Warmth in the Doctor-Patient Relationship: Analysis of the Effect of Empathy as a Mediating Variable in the Patient's Intention to Adhere to Treatment*

Ana María Erazo-Coronado[1]
Jesús Antonio Arroyave Cabrera[2]
Miguel Efrén Garcés Prettel[3]

Recibido: 24/06/2023
Aceptado por pares: 18/10/2023
Enviado a pares: 16/08/2023
Aprobado: 14/11/2023

DOI: 10.5294/pacla.2024.27.3.6

Para citar este artículo / to reference this article / para citar este artigo
Erazo-Coronado, A. M., Arroyave, J. A. y Garcés, M. E. (2024). Calidez en la relación médico-paciente: análisis del efecto de la empatía como variable mediadora en la intención de adherencia al tratamiento del paciente. *Palabra Clave*, *27*(3), e2736. https://doi.org/10.5294/pacla.2024.27.3.6

Abstract

The doctor-patient relationship has been identified over time as a key to the success of medical treatment. It has been explored in European, North American, and Latin American contexts with particular socioeconomic, educational, and cultural conditions. This research offers a new perspective on the matter. A model has been developed for the variables influencing the intention to adhere to treatment and the direct and indirect effects of such a relationship through an experimental study. The method involved a random design of two groups of university students, with a sample of 440 participants: 80 to validate the manipulation of the independent variables

* Article derived from the doctoral thesis "La calidez y el intercambio de información en la relación médico-paciente: un análisis narrativo desde el efecto de la empatía y la comunicación verbal y no verbal como variables mediadoras y moderadoras en la intención de adherencia al tratamiento del paciente" presented at the Universidad del Norte. Available at: https://primo-tc-na01.hosted.exlibrisgroup.com/permalink/f/1nls3ib/uninorte_aleph000133199

1 ✉ https://orcid.org/0000-0002-6696-4107. Universidad Metropolitana, Colombia. aerazo@unimetro.edu.co
2 https://orcid.org/0000-0001-5894-6059. Universidad del Norte, Colombia. jarroyav@uninorte.edu.co
3 https://orcid.org/0000-0001-6391-3147. Universidad Tecnológica de Bolívar, Colombia. mgarces@utb.edu.co

in the created narratives, 150 for the pilot test, and 210 for the experimental situation. The emerging model revealed a directly proportional relationship between physician warmth and intention to adhere to treatment. The results also show the mediating role of empathy as a predictor of treatment adherence behavior and the concentration of greatest weight on the cognitive component of empathy. The significant predictors of the model confirm that the doctor-patient relationship is a clear example of heterogeneity, in which many patients and physicians with diverse characteristics come together and make each interaction unique, which appears to be more complex and multicausal than studied so far.

Keywords

Adherence; warmth; communication; empathy; doctor-patient relationship.

Calidez en la relación médico-paciente: análisis del efecto de la empatía como variable mediadora en la intención de adherencia al tratamiento del paciente*

Resumen

La relación médico-paciente ha sido identificada a lo largo del tiempo como una de las claves del éxito del tratamiento médico y ha sido estudiada en contextos europeos, norteamericanos y latinoamericanos con condiciones socioeconómicas, educativas y culturales particulares. Esta investigación ofrece una nueva perspectiva acerca del asunto. En ella se ha elaborado un modelo para las variables que inciden en la intención de adherencia al tratamiento y los efectos directos e indirectos que surgen en tal relación a partir de un estudio experimental. La metodología incluyó un diseño aleatorio de dos grupos, con una muestra de 440 participantes, de los cuales 80 correspondieron a la validación de la manipulación de las variables independientes en las narraciones creadas, 150 a la prueba piloto y 210 a la situación experimental, de una población de estudiantes universitarios. El modelo emergente reveló la relación directamente proporcional entre la calidez del médico y la intención de adherencia al tratamiento. Los resultados evidencian, además, el papel mediador de la empatía como predictora de la conducta de adherencia al tratamiento y la concentración del mayor peso en el componente cognitivo de la empatía, asociado a estos resultados. Los predictores significativos del modelo confirman que la relación médico-paciente es un claro ejemplo de heterogeneidad, en la que confluyen multitud de pacientes y médicos con características diversas, lo que hace única cada interacción, que se muestra más compleja y multicausal que lo estudiado hasta el momento.

