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Empathy in Nursing Students. Cross-sectional Study

Empatía en estudiantes de enfermería. Estudio transversal

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Authors' contribution: all authors have participated in all the main stages of this work: Research Idea, Research Design, Writing the manuscript in all its components, final approval of the text. The only exceptions, apart from having participated in all the stages mentioned above, refer to the fact that the data collection was carried out by authors Drs. Fajardo and Ferrero, and the statistical analysis was carried out by Dr. Díaz.

ABSTRACT

Objective: To estimate the levels of empathy in students enrolled in the nursing program.

Material and methods. Data Sources: The population consists of students from the first to the fifth academic year (Course) (N = 312, n = 253, 81.08% of the population). Selection of studies: Exploratory and cross-sectional study. Data extraction: The authors collected the information between January and February 2018. Participants answered the Jefferson Medical Scale of Empathy, the Spanish version for medical students (S version), validated and adapted for nursing students in Colombia.

Results. Synthesis of the data: Cronbach's alpha was satisfactory (not typified = 0.891 and typified = 0.886), from which it is inferred that the data has internal reliability. The inter-class correlation coefficient was 0.891; CI [0.87, 0.909] (F = 9.15, p = 0.005): confirms the good reliability. The authors observed that in empathy, this coefficient was highly significant in all three factors, with the eta-square value satisfactory and a high power observed. The significance level used was $\alpha \leq 0.05$ and $\beta < 0.20$.

Conclusions: The manifestation of the levels of empathy observed in this study agrees with the concept of empathic erosion, especially when analyzing empathic behavior in the male gender. The empathy levels in the students examined are relatively low, and authors conclude that there is considerable potential for growth of empathy and that of its components. Empathy is a complex part of academic formation that cannot be seen as an isolated variable.

Keywords: empathy; nursing; students.

RESUMEN

Objetivo: Estimar los niveles de empatía en estudiantes matriculados en un programa de enfermería.

Material y Métodos. Fuentes de datos: La población está compuesta por estudiantes del primer al quinto año académico (Curso) (N = 312, n = 253, 81.08% de la población). Selección de estudios: Estudio exploratorio y transversal. Extracción de datos: La información se

recopiló entre enero y febrero de 2018. Los participantes respondieron la Escala de Empatía Médica de Jefferson (S)validada y adaptada para estudiantes de enfermería en Colombia.

Resultados. Síntesis de los datos: El alfa de Cronbach fue satisfactorio (no tipificado = 0,891 y tipificado = 0,886): de manera que los datos tienen fiabilidad interna. El coeficiente de correlación interclase fue de 0,891; IC [0.87, 0.909] ($F = 9.15$, $p = 0.005$): este confirma la buena confiabilidad. Se observó que, en la empatía, el coeficiente de correlación intraclase fue altamente significativo en los tres factores; con el valor eta-cuadrado satisfactorio y la potencia observada alta. El nivel de significación utilizado fue $\alpha \leq 0.05$ y $\beta < 0.20$.

Conclusiones: La manifestación de los niveles de empatía observados en este estudio coincide con el concepto de erosión empática, especialmente cuando se analiza el comportamiento empático en el género masculino. En general, los niveles de empatía en los estudiantes examinados son relativamente bajos y se ha demostrado que existe un potencial considerable para el crecimiento de la empatía y de sus componentes. La empatía es una parte compleja de la formación académica que no puede verse como una variable aislada.

Palabras clave: empatía, enfermería, estudiantes.

INTRODUCTION

The nurse-patient relationship is an interaction between two people who have different personal interests. (1) From a clinical and human perspective it has been established that this relationship contributes to the recovery process of the patient's health. This has forced medical sciences to incorporate theories of psycho-dynamic and bio-psycho-social analysis, not only in the explanation of the genesis, maintenance and resolution of diseases, (2) but also in the patient's general care process. (3) As a consequence, it is necessary for nurses to develop empathic communication with their patients. (4)

Empathy in health care is understood as a cognitive and behavioral attribute that implies the ability to understand how the patient's experiences and feelings influence and are influenced by the disease and its symptoms. (5-7) Review of literature indicates that empathy relates to a number of other attributes, such as pro-social behavior, ability to obtain a medical history, increased patient and physician satisfaction, improved therapeutic relationships, and good clinical outcomes. (6) The objective of the present study was to estimate the levels of empathy in general (and that of each of its components or dimensions) of nursing students.

