ARTÍCULO ORIGINAL/*ORIGINAL ARTICLE*
http://dx.doi.org/10.14482/sun.34.3.615.82

Diagnosis of the empathic situation in students of physioteraphy: cross-sectional study

Diagnóstico de la situación empática en estudiantes de fisioterapia (colombia): estudio transversal

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Abstract

Objective: *Diagnosis of the empathic situation in the physiotherapy students of the Simón Bolívar University. Barranquilla. Colombia.*
Material and methods: *Transversal study. Empathy levels were measured in 430 students along with the reliability of the data. The mean and deviation were estimated in two factors: Gender and Courses. The data were processed using a bifactorial variance analysis (model III), calculated the effect size, the power of the test and the Possible Growth Potential of the empathy and of each of its components considering the gender. The level of significance was $\alpha \leq 0.05$ and $\beta \geq 0.80$. The SPSS 22.0 program was used.*
Results: *There are differences between courses but not between gender. The differences between courses were observed in empathy in general and two of its components and all possible growth potential were positive.*
Conclusions: *The empathic decline model is not met, there are no differences between the genders and the factors studied explain the empathic behavior observed. The characteristics indicated constitute the diagnosis of the empathic situation and constitute a guide to construct an intervention.*

Key words: Empathy, Components of Empathy, Medical Students, Empathic Formation.

Fecha de recepción: 19 de marzo de 2017
Fecha de aceptación: 27 de octubre de 2017

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Salud Uninorte
Vol. 34, N° 3, 2018
ISSN 0120-5552
eISSN 2011-7531

Resumen

Objetivo: *Diagnóstico de la situación empática en los estudiantes de fisioterapia de la Universidad Simón Bolívar. Barranquilla. Colombia.*
Material y Métodos: *Estudio transversal. Se midieron los niveles de empatía a 430 estudiantes y la confiabilidad de los datos. Fueron estimadas la media y desviación en dos factores: Género y Cursos. Los datos fueron procesados mediante un análisis de varianza bifactorial (modelo III), calculado el tamaño del efecto, la potencia de la prueba y el Potencial de Crecimiento Posible de la empatía y de cada uno de sus componentes considerando el género. El nivel de significación fue de $\alpha \leq 0,05$ y $\beta \geq 0,80$. Se empleó el programa SPSS 22.0.*
Resultados: *Existen diferencias entre los cursos pero no en el género. Las diferencias entre cursos se observaron en la empatía en general y dos de sus componentes y todos los Potenciales de Crecimiento Posible fueron positivos.*
Conclusiones: *El modelo de declinación empática no se cumple, no hay diferencias entre los géneros y los factores estudiados explican todo el comportamiento empático observado. Las características señaladas constituyen el diagnóstico de la situación empática y constituyen una guía para construir una intervención.*

Palabras claves: Empatía, Componentes de la Empatía, Estudiantes de Medicina, Formación Empática.

INTRODUCTION

The concept of empathy is related to the ability to understand the experiences and feelings of another person and the ability to communicate this understanding to others (1,2). Hojat et al. Presents that important attributes have been associated with empathy (3). Sole et al. emphasize that the employers of physiotherapists are not only guided by clinical competences but also assign great importance to non-clinical skills, by identifying empathy as one of the most important when hiring a professional (4). Other authors (5,6) have pointed out the need to study empathy (EG) and introduce it in the formation of the full spectrum of professions associated with patient care. One of the instruments most used to measure empathy is the Medical Empathy Scale (EEMJ), which is consistent with the multidimensional structure that this construct has and defines it based on three factors or components: (a) Care with Compassion (CC), (b) Perspective Taking of the Patient and (c) Ability to Understand Others (AUA) (1, 2, 7). In Colombia, Latin America and other continents, the research of empathy in physiotherapy students is limited. There are other studies, but they are referred to the students of dentistry and medicine (2, 5, 8-14). Since empathy is associated with a set of attributes that favor the relationship between patient and health professional (15,16), it is essential to study empathy in physiotherapy students (2, 6, 8-11). The objective of the present work is to diagnose the empathic situation in Physiotherapy students (Kinesiology) of Simón Bolívar University, Barranquilla (Colombia).

MATERIAL AND METHODS

This work is of an exploratory and cross-sectional type and was carried out on the basis of Helsinski standards. The students from the first to fourth academic year of the Physiotherapy career of the Simón Bolívar University, Barranquilla (Colombia) (N = 430, n = 327, 76.05% of the population) were analyzed. Data collection was performed in 2016. The Jefferson Medical Empathy Scale (EEMJ-S) validated and adapted in Chile was applied (5). Before being applied in Colombia,

it was submitted to the judges (three relevant professionals of the Physiotherapy profession) in order to verify the cultural and content validity (8). The application was confidential (neutral operator and previous signature of informed consent) and the understanding of the adapted scale was carried out through a pilot test.