Palabras clave

Adherencia; calidez; comunicación; empatía; relación médico-paciente.

* Artículo derivado de la tesis de doctorado "La calidez y el intercambio de información en la relación médico-paciente: un análisis narrativo desde el efecto de la empatía y la comunicación verbal y no verbal como variables mediadoras y moderadoras en la intención de adherencia al tratamiento del paciente" presentada en la Universidad del Norte. Disponible en: https://primo-tc-na01.hosted.exlibrisgroup.com/permalink/f/1nls3ib/uninorte_aleph000133199

Acolhimento na relação médico-paciente: análise do efeito da empatia como variável mediadora na intenção do paciente de aderir ao tratamento*

Resumo

A relação médico-paciente tem sido identificada ao longo do tempo como uma das chaves para o sucesso do tratamento médico e tem sido estudada em contextos europeus, norte-americanos e latino-americanos com condições socioeconômicas, educacionais e culturais específicas. Esta pesquisa oferece uma nova perspectiva sobre o assunto. Nela, foi desenvolvido um modelo para as variáveis que afetam a intenção de aderir ao tratamento e os efeitos diretos e indiretos que surgem nessa relação com base em um estudo experimental. A metodologia incluiu um projeto aleatório de dois grupos, com uma amostra de 440 participantes, dos quais 80 eram para a validação da manipulação das variáveis independentes nas narrativas criadas, 150 para o teste-piloto e 210 para a situação experimental, de uma população de estudantes universitários. O modelo emergente revelou uma relação diretamente proporcional entre o acolhimento do médico e a intenção do paciente de aderir ao tratamento. Os resultados também mostram a função mediadora da empatia como preditora do comportamento de adesão ao tratamento e a concentração de maior peso no componente cognitivo da empatia associada a esses resultados. Os preditores significativos do modelo confirmam que a relação médico-paciente é um exemplo claro de heterogeneidade, na qual converge uma infinidade de pacientes e médicos com características diferentes, o que torna cada interação única, e que se mostra mais complexa e multicausal do que o estudado até o momento.

Palavras-chave

Adesão; acolhimento; comunicação; empatia; relação médico-paciente.

* Artigo derivado da tese de doutorado "La calidez y el intercambio de información en la relación médico-paciente: un análisis narrativo desde el efecto de la empatía y la comunicación verbal y no verbal como variables mediadoras y moderadoras en la intención de adherencia al tratamiento del paciente" (O acolhimento e o intercâmbio de informações na relação médico-paciente: uma análise narrativa a partir do efeito da empatia e da comunicação verbal e não verbal como variáveis mediadoras e moderadoras na intenção do paciente de aderir ao tratamento), defendida na Universidad del Norte. Disponível em: https://primo-tc-na01.hosted.exlibrisgroup.com/permalink/f/1nls3ib/uninorte_aleph000133199

Introduction

A great deal of research on interpersonal communication in the health context has confirmed that communication in the doctor-patient relationship is essential with regard to favorable health outcomes (Arroyave and Erazo, 2017; Petracci et al., 2017; Domingo, 2010) and can promote the involvement of the patient with his or her disease by enabling the patient to take control of it (Anderson and Funnell, 2010). This claim holds true with respect to the doctor-patient relationship and adherence to treatment (Erazo and Arroyave, 2017; Herrera et al., 2010) as well as with regard to effective and assertive communication with patients (Vega, 2020).