MATERIALS AND METHODS

Exploratory and cross-sectional study. The population consists of students enrolled in the Nursing Program of the Faculty of Health Sciences at the University of Tolima, Colombia ($N = 312$, $n = 253$, 81.08% of the population). The gender factor was the following: female = 123 and male = 130. The information was collected in February 2018. Participants were given the JMSE, (Version-S), validated and adapted for nursing students in Colombia. It was submitted to judges (five) for the purpose of verifying cultural and content validity⁽⁸⁾. The application was confidential and students' understanding of the culturally adapted scale was performed through a pilot test.

The authors tested the data for normality (Kolmogorov-Smirnov) and homoscedasticity (Levene). The internal reliability was estimated using the general Cronbach's alpha and interclass correlation coefficient. It was estimated Hotelling's T^2 , Tukey's non-additivity test, mean and standard deviation. Analysis of variance (ANOVA) and the SPSS 25.0 program were applied. The Total Possible Growth Potential (TPGP) was considered as the quotient between two magnitudes: a) the actual difference between the observed scores of fifth-year students minus the score of first-year students (D1) with respect to b) the difference between the highest value of empathy allowed by the instrument (140) and the effective value of the empathy of first-year students (D2): $TPGP = D1/D2$. This indicator allows evaluating the magnitude of advancement, regression, or stagnation of empathy. The components operate in the same way, the maximum values were considered specifically for each one of them. The significance level used was $\alpha \leq 0.05$ and $\beta < 0.20$, based on the bioethical standards of Helsinki (2013).

RESULTS

The Kolmogorov-Smirnov and Levene tests were not significant ($p > 0.05$). Cronbach's alpha was satisfactory (not typified = 0.891 and typified = 0.886). The interclass correlation coefficient was 0.891; IC [0.87; 0.909] ($F = 9.15$; $p = 0.005$). The T^2 test of Hotelling ($F = 448.8$; $p = 0.0001$) and Tukey non-additive ($F = 14.19$; $p = 0.001$). The results of the estimates of descriptive statisticians are shown in Table 1.

Table 1. Results of the estimation of means, standard error of the mean and confidence interval of the mean in the empathy in general and in each one of its components.

Course	Gender	Aritmetic Average	Standard deviation	n
General Empathy				
First	Female	78.23	5.833	26
	Male	78.63	7.698	46
	Total	78.49	7.041	72
Second	Female	108,21	18.094	24
	Male	95.04	16.321	24
	Total	101.63	18.299	48
Third	Female	108.96	18.274	25
	Male	111.85	15.958	20
	Total	110.24	17.153	45
Fourth	Female	101.96	23.382	25
	Male	94.69	20.411	16
	Total	99.12	22.297	41
Fifth	Female	107.65	22.920	23
	Male	84.25	13.882	24
	Total	95.70	22.078	47
Total	Female	100.65	21.881	123
	Male	89.78	17.949	130
	Total	95.07	20.647	253
Compassionate Care				
First	Female	24.38	5.906	26
	Male	25.41	6.177	46
	Total	25.04	6.059	72
Second	Female	37.88	9.313	24
	Male	30.00	10.013	24
	Total	33.94	10.360	48
Third	Female	37.84	11.346	25
	Male	41.20	8.942	20
	Total	39.33	10.373	45

Continúa...