Statistic analysis.

The data was subjected to normality tests (Kolmogorov-Smirnov) and homoscedasticity tests (Levene). Internal reliability: general Cronbach's alpha and the values of this statistic to the extent that each of the elements (questions), intraclass correlation coefficient, Hotelling's T2 and Tukey's additivity test were eliminated. Mean and standard deviation were estimated. A two-factor analysis of variance (ANOVA) (model III) was applied to find differences of the means between the academic years, between the genders and their interaction. The data were described by simple box and arithmetic charts and processed by SPSS 22.0. Total potential growth estimated (PTCP): quotient between two magnitudes: a) the effective difference between the observed scores of fifth-year students minus the score of first-year students (D1) with respect to b) the possible difference between the highest Empathy value that the instrument (140) allows with respect to the effective value of the empathy of the first year students (D2): PTCP = D1 / D2. The PTCP is an indicator that shows the degree of progress observed of the levels of empathy that are possible to observe in cross-sectional and longitudinal studies. The level of significance used was $\alpha \leq 0.05$ and $\beta < 0.20$ in all cases.

RESULTS

The following stratification was found by academic year: first = 95; second = 107; third = 71 and fourth = 54. Gender: female = 275; male = 52 Kolmogorov-Smirnov and Levene were not significant ($p > 0.05$) Cronbach's alpha: without categorize = 0.781 and categorized = 0.786, there is internal reliability The value of the total Cronbach's alpha if an element is eliminated (question), fluctuated between [0.760, 0.789]: test showed reliability, correlation coefficient: 0.781 ($F = 4.568$, $p = 0.001$), confirms reliability, Hotelling's T2 test ($F = 41.31$; $p = 0.001$) and non-additivity of Tukey ($F = 3.02$, $p = 0.278$) imply that the means of the questions do not contribute equally to the global average (5,12) and, in the second case, there is no additive character in the data and the methods used were correct. The estimate of the means, the standard error and the sample size are shown in Table 1.

Table 1. Results of the estimation of the mean, standard error and Confidence Interval of the Empathy in General and of each component in the studied factors.

Academic Year	Gender (n)	Average	Typical error	Confidence interval (95%)	
				Lower limit	Upper limit
Empathy in General					
First	Female (77)	103.870	1.710	100.506	107.234
	Male (18)	101.056	3.537	94.097	108.014
Second	Female (90)	97.900	1.582	94.788	101.012
	Male (17)	99.176	3.639	92.016	106.337
Third	Female (62)	102.403	1.906	98.654	106.153
	Male (9)	112.556	5.002	102.715	122.396
Fourth	Female (46)	107.783	2.212	103.430	112.135
	Male (8)	105.875	5.305	95.437	116.313
Conpassionate Care					
First	Female	35.740	1.036	33.702	37.779
	Male	34.667	2.143	30.451	38.883
Second	Female	31.411	0.958	29.525	33.297
	Male	30.529	2.205	26.191	34.868
Third	Female	33.661	1.155	31.390	35.933
	Male	39.667	3.031	33.704	45.629
Fourth	Female	37.130	1.340	34.493	39.768
	Male	33.750	3.214	27.426	40.074
Taking Patient's Perspective					
First	Female	56.403	0.993	54.450	58.356
	Male	54.889	2.053	50.850	58.928
Second	Female	54.111	0.918	52.305	55.918
	Male	57.059	2.113	52.902	61.215
Third	Female	57.742	1.106	55.566	59.918
	Male	59.667	2.903	53.954	65.379
Fourth	Female	59.065	1.284	56.538	61.592
	Male	59.500	3.080	53.441	65.559
Ability to Understand Another					
First	Female	11.727	0.427	10.888	12.567
	Male	11.500	0.882	9.764	13.236
Second	Female	12.378	0.395	11.601	13.154
	Male	11.588	0.908	9.802	13.374
Third	Female	11.000	0.475	10.065	11.935
	Male	13.222	1.248	10.767	15.677
Fourth	Female	11.587	0.552	10.501	12.673
	Male	12.625	1.323	10.021	15.229

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

Empathy in General	**F**	**(p)**	**Eta-squared**	**Power**
Academic Year (AY)	3.22	0.023	0.029	0.739
Gender (G)	0.484	0.487	0.002	0.107
AY*G	1.376	0.25	0.013	0.365
Compassionate Care				
Academic Year (AY)	3.577	0.014	0.033	0.788
Gender (G)	0.013	0.909	0.005	0.051
AY*G	1.568	0.197	0.015	0.412
Taking Patient's Perspective				
Academic Year (AY)	1.949	0.122	0.018	0.501
Gender (G)	0.460	0.498	0.001	0.104
AY*G	0.679	0.565	0.006	0.193
Ability to Understand Another				
Academic Year (AY)	0.184	0.907	0.002	0.084
Gender (G)	0.871	0.351	0.003	0.154
AY*G	1.274	0.283	0.012	0.340

