88
Second	Female	104.69	14.783	36.01	9.468	57.28	9.229	11.39	3.525	67
	Male	104.9	16.299	36.3	8.367	57.2	15.887	11.4	4.142	10
	Total	104.71	14.875	36.05	9.282	57.27	10.191	11.39	3.58	77
Third	Female	106.01	11.411	35.93	6.55	58.89	8.544	11.2	3.091	70
	Male	110.83	15.917	34.83	11.974	64.5	3.619	11.5	1.643	6
	Total	106.39	11.764	35.84	7.009	59.33	8.388	11.22	2.996	76
Fourth	Female	101.63	16.72	34.52	9.157	55.68	9.175	11.43	3.495	56
	Male	102.25	19.466	40.5	9.11	50.25	9.287	11.5	1.732	4
	Total	101.67	16.73	34.92	9.201	55.32	9.205	11.43	3.397	60
Fifth	Female	93.93	16.586	29.74	9.673	52.7	11.27	11.5	2.965	46
	Male	91.38	17.685	27.69	9.784	52.15	13.353	11.54	3.971	13
	Total	93.37	16.711	29.29	9.651	52.58	11.64	11.51	3.175	59
Sixth	Female	105.48	15.091	37.5	9.134	56.66	9.922	11.33	4.114	64
	Male	115.6	8.877	41.6	5.367	62	5.148	12	2	5
	Total	106.22	14.92	37.8	8.952	57.04	9.732	11.38	3.993	69
Seventh	Female	108.26	12.341	38.5	8.046	59.48	7.547	10.28	3.919	58
	Male	114	11.261	38.67	8.066	62.5	4.55	12.83	3.061	6
	Total	108.8	12.276	38.52	7.984	59.77	7.346	10.52	3.9	64
Eighth	Female	108.12	11.144	36.2	8.569	60.58	6.201	11.34	3.426	50
	Male	106.67	8.042	35	2.366	59.83	7.055	11.83	3.125	6
	Total	107.96	10.804	36.07	8.128	60.5	6.232	11.39	3.372	56
Total	Female	104.11	14.604	35.75	8.818	57.14	9.231	11.22	3.612	491
	Male	105.31	16.616	35	9.366	58.52	10.979	11.79	3.355	58
	Total	104.24	14.817	35.67	8.871	57.29	9.429	11.28	3.587	549

Source: Elaborated by authors.

E=Empathy; CC=Compassionate Care; PA= Perspective Adoption; AUO= Ability to Understand Others; SD=Standard deviation; n=Sample size.

Table II. Results of the application of ANOVA, the value of F, eta-square and power of the test used (P). Barranquilla, Colombia, 2016.

Empathy	F	(p)	Eta square	p	R²(a)
<i>Semester(S)</i>	3.78	0.005	0.007	0.999	
<i>Gender (G)</i>	2.47	0.117	0.005	0.348	0.071
<i>S*G</i>	0.738	0.64	0.01	0.321	
Compassionate Care					
<i>Semester(S)</i>	4.683	0.005	0.058	0.99	
<i>Gender (G)</i>	0.345	0.557	0.001	0.09	0.057
<i>S*G</i>	0.515	0.823	0.007	0.23	
Perspective Adoption					
<i>Semester(S)</i>	4.028	0.020	0.05	0.986	
<i>Gender (G)</i>	2.074	0.150	0.004	0.301	0.054
<i>S*G</i>	0.316	0.240	0.017	0.565	
Ability to understand other s					
<i>Semester(S)</i>	0.033	1.00	0.005	0.058	
<i>Gender (G)</i>	1.34	0.250	0.003	0.212	0.015
<i>S*G</i>	0.315	0.947	0.004	0.147	

Source: Elaborated by authors.

p= probability of making type II error; *Symbol of interaction between factors Semester (S) and Gender (G); R² (a): Adjusted coefficient of determination.

other and shows that not all of them contribute equally to the global mean 5.21, which implies variability between the answers. The results of estimating the means and standard deviations and the sample size are shown in Table I.