Various aspects of communication in the doctor-patient relationship, such as sympathy, the warmth of the doctor (Donoso, 2014), empathy (Marroquín et al., 2020), adherence to treatment (Domingo, 2010) and health recovery (Guerrero-Vaca et al., 2020), among other topics, have been explored; such research has revealed that training in communication skills can improve the doctor-patient relationship (Urtasun, 2021). This claim has also been reflected in the medical literature in light of the possibility of modifying this interaction through interventions (Sánchez-Angarita, 2017).

Patients' lack of adherence to treatment has been defined as pharmacotherapeutic noncompliance, which has been linked with patients' reluctance to implement life changes that could promote healthy lifestyles. This issue has come to represent a problem in the field of health care, as such reluctance is associated with the failure of medical treatments; thus, it is necessary to understand how communication occurs within doctor-patient relationship as well as the underlying mechanisms (Petracci and Waisbord, 2011). Accordingly, this research aims to explain the causal relationship between the warmth of the doctor and patients' treatment adherence intentions as well as the mediating effect of empathy within the doctor–patient relationship.

Previous studies have recognized that a good doctor-patient relationship tends to improve patients' adherence to treatment (Erazo and Arroyave, 2017; Peralta and Carbajal, 2008; Chamorro, 2008). In particular, the

quality and warmth with which patients are treated have been highlighted as essential factors in efforts to exert a positive influence on patients' comprehensive management. Warmth is related to cordiality and human affection and is viewed as the basis of the relationship between a health professional and the patient; accordingly, this attitude encourages more humane health care practices (Ordóñez, 2014). Warmth pertains to the affective and attentive proximity between the doctor and the patient (Zelada, 2018). When doctors express a warm attitude toward patients, the confidence of the latter tends to improve (Lu et al., 2016). According to Leal (2004), warmth should not be viewed as an addition to the medical act but rather as an inherent component thereof. The notion of adherence has been defined as a complex phenomenon that is essentially related to the actors involved in this process. For this reason, the expression of warmth in the process of caring and providing dignified and humanized treatment, alongside the establishment of good relationships between health professionals and patients, can help strengthen patients' adherence to treatment, thus ensuring that they comply with their treatment and exhibit regularity in terms of control (Muñoz et al., 2013).

When the patient perceives the doctor–patient relationship as centered on himself or herself, that attention is given to him or her and that shared decisions are made in an environment that is characterized by human warmth, the patient's likelihood of compliance with prescriptions tends to increase (Vega, 2020). The quality of the medical interview and of the corresponding communication promote patients' adherence to treatment as well as their. In this context, certain qualities of the interviewer are notable, including warmth, respect and cordiality, which are defined as surface qualities, as well as empathy, emotional continence and assertiveness, which are defined as deep qualities (De Marco et al., 2010).

Although previous studies have reported that the warmth expressed by doctors is an important component of consultations with respect to the goal of improving patients' adherence to treatment, insufficient experimental studies have been conducted with regard to the direct relationship between warmth and adherence to treatment.

Empathy includes two fundamental elements. On the one hand, it includes a cognitive element, which explains the manner in which the feelings of another person can be understood by adopting their perspective and predicting their behavior. On the other hand, empathy also includes an affective element that is related to the manner in which the observer responds to the target's emotional state (Maldonado and Barajas, 2018); however, this aspect does not always imply that the observer shares that person's emotional state. Several factors play important roles in the process of determining the level of patients' treatment adherence. These influences include socioeconomic factors, those that are associated with the treatment, those that pertain to the patient, those that are related to the disease and, finally, those that concern the health care system or the body; this variety of influences thus takes into account the type, duration and complexity of the indicated treatment, the supervision and support provided by the health team that bears responsibility for caring for the patient, among empathy among these various parties (Ortega et al., 2018).