(p) = probability of type I error
* Symbol of interaction between factors AY and G

Table 2 shows the results of the ANOVA applied to the EG and its components. It was observed that EG, the Academic Year (AA) factor was significant (p = 0.023); the eta-squared value (0.029) and the observed power (0.739) are satisfactory; however, in the Gender factor (G), the eta-squared was 0.002 and the power of 0.107 and they were not satisfactory: the average of the women was 102.99 and the average of the men was 104.66. In the CC component, significant differences were found only in the AA factor (p = 0.014); the eta-squared value (0.033) and the observed power (0.788) were satisfactory. The average of the women was 34.49 and of the men 34.65 (of a maximum of 49 points). In the TPP component it was observed that the ANOVA did not find significant differences in any of the factors or in the interaction; the values of empathy in women were 56.83 and of men it was 57.78 (out of a maximum of 70 points).

Finally, in the AUA component, the same situation was found as in the previously analyzed component. Women achieved a value of 11.67 and men 12.23 (out of a maximum of 21 points).

Table 3 shows the results of the multiple comparison of the average in the AA factor in the GA and in each of the components. In the EG the essential differences are observed between the second (minor average) and the fourth academic year (higher average) (p <0.05) and it can be said that EG increased in the last three years of the career. However, the growth potential of the students was only 11.46% of the total potential.

Table 3. Results of the comparison between the means of the academic years in the empathy in general and in the components

Component, Academic Year and statistical significance within the groups	n	Subsets (statistical differences between subsets)	
		1	2
Empathy in General			
Second year	107	98.10	
Firth Year	95	103.34	103.34
Third Year	71	103.69	103.69
Fourth Year	54		107.50
Significace		0.100	0.319
Compassionate Care			
Second year	107	31.27	
Third Year	71	34.42	34.42
Firth Year	95		35.54
Fourth Year	54		36.63
Significace		0.143	0.439
Taking Patient's Perspective			
Second year	107	54.58	
Firth Year	95	56.12	56.12
Third Year	71	57.99	57.99
Fourth Year	54		59.13
Significance		0.076	0.144

Finally, in the AUA component, the same situation was found as in the previously analyzed component. Women achieved a value of 11.67 and men 12.23 (out of a maximum of 21 points).

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In CC it was found that the second year (lower value of the average) differed statistically ($p < 0.05$) from the average of the first and fourth years. However, the potential for student growth was only 8.09% of the total potential growth of this component.

In relation to the TPP component, it was observed that the significant difference ($p < 0.05$) existing between the second [54,58] and the fourth year [59,13]; while the other academic years do not differ from each other ($p > 0.05$). In the ANOVA these levels of the analyzed factors had not found differences between the years; however, the test of Tukey is more powerful than ANOVA. The potential growth of TPP was 21.68%. In AUA, the only difference was between the second year with respect to the fourth and fifth years and there are significant differences between them ($p < 0.05$). The potential growth was 0.64%

Finally, Figures 1a through 1b show the behavior of the averages by the levels of factors AA and G. It was found that women behave differently than men in general empathy and in each one of its components, but without statistical differences between them.