Course	Gender	Aritmetic Average	Standard deviation	n
Fourth	Female	30.48	15.987	25
	Male	25.63	12.992	16
	Total	28.59	14.913	41
Fifth	Female	34.43	15.730	23
	Male	18.71	9.139	24
	Total	26.40	14.941	47
Total	Female	32.87	13.065	123
	Male	27.48	11.141	130
	Total	30.10	12.388	253
Taking Patient's Perspective				
First	Female	43.88	0.113	26
	Male	41.59	9.342	46
	Total	42.42	9.621	72
Second	Female	57.96	8.483	24
	Male	54.87	7.017	24
	Total	56.42	7.857	48
Third	Female	60.68	8.245	25
	Male	60.30	8.099	20
	Total	60.51	8.089	45
Fourth	Female	62.44	5.903	25
	Male	60.81	5.307	16
	Total	61.80	5.667	41
Fifth	Female	63.39	4.272	23
	Male	57.75	3.287	24
	Total	60.51	4.718	47
Total	Female	57.46	10.545	123
	Male	52.27	10.985	130
	Total	54.79	11.062	253
Ability to Understand Others				
First	Female	9.96	0.340	26
	Male	11.63	3.255	46
	Total	11.03	3.361	72

Continúa...

Course	Gender	Aritmetic Average	Standard deviation	n
Second	Female	12.38	3.597	24
	Male	10.17	2.200	24
	Total	11.27	3.154	48
Third	Female	10.44	3.820	25
	Male	10.35	3.528	20
	Total	10.40	3.652	45
Fourth	Female	9.04	4.477	25
	Male	8.25	4.359	16
	Total	8.73	4.393	41
Fifth	Female	9.83	4.303	23
	Male	7.79	3.765	24
	Total	8.79	4.123	47
Total	Female	10.32	4.015	123
	Male	10.04	3.659	130
	Total	10.17	3.831	253

Table 2 shows the results of the ANOVA. It was observed that in Empathy (E), were highly significant in the three factors; the eta-square value was satisfactory and the power observed was high; the average for women was 101.0, and that for men was 92.89. The “Compassionate Care”(CC) component behaved in the same way as “Empathy.” The women’s average was of 32.87 and of the men of 27.48 (of a maximum of 49 points). In the component of “Taking the Patient’s Perspective”(TPP), it was observed that academic year (AY) and gender factors were highly significant; Eta-square values were low and satisfactory power for both factors; the average for women was 57.46 and for men it was 52.27 (from a maximum of 70 points). Finally, in the component of “Ability to Understand Others”(AUO), it was found only that the factor AY and AY * Gender were significant and with values of eta-square and satisfactory power. The women achieved an average of 10.32 and the men 10.17 (of a maximum of 21 points).

Table 2. Results of the application of the ANOVA, the value of F, eta-square and power of the test used

ANOVA					
General Empathy	F	(p)	Eta Squared	Power	R2 (a)=0.369
Academic Year (AY)	29.12	0.001	0.324	0.999	
Gender(G)	14.51	0.005	0.056	0.967	
	5.19	0.005	0.079	0.977	
Compassionate Care					
Academic Year (AY)	15.88	0.001	0.207	1.0	R2=0.262
Gender(G)	12.14	0.001	0.048	0.0935	
AY*G	6.21	0.001	0.093	0.987	
Taking Patient's Perspective					
Academic Year (AY)	63.09	0.0001	0.509	1.0	R2(a)=0.527
Gender(G)	6.97	0.009	0.028	0.748	
AY*G	0.763	0.549	0.012	0.244	
Ability to Understand Others					
Academic Year (AY)	4.911	0.001	0.075	0.957	R2(a)=0.089
Gender(G)	2.117	0.147	0.009	0.305	
AY*G	2.682	0.032	0.042	0.741	

Table 3 presents the results of the multiple comparisons of the means in the factor AY in “Empathy” and each of the components. In empathy, the formation of three groups (with ascending values) is observed: the first year is the one with the lowest value, then increases in the second, fourth, and fifth year, but the highest value is recorded in the third year. If we consider that the potential growth of first-year students was 61.51 (140-78.49) then the difference between the empathy of the fifth and first-year students (95.7-78.49) was 17.21 points, which means that only was covered 27.98% of the total potential growth of empathy.

Table 3. Result of the multiple comparison of means in empathy in general and in each of its components.