Table II shows the results of the ANOVA applied to empathy (E) and to each of its components of empathy. It was observed that, in empathy, the S factor was highly significant (p= 0.005); the eta-square value was satisfactory and the observed power is good; however, in factor G (and the interaction between factors) it was not significant. Differences were also observed between the means in the Compassionate Care (CC) and Perspective Adoption (PA) components (p< 0.05) between semesters, but not in the AUO component (p> 0.05). No significant differences were found between gender. However, the BPT test was significant between genders in Empathy (x² = 15.33; p= 0.0005) and also significant in the Perspective Adoption component (x²= 13.93; p= 0.0005).

The t-student test to compare means with different variances between groups was not significant for Empathy and Perspective Adoption (t= 526; p= 0.601 and t= 0.916; p= 0.363 respectively).

R² values are low and these results are consistent with those obtained in students from the same degree and from other degrees in Latin America.^{3,8-11,14-16,18-23,39}

Finally, it was observed that the "stable" average values remain between the first and third semesters and decline between the fourth and fifth semesters, and then increase in the other semesters (Table I). In the case of CC, it remains stable until the third semester, it increases in the fourth, it decreases in the fifth and then again increases the values of the means in the other semesters. In the PA component, as in E, they decreased in the fourth and fifth, and then increased in the rest of the semesters (Table I). The AUO remains stable around its global mean (Table I)

DISCUSSION

It was evidenced that the examined students have acceptable values of empathy levels,⁷⁻⁹ but at the same time, they show the possibility and the need to increase them and implies an intervention to raise their levels. In this regard, the literature seems to indicate that there are two general approaches that modulate the interventions: a) the intervention of processes with short duration and directed to specific aspects and b) complete transformations in the students' curriculum that imply the need for profound changes in the relationship student-patient (from the first year), in the teaching-learning processes (active teaching-learning processes) and different ways of introducing into teaching attributes associated with the humanistic aspects of student training (including empathy)¹¹⁻¹⁴. We agree on the need to carry out a profound intervention that implies, among other necessary changes, a comprehensive modification of the curriculum, after a thorough evaluation (diagnosis) of the empathetic situation based on the experiences referenced^{11,15-17}. In other words an intervention would, in our case, have to explain before the intervention, what are the possible causes that influence or determine the magnitude of the observed empathy values and also try to find the causes that imply a decrease in empathy in the fourth and fifth semesters. The intervention must be planned, aimed at eliminating the aspects that have a negative impact and promoting those that could act positively.

Neuronal development remains active until the age of 25 years; as a consequence, there is a window in which the University can act on empathy positively and intervention is part of the institution's social responsibility in the training of its students.¹⁵ The nature of the need for deep interventions derives from the complex nature of empathy and its components^{18,19}. On one hand, the CC component belongs to the emotional sphere and is influenced, in its formation process, by factors such as moral values, religiosity, family functioning, attachment relationships, styles of education and upbringing (between others), who begin their process of influence from the earliest ages.¹⁸⁻²³ As a consequence, this component is difficult to "teach" in higher education students and the hypothesis arises that in subjects who have had a correct training and environmental influence, the encounter with the suffering patient should become a facilitating factor and enhance the possible "natural" increase in the levels of this component. On the other hand, the remaining two components are cognitive and susceptible to being subjected to teaching-learning processes.^{18,24,25} However, the final result is: empathy is the product of the interaction between these components in a context of factor interdependence^{26,27} and it is necessary to guarantee the development of empathy in an integral way that allows positively modulating the factors that contribute to development of all its components and, therefore, to the increase of the positive dialectical interaction between them and to cancel the negative factors. In cases where development is asymmetric (damaging one of its components in relation to

the others), it can lead, in the most extreme cases, to a subject in a psychopathic path (in the least extreme cases the possibility of training of less empathetic professionals).²⁸⁻³⁰ This is due to the existence of relative independence between the neurobiological substrates that support the formation of the components of empathy and it is known that serial killer psychopaths are not affected by cognitive components,^{28,30} instead they are affected by the affective component: they do not recognize the suffering in their victims.

The authors of this work are inclined towards comprehensive intervention as a way of raising empathy levels (among other attributes) extensively and intensively and that this process must take place from the time the student begins the training process until the last year as an undergraduate student. In said intervention, the specific behavior of the components of empathy must be considered as a result of their initial evaluation (diagnosis) so that the intervention also has a specific meaning in accordance with the nature of the specific behavior of each component.