Empathy in the field of health care can be understood as a cognitive and behavioral factor that offers health care professionals the ability to understand how the patient's experiences and feelings both influence and are influenced by the disease and its symptoms as well as to determine the appropriate way in which to communicate this state to the patient (Dávila et al., 2017). The doctor must take the notion of an empathic relationship, which includes active listening, among other skills, into account to develop strategies that can ensure that the implementation of the treatments is flexible and, most importantly, personalized, which can increase the likelihood of its success (Del Duca et al., 2013). Previous studies have confirmed that empathy expressed by doctors is one of the factors pertaining to professionals that determines whether patients are adherent to treatment (Derksen et al., 2013; Santander-Díaz, 2021).

One characteristic that identifies empathy as a relevant factor in the doctor-patient relational process is the ability of the doctor to transmit this empathic understanding to his patient in such a way that that the patient can perceive it. Hence, a professional's level of empathy, as perceived

by the patient or by an observer, is the best predictor of therapeutic outcomes (Elliot et al., 2011).

Method

This experimental research explains both the causal relationship between warmth and patients' treatment adherence intentions as well as the mediating effect of empathy within the doctor–patient relationship. This research is part of a doctoral thesis in the field of communication that was funded by Colciencias and produced before the COVID-19 pandemic.

The participants in this research were university students (n = 440) who were between the ages of 18 and 24 years and who were involved in programs other than the health sciences program at three main universities in the Colombian Caribbean Region. Among these students, 230 participated in the validation/manipulation of the independent variable and in the pilot test, while 210 participated in the experimental study. Participation in this research was voluntary, and each participant provided informed consent; furthermore, the participants were randomly assigned to one of the two proposed experimental conditions, which are explained below.

Regarding the *design and procedure* of this research, the process of developing and validating the instruments featured two steps. In the first step, two narratives were developed on the basis of dialog between a doctor (a specialist) and a patient (with a chronic disease) with the goal of reproducing the experimental context of a specialized medical consultation rooted in narrative persuasion; this approach aimed to ensure that participants could perceive the narrative and identify with the relevant character (Igartua, 2010). In Narration 1, the independent variable of warmth was manipulated to ensure "high warmth", while in Narration 2, this variable was manipulated to ensure "low warmth". Although the protagonists in the narrations were a doctor (man) and a patient (woman), to standardize the experimental conditions, the gender variable was not considered in this study.

Table 1. Narrations including the manipulation of the independent variable

Narration 1. High warmth	Narration 2. Low warmth
María: Good morning, Doctor Felipe, I'm finally here!	Maria: Good morning, doctor, I'm finally here!
Dr. Felipe: Good morning, Maria. (The doctor stands up to greet the patient, hugs her and asks the following question): And why do you say that?	Doctor: Good morning. (The doctor does not lift his head from the computer, and he asks the following question): And why do you say that?
María: I had a hard time getting an appointment. It was not easy; I had to endure the discomfort of high blood pressure for two weeks.	María: I had a hard time getting an appointment. It was not easy; I had to endure the discomfort of high blood pressure for two weeks.
Dr. Felipe: And why did not you go to another internist this time instead of waiting so long?	Doctor: Ah, already ...! And why did you not go to another internist this time?
María: I have tried other internists, but they make me nervous. When you are a certain age, it does not feel pleasant to be scolded by the doctor.	María: I have tried other internists, but they make me nervous. When you are a certain age, it does not feel pleasant to be scolded by the doctor.
Dr. Felipe: And with me, what is the difference?	Doctor: And with me, what is the difference?
María: It has never been like this with you. That is why there was no agenda with you, and I had to make the appointment weeks in advance, but it is worth it.	María: Well… Actually, there was no agenda with anyone else, and I had to make appointments weeks in advance.
Dr. Felipe: Excuse me, Maria; it took me a while to call you.	Doctor: I'm late, so let's start ...
Maria: Don't worry, doctor. I know that, just as you take your time with other patients, you will take your time with me. Excuse me for asking you something that is not your specialty, but my eyes are very dry.	María: Yes, I realized that you were delayed with the previous patient; what luck! Because with me, it does not usually take so long ... Excuse me for asking you something that is not your specialty, but my eyes are very dry.
Dr. Felipe: Remind me at the end of the consultation to review it and proscribe medication, if it is the case. Let's start with pressure control. (Meanwhile, Maria and the doctor engage in conversation).	(Meanwhile, the doctor takes Maria's blood pressure in silence).