Empathy				
Academic Year	n	Subset (p < 0.05 between subsets)		
		1	2	3
First Year	72	78.49		
Fifth Year	47		95.7	
Fourth Year	41		99.12	
Second Year	48		101.63	101.63
Third Year	45			110.24
Significance within subset		1.00	0.386	0.075
Compassionate Care				
First Year	72	25.04		
Fifth Year	47	26.40		
Fourth Year	41	28.59	28.59	
Second Year	48		33.94	33.94
Third Year	45			39.33
Significance within subset		0.471	0.098	0.093
Taking Patient's Perspective				
First Year	72	42.42		
Second Year	48		56.42	
Fifth Year	47		60.51	60.51
Third Year	45		60.51	60.51
Fourth Year	41			61.80
Significance within subset		1.0	0.064	0.981
Ability to Understand Others				
Fourth Year	41	8.73		
Fifth Year	47	8.79		
Third Year	45	10.4	10.40	
First Year	72		11.03	
Second Year	48		11.27	
Significance within subset		0.165	0.766	

In the “CC” component, found a situation analogous to the behavior of empathy. Three well-defined groups are formed: the first formed by the first, fifth, and fourth years, the next group formed by the second year, and the last by the third year students. If we consider that the growth potential of first year students was 23.96 (49-25.04); then the difference between the empathy of the fifth and first-year students (26.4-25.04) was 1.36 points, that is, 5.67% of the potential growth possible of this component.

Concerning the “TPP,” also three groups are formed (with ascending values). The first-year group has the lowest values, followed by the second, fifth and third, and finally, the fourth year is the highest value. The potential growth of empathy in this component is 27.58 points; then, the difference between the first and fifth year was 18.09; consequently, the growth potential in this component was 65.58%.

We observed in the component “AUO” that data produced two groups: the first formed by the fourth, fifth, and third-year students and, secondly, by the first and second years students. The potential growth of this component of empathy was -22.46%. By comparing the real growth between the fifth and first year to the maximum possible growth and the first year, there is a decrease in this component.

Finally, Figure 1 (1a through 1d) shows the means at AY and Gender levels. Women were found to behave differently between the second, fourth and fifth years; these values of empathy in general are higher in the female gender, but in the first year and third tend to equalize (1a). Regarding the component of “CC” (1b), we found that the differences found are similar to the behavior of “Empathy.” However, in the two remaining components of the behavior of gender in different years does not follow the patterns noted, but it is always in favor of women. In the “TPP,” gender differences are deepened in the fifth year and are entirely upward in females and upward in males up to the fourth year (1c). Finally, in the component the “AUO,” the feminine gender surpasses the masculine in almost every academic year (with the exception of the second year that is greater in the women) and undergoes a process of decrement in the values of this component.

DISCUSSION

We observed that empathy levels are relatively low (regarding those found in other publications in nursing students) both in empathy in “general” and each of its components. The levels of empathy in the components associated with cognitive processes are not high. (5,9-16)

Levels of Empathy: Behavior in academic years of empathy (in males) are consistent with the “empathic erosion” model (5,11); however, this is not true in the case of women. Other studies have reported the inconsistency of this model (9,10,12-14,16-18), then we can consider that the presence of “erosion” would be a particular case of different models of empathy behavior. (10) This suggests that the application of any intervention should be based on a strict diagnosis of the levels of this attribute and its corresponding distribution. Differences found between genders favor the feminine in the last few years preferably (Figure 1a), in statistical terms in “Empathy,” and all its components, except for the “Ability to Understand Others.” In this sense, we can show that there is a variability of the empathic response in relation to gender. Therefore, it is not possible to categorically affirm that women are more empathetic than men (19-24). This variability must be checked as soon as possible because it has a direct effect on the curricular conformation. The estimated results of T2 and the high value of R2 contribute to verify the existence of variability (10,12-14,16). This situation generates a dilemma that has its effect in the fact that most of the studies do not take into account this last statistician (R^2) and, therefore, is not considered the obligatory necessity to include other factors that help to explain the behavior of empathy; which, in addition, could have a contributory alternative character (25, 26). On the other hand, the low values of empathy observed in the present study allow us to affirm that there is potentially a significant margin for “empathic growth.”