The concept of "empathic erosion" was introduced to describe the phenomenon found in medical students, characterized by an increase in empathy until the third year of the degree and a sustained decline in it in successive years³¹. The causes that hypothetically could support this decline process can be summarized: mistreatment by superiors or mentors, vulnerability of medical students and residents, social support problems, high workload, incorporation to health careers with a "low empathic level", insufficient altruism³², among many other factors.

As a consequence, it could be thought that empathic decline (empirical event) could be a universal scientific fact. However, some authors have found that this process is not a particular fact³³⁻³⁶. In this sense, empathy levels were compared between 18 dental schools in Latin America and different forms of behavior were found, and in some of them an increase in empathy was manifested.³⁰ A similar situation was found in students of medicine from the same region^{34,36}. The fact that in the present study empathy decreased (in general terms, in the fourth and fifth semesters), it could be due to the fact that the students examined could be subject to the same causes (or a part of them) that produce empathic decline.³² However, it cannot explain the increase in empathy produced in the students in the following semesters. The cause of the decline and promotion described, must be studied in successive investigations because the knowledge of the factors that have produced these fluctuations are vital to nullify the negative effects and enhance those that have empowered the increased levels of empathy.

The analysis of empathic behavior in its components shows a different panorama from the "classic decline" that occurs in empathy and, in addition, in gender it also manifests itself in a different way. These results support the postulates of some authors^{6,37-39} who have pointed

out directly or indirectly that decline is a particular case and that the behavior of levels of empathy throughout the career is characterized by manifest variability.^{18,40} This situation is not a minor matter, because it necessarily implies that there cannot be a "universal" pedagogical intervention aimed at positively modifying empathy in undergraduate students and, of course, the findings found in this work, highlights that any intervention should consider the particularities of empathic behavior (construct integrated in a peculiar way by its components and the derived way in which these components interact).

On the other hand, the variability described above can be attributed to the existence of present factors that modulate empathy. Such an inference is not new, but what may be novel is that each student population could be influenced by a particular conglomerate of factors with a particular interaction between the said factors and a particular formation of empathy, given the particularities of each population and as a consequence, universal or general pedagogical interventions could be counterproductive.⁽⁷⁾ From the above, the meaning of complexity in empathic formation is derived.

Regarding gender, the observed results do not show significant differences between them. This result coincides, in some cases, and contradicts others.^{1,9,11,19, 34,40} Comparisons made between genders in students from different health careers in Latin America found variability in the empathic response characterized by: absence of differences between genders; women more empathetic than men and vice versa.

Finally, the fact that the value of the coefficient of determination is low in the two factors studied (consistent, in addition, with other results already cited) allows us to infer the existence of many factors acting on empathy and each of them is responsible for the degree of empathy that a particular subject can achieve.

The results observed in this work cannot be generalized to other student populations since each population has its own characteristics of distribution of empathy and its dimensions. What is generalizable is that the observed results confirm the existence of variability of the empathic response in the different populations of nursing students in Colombia and in Latin America and this implies that any intervention aimed at raising levels of empathy must consider how different factors may influence these levels and what specific modifications should be considered to achieve this goal, all of which must necessarily be the subject of future research.

The main limitation of this study is that 100% of the population was not studied and the sample studied was not chosen at random, all of which may include a bias that only allows consistent trends to be established. On the other hand, some factors that are suspected of influencing levels of empathy were not studied, such as stress, family functioning, student personality, among other factors.

CONCLUSION

The absence of decline in empathy and in its dimensions: Compassionate Care, Perspective Adoption and Ability to Understand Others (also the absence of gender differences), is consistent with the conception of the existence of variability in the empathic response of Latin America. The observed results suggest to the authorities of the studied university that they should take the corresponding measures to increase the levels of empathy, all of which is in accordance with the social responsibility that each university has.

Any intervention must consider the behavior of each of the components or determine what the specific modulation process is like in the components. In general, these results show the complexity of the manifestation of the concept of empathy and the need to face its "teaching" according to said complexity.

Conflict of interest

There are no conflicts of interest and the authors have carried out this research without any intervention from the University authorities.

Funding

It has been funded by its own authors.

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