Source: Own elaboration.

These narratives were validated by experts, and to verify the experimental manipulation of the independent variable of physician warmth, a semantic differential was calculated. The results of the manipulation of the independent variable, which were obtained via a factorial analysis of the principal components of the factors, revealed that the first factor explained 77.16% of the variance in high warmth and exhibited a Cronbach's alpha coefficient of 0.70, thus indicating acceptable level of internal consistency. In contrast, the second factor explained 86.8% of the variance in warmth

and exhibited a Cronbach's alpha coefficient of 0.84, thus indicating good internal consistency.

In the second case, with respect to the *experimental stimuli*, previously developed and validated scales were used to measure adherence to treatment and empathy; these scales were adapted on the basis of the narratives developed by reference to on 320 participants via exploratory factorial analysis; the finalized instruments were subsequently applied to the experimental sample. To measure adherence to treatment, we used the Medication Adherence Report Scale (MARS), which assesses patients' adherence in terms of health beliefs, health experiences and health behavior (Zemmour et al., 2016); on this basis, a scale consisting of six items was developed. We also used the Jefferson Scale of Physician Empathy (JSPE) (20 items) to measure empathy; the Spanish version of this scale was validated by Alcorta et al. (2005). In this measure, empathy is defined in terms of three factors: perspective taking, compassionate care and the ability to understand the patient from the patient's own perspective. Following the adaptation of this scale to suit the purposes of this research, the scale consisted of eight items.

Regarding the *measurements*, both scales, i.e., the MARS scale (six items) and the JSPE scale (eight items), were revealed to be adequate with regard to explaining the data contained in the pilot sample according to Bartlett's test of sphericity. With regard to the MARS scale, the test yielded an approximate chi-square value of 864.76, with gl = 15 and p <0, thus indicating strong correlations among the items. The value of the determinant was 0.051, and the Kaiser-Meyer-Olkin coefficient was 0.751, thus indicating good interrelations and the adequacy of the sample. The MARS scale exhibited a two-factor structure that explained 66.28% of the variance in patients' treatment adherence intentions. The eigenvalue of factor "beliefs in health", which combines Items 1, 2, 3 and 4, indicated that this factor explained 45.17% of the variance in adherence, while the factor "behavior in health", which combines Items 5 and 6, explained 21.11% of the variance in adherence to treatment. The adapted MARS scale exhibited a good level of reliability; namely, the Cronbach's alpha coefficient of the factor "beliefs in health" was 0.88, and that of the factor "health behavior" was 0.78.

With respect to the JSPE scale, the test yielded an approximate chi-square value of 1163.9, with gl = 28 and p <0, thus indicating strong correlations among the included items. The value of the determinant was 0, and the Kaiser-Meyer-Olkin coefficient was 0.934. The factors exhibited communalities greater than 0.3 and factor loadings greater than 0.4. Similarly, the corrected item–total correlations yielded appropriate values that were greater than 0.3. In general, the JSPE featured a two-level factorial structure that explained 70.5% of the variance in empathy. The eigenvalue of the cognitive level, which combines Items 1, 2, 3, 4, 5 and 6, indicated that this factor explained in 73.82% of the variance in the cognitive dimension (perspective taking) and exhibited a Cronbach's alpha coefficient of 0.95; the factor "affective dimension" (putting oneself in the other's situation), which combines Items 7 and 8 explained 9.7% of the variance in empathy and exhibited a Cronbach's alpha coefficient of 0.81.

After the scales that were used in the context of the dialogical narratives had been adapted, two types of questionnaires were designed; these questionnaires included informed consent, dialogical narration, and the scales used to measure empathy and adherence. These questionnaires were randomly distributed to a sample of 210 individuals; 105 of these individuals participated in the first experimental situation, while the other 105 participated in the second experimental situation.