Decreasing levels of empathy could be associated with the decrease of all its components, but in the present case, there is an exception: the “TPP” component increases (Figure 1c). On the other hand, the “AUO” component (Figure 1d) declines. Both belong to the cognitive sphere. Additionally, the “CC” component (Figure 1a) decreases. Then it is possible to infer that empathy is the result of a complex interaction between these three components and not only a number.

On the other hand, empathic erosion manifests itself with a steady decline between student courses in both genders, but is much more pronounced in the male gender. This generates contradictions with some studies that suggest that cognitive components are more developed in the masculine gender (27, 28), and this postulate agrees with our results in the empathy in general in the components with “CC” and “TPP,” but not in “AUO.” This finding cannot be explained in this paper. On the other hand, all total possible growth potentials are very low, which would indicate that, in general, there is little development of these components.

A first generalization shows the following possible aspects: a) Although the analysis of the components separately constitutes only an abstraction, since all three are intimately linked and interacting (19,29) one could suppose that the “greater” development observed in “Taking the Patient’s Perspective” contradicts the development of the rest of the components; b) the explanation of these results could lead to an explanation from neuroscience; however we believe that these results may be determined by factors external to the ontogenetic development of empathy rather than to specific problems of alterations in the neurological structures associated with empathy and c) the gap between the degree of potential development (observed in “Empathy” and in all its components) and its corresponding actual development, could be modified and reduced with a profound revision in the curricula of the nursing career and the active teaching-learning processes associated with the formation of empathy around the introduction of elements that allow the best apprehension of empathy and a balanced development of its components.

As a result of the findings, recognizing the values that a particular university formation promotes, as well as the weaknesses in students and graduates, is the first step in establishing strategies to ensure the most coherent training possible. From the point of view of curricular design and the adoption of academic experiences that can improve the empathic values during training in the health sciences, the literature on the subject has described several proposals: stress reduction, promotion of self-regulation, and reflection (30). Chen, Kumar, and Haramati (31) describe one of the reasons why students show detriment in empathy (or erosion in some of the attributes that compose it) is the academic load that, in turn, can trigger stress and depression. However, it is theoretically possible to find students without stress and depression with low levels of empathy and vice versa. We can infer that stress and depression are factors that contribute to diminishing empathy and these factors may only be elements that partially affect the empathic attitude.

Some consider empathy as a communicative competence. Srivastava and Das (32) argue that reinforcing the act of listening to patients during training in the medical sciences can increase empathy. However, it has not yet been studied which component of empathy is the most stimulated by the acquisition of this competence.

Practical activities, especially those in which the student shares with patients in clinical settings, have been shown to improve students’ perception of their empathic ability. An educational process linked to people in their environment seems to be an appropriate tool to improve empathy

(33). It is possible to make adjustments or updates in the academic curriculum that can effectively alter the indicators of empathy, reducing erosion in general form or its individual components. Some scholars have already observed this and documented it. We can see it in the curricular change of the dental school of the Latin American University of Science and Technology in Costa Rica. There a change in extramural experiences and an earlier insertion of clinical practices let identify a positive shift in empathy levels, negating the process of the classical erosion model of empathy. (34) On the other hand, it remains to be determined whether the use of clinical simulators or clinical simulation environments and virtual education contributes to empathic capacities and, if they do, what is the real influence on these capacities. (35,36)

However, we have not confirmed whether this positive change in empathy levels has a permanent character in time (and even more, if these increases can positively self-feedback or require a constant pedagogical “reinforcement”). We also can’t confirm if this increase in empathy is due to the development of cognitive or emotional components or both. Authors argue that the component of “compassionate care” is less susceptible to development in the stages of young adults (29). The last, since it is closely related to other factors such as religion, moral principles, and worldview that each person has and the society in which they develop.

CONCLUSIONS

The behavior of the levels of empathy observed in this study agrees with the concept of empathic erosion, especially when analyzing empathic behavior in the male gender. This is no further evidence that empathic erosion is a general case, but that this process is one more case of several types of distributions. The empathy levels in the students examined are relatively low. Results such as these strongly suggest to the authorities of any university the need to take measures, both in the curriculum as in teaching-learning methodologies, which must be implemented in the teaching processes in nursing.

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