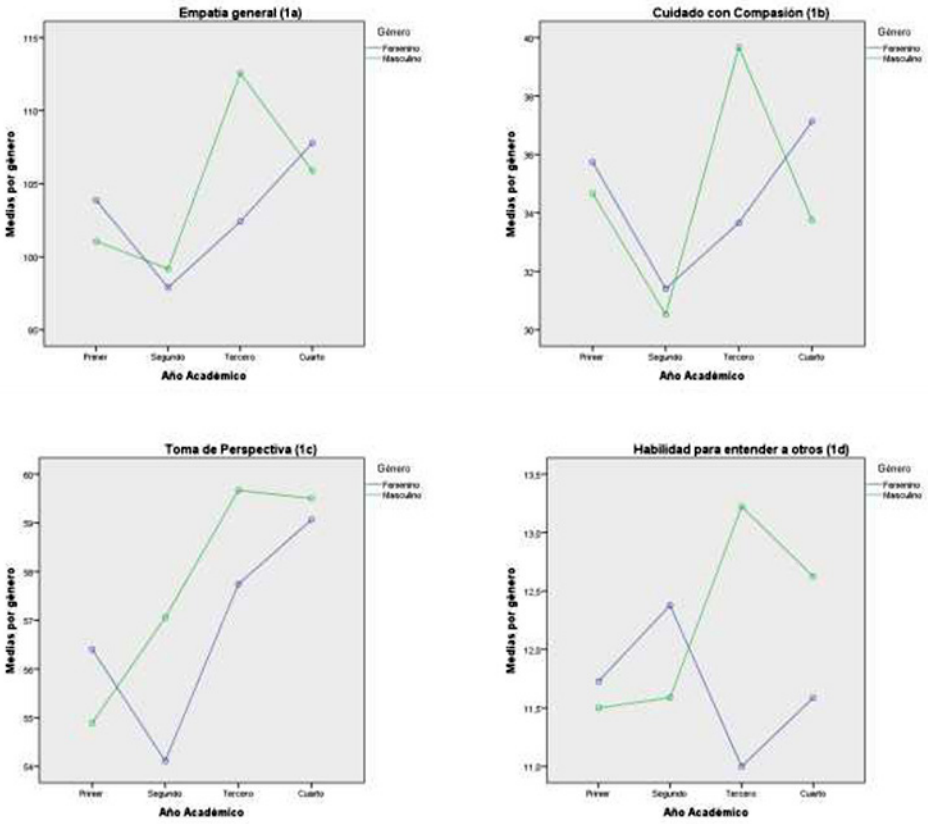

Figura 1.Resultados de la distribución de los niveles generales de empatía y en cada uno de los componentes en los factores año académico y género

DISCUSSION

The EG values observed are relatively high in relation to those found in other studies (7, 9-12, 15-22); however, the comparison of the levels of EG is insufficient to describe an empathic situation if the one of its components is not included in them (7,8,11,12,14,15,19,23,24). The values of R2 found scarcely explain the variance of the EG and its components. There are, at least, three theoretical reasons that could explain these values: a) the population studied constitute subjects with normal ranges for E (15); b) the instrument used is precisely for normal subjects (10) and c) the EG is a multidimensional concept and its components can be influenced by several other factors of the commonly studied (7, 9, 12, 22-28). It is assumed that women have more empathy than men and neurobiological bases support the idea (28-31). However, some authors (7,9,11,14) have found, in different populations of students of medicine and dentistry, that levels of empathy are manifested in the three possible ways: F = M; F> M and F <M. Men and women use all the components of the EG in an integrated manner; nevertheless, the neurological processes are different and the form of response is different between the genders.

The fact that the means of the courses are distributed differently in the EG, CC and TPP (characterized because the value of the fourth

course is greater than the rest of the years) could suggest that the distribution of the EG depends on the behavior of CC and TPP, on the other hand, AUA behave in a "flat" manner. This implies that before applying any pedagogical strategy aimed at elevating empathy, one must consider the causes by which the described empathic situation occurs.

The results of PTCP show that there is still a lot of "space" to grow. The observed PTCP values of the CC component and TPP are the ones that better explain the growth of the EG. These findings, added to the fact that the AUA component behaved flat and almost without growth of the PTCP, imply that any possible intervention must consider the magnitude of growth observed and in which components it occurs.

Additionally, the model of empathic decline, conditioned by the phenomenon of empathic erosion, has been explained in other works, including its impact on patients. (31-34) This model, which postulates empathic decline from the beginning of the clinical cycle of the students, has been questioned by several authors who have reported the existence of empirical evidence that shows that this phenomenon is not universal (7, 9, 11, 16, 19, 22-25, 31-34). Several different ways of distributing the means (demonstrated by adjusted regression equations) have been observed through the courses (16,24), which allows us to infer that empathic erosion can be a particular case. The fact that the PTCP has a positive sign in all cases is an indicator that the process of empathic erosion proposed by Hojat et al. (17), although it exists objectively, is a particular case and raises the working hypothesis that the arguments that explain and justify this model (17) are admissible theoretically and empirically, but for their own explanation, without this discarding the possibility that there are factors that intercept each other. In this way, other distributions require a different approach to explain them and the intervention must be planned differently (16, 35-37). The results of this research show the need to plan didactic actions that respond to the real nature of the problem. The distribution between the genders is different in EG, as well as in its components; however, there are not enough differences (statistics) to delineate a specific behavior of the gender in relation to GE and its components.

As a consequence of the above, an intervention that does not recognize the complexity of the teaching-learning problem of empathy and that is constituted by small groups, limited in time and without temporary monitoring (38-40) is not synonymous with the guarantee, even if these levels achieve growth. What is involved is not that only the levels of empathy have grown, but that the intervention must have as an objective that empathy becomes part of the natural way of acting of the physiotherapist with his patients (16,36).

CONCLUSIONS

1. The observed results of the PTCP show that the process of empathic erosion does not occur, that there are no (statistical) differences between the gender and that the factors AA and G poorly explain the variation of the GE and its components.

2. This diagnosis of the empathic situation of the students examined shows that an intervention aimed at achieving an increase in the levels of empathy has to consider the possible causes that originate the results described above, considering also other factors that influence the empathic formation of the students.

Intereses Conflict: none

Fundind: own resources

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