To *analyze the data* thus obtained, these data were transcribed into an Excel sheet and imported into SPSS 25 software. An analysis of the conditional process was performed on the basis of a mediation analysis as well as its analytical integration in the form of a conditional process analysis conducted with the assistance of the PROCESS 3 macro for SPSS. To analyze Hypothesis 1 (H1), i.e., "a high level of warmth on the part of the doctor improves patients' treatment adherence intentions than does a low level of warmth on the part of the doctor", a univariate analysis of covariance (ANCOVA) and a multivariate analysis of variance (MANOVA) were conducted. Similarly, to analyze Hypothesis 2 (H2), i.e., "the effect of the warmth exhibited by the doctor on patients' adherence to treatment is mediated by empathy", Model 4, which was developed by Andrew Hayes (2013), was

used. In this context, it is important to understand the mechanisms that produce an effect; however, it is no less important to determine whether this effect is mediated by other variables (Igartua and Hayes, 2021).

Results

With respect to H1, the mean (*M*) values obtained for each level of patients' treatment adherence intentions (level I = health beliefs, level II = health behaviors) indicated the predominance of the experimental group, which focused on narratives involving a high level of warmth on the part of the doctor, over the control group, which focused on narratives featuring low levels of warmth.

With regard to the first level of patients' treatment adherence intentions, the group that was exposed to narratives featuring a high level of warmth on the part of the doctor was associated with a higher average level of patients' health beliefs ($M = 4.42$; $SD = 0.61$) than was the group that was exposed to narratives that featured low levels of warmth ($M = 2.04$; $DS = 0.69$). Similarly, with respect to the second level of patients' treatment adherence intentions , the group that was exposed to narratives that featured a high level of warmth on the part the doctor ($M = 2.57$; $SD = 1.11$) was associated with a higher average level of patients' health behaviors than was the group that was exposed to narratives that featured low levels of warmth ($M = 2.04$; $SD = 0.69$).

Table 2. Differences in the levels of patients' treatment adherence intentions according to narratives featuring different levels of warmth on the part of physicians (according to the ANCOVA univariate analysis)

Levels of adherence	High warmth	Low warmth	P value
Health beliefs	M = 4.42	M = 2.04	0
Health behavior	M = 2.57	M = 2.04	0
N = 210	105	105	-

Source: Own elaboration.

The data presented in Table 2, which were obtained from the univariate analysis (i.e., ANCOVA), allowed us to verify that the differences observed in patients' levels of adherence were statistically significant in terms of both the beliefs and the health behaviors exhibited by the patient. This finding is consistent with the results of the multivariate analysis (MANOVA) that was conducted to determine the joint effect of the warmth narratives on these levels, thus reaffirming the previously reported differences (Wilks' Lambda = 0.22; *F* -multivaried = 356, 39, $p = 0.001$) and verifying that high levels of warmth on the part of the doctor have significant effects on patients' treatment adherence intentions.

However, the ability of the warmth exhibited by the doctor to explain patients' adherence intentions focuses more strongly on patients' beliefs (*R 2* adjusted = 76.7%) than on patients' health behaviors (*R 2* adjusted = 7.2%). Therefore, the empirical evidence obtained regarding the levels of patients' adherence confirms that the version of the narrative that is designed to indicate high levels of warmth on the part of the doctor promotes higher levels of patients' treatment adherence intentions than does the version that is designed to indicate low levels of warmth on the part of the doctor. In the analysis of the indirect effects, the levels of health beliefs and health behavior related to adherence to treatment as well as the cognitive and affective dimensions of empathy were taken into account.

Regarding the second hypothesis (H2), according to which the effect of the warmth exhibited by the physician on patients' treatment adherence is mediated by empathy, the data presented in Table 3 reveal, first (Model 1), the results of a simple linear regression analysis that was conducted to investigate the relationship between cognitive empathy (the mediating variable) and high warmth (the independent variable); the results reveal that these two variables exhibit a positive and statistically significant relationship. The percentage of variance explained (*R 2*) by high warmth via cognitive empathy is 76.4%. Second (Model 2), the results regarding the statistically significant effects of high warmth ($B = 1.2792$; $t = 7.73$; $p = 0$) and cognitive empathy ($B = 0.29$; $t = 7.63$; $p = 0$) on patients' treatment adherence intentions according to the patient's beliefs are presented. This model explains 81.9% of the total variance in patients' health beliefs.

Third (Model 3), the same table indicates that the direct effect of high warmth ($B = 2.3833$; $t = 26.26$; $p = 0$) on patients' health beliefs is statistically significant and that the relationship between these two factors is directly proportional, which is consistent with the data presented in Table 2. The narratives designed to evoke high levels of warmth explain 76.8% of the total variance in the level of patients' treatment adherence intentions. Fourth (Model 4), the table presents the results pertaining to Model 4, thus confirming the second hypothesis proposed in this research with regard to the first level of the mediation of cognitive empathy; namely, the lower limit (*BootLLCI*) and the upper limit (*BootULCI*) of the confidence interval of the model do not include 0, thus indicating that the indirect mediating effect proposed in the hypothesis is statistically significant. In other words, the relationship between the narrative that indicate high levels of warmth on the part of physicians and patients' treatment adherence intentions on the basis of the patient's health beliefs is also mediated by empathy at the cognitive level.

However, although the direct effect of the narratives indicating a high level of warmth on the part of physicians on patients' health beliefs is greater ($B = 1.2792$) than the indirect effect via cognitive empathy ($B = 1.1041$), the data pertaining to Model 2 suggest that when the joint effect of high levels of warmth on the part of physicians and cognitive empathy on patients' health beliefs is analyzed, this influence is stronger ($R\ 2 = 81.93\%$) than the direct effect of high levels of warmth on patients' beliefs ($R\ 2 = 76.4\%$). In other words, the results suggest that the higher the levels of warmth and cognitive empathy associated with the doctor are, the more likely patients are to exhibit treatment adherence intentions on the basis of patients' health beliefs.

Table 3. Effects of warmth on patients' beliefs via cognitive empathy

Regression analysis	Coeff (B)	Result	t	p	LLCI	ULCI
Model 1: (X → M) Relationship between high warmth and cognitive empathy.	3.6841	0.1420	25.9494	0	3.4042	3.9640

Regression analysis	Coeff (B)	Result	t	p	LLCI	ULCI
Model 2: (XM → Y) Effect of high warmth and cognitive empathy on patients' treatment adherence intentions according to patients' beliefs.	High warmth 1.2792	0.1654	7.7354	0	0.9532	1.6052
	Empathy 0.2997	0.0392	7.6388	0	0.2224	0.3771
Model 3: (X → Y) Direct effect of high warmth on patients' treatment adherence intentions according to patients' health beliefs.	2.3833	0.0907	26.266	0	2.2045	2.5622
Model 4: (X → M → Y) Indirect effect of high warmth on patients' beliefs via cognitive empathy.	1.1041	0.1932	-	-	0.7236	1.4805

Source: Own elaboration.

On the other hand, the data presented in Table 4 reveal that the regression analysis of the relationship between affective empathy (the mediating variable) and high warmth (the independent variable) in Model 1 indicates a positive and statistically significant relationship between these two variables. The percentage of variance explained ($R\ 2$) by high warmth via affective empathy is 34.7%. Second (Model 2), the results regarding the statistically significant effects of high warmth (B = 2.2714; t = 20.31; p = 0) and affective empathy (B = -0.456; t = -1.6975; p = 0.091) on patients' treatment adherence intentions according to patients' beliefs are presented; these results initially indicates that the model is significant and that the two variables jointly explain 77.15% of the variance in the patients' health beliefs. These results also indicate that the relationship with high warmth is significant in this context but that emotional empathy alone is insufficient.

Third, Model 3 reveals that the direct effect of high warmth (B = 2.3833; t = 26.26; p = 0) on patients' health beliefs is statistically significant and explains 2.38% of the total variance in the level of patients' treatment adherence intentions. Fourth, the corresponding table presents the results pertaining to Model 4. The lower limit ($BootLLCI$ = -0.0252) and the upper limit ($BootUL\text{-}CI$ = 0.2892) of the confidence interval of the model do include 0, thus indicating that the second hypothesis is not verified in the context of affective empathy since the proposed mediating effect is not sta-

tistically significant; that is, the relationship between high warmth and adherence is not mediated by affective empathy. This result explains why the direct effect of the narratives featuring high levels of warmth on the part of the physician on patients' health beliefs ($B = 2.27$) is stronger than the corresponding indirect effect via affective empathy ($B = 0.1119$).

Table 4. Effects of warmth on patients' beliefs via affective empathy

Regression analysis	Coeff (B)	Result	t	p	LLCI	ULCI
Model 1: (X → M) Relationship between high warmth and affective empathy.	-2.4524	0.2330	-10.5268	0	-2.9117	-1.9931
Model 2: (XM → Y) Effect of high warmth and affective empathy on patients' treatment adherence intentions according to patients' health beliefs.	High warmth 2.2714	0.1118	20.3110	0	2.0509	2.4919
	Empathy -0.0456	0.0269	-1.6975	0.091	-0.0986	0.0074
Model 3: (X → Y) Direct effect of high warmth on patients' treatment adherence intentions according to patients' health beliefs.	2.3833	0.0907	26.2665	0	2.2045	2.5622
Model 4: (X → M → Y) Indirect effect of high warmth on patients' beliefs via affective empathy.	0.1119	0.0797	-	-	-0.0252	0.2892

Source: Own elaboration.

The data presented in Table 5 reveal that the simple linear regression analyses of the relationship between cognitive empathy (the mediating variable) and high warmth (the independent variable) in Model 1 indicate a positive and statistically significant relationship between these two variables. The percentage of variance explained ($R\ 2$) by high warmth via cognitive empathy is 76.4%. Second, with respect to Model 2, the results regarding the statistically significant effects of high warmth ($B = -0.2342$; $t = -0.9101$; $p = 0.3638$) and cognitive empathy ($B = 0.2077$; $t = 3.4016$; $p = 0.008$) on patients' treatment adherence intentions according to patients' behavior are presented; these results initially indicate that the model is significant and that the two variables jointly explain 12.51% of the variance in patients' health behaviors.

Third, Model 3 reveals that the direct effect of high warmth (B = 0.5310; t = 4.14; p = 0) on patients' health behaviors is statistically significant and explains 53.1% of the total variance in the level of patients' treatment adherence intentions. Fourth, the results pertaining to Model 4 are presented in the corresponding table. The lower limit ($BootLLCI$ = 0.2407) and the upper limit ($BootULCI$ = 1.2938) of the confidence interval of the model do not include 0, thus indicating that the indirect mediating effect proposed by this hypothesis is statistically significant. In other words, the relationship between the narratives featuring high levels of warmth on the part of the doctor and patients' treatment adherence intentions according to patients' health behaviors is also mediated by empathy at the cognitive level.

These results are in line with the values that highlight the fact that the indirect effect of cognitive empathy on the relationship between the narratives featuring high levels of warmth on the part of the doctor and patients' health behaviors is stronger (B = 0.7652) than the direct effect of high warmth on the part of the doctor on such behaviors (B = -0.2342).

Table 5. Effects of warmth on patients' behaviors via cognitive empathy

Regression analysis	Coeff (B)	Result	t	p	LLCI	ULCI
Model 1: (X → M) Relationship between high warmth and cognitive empathy.	3.6841	0.1420	25.949	0	3.4042	3.9640
Model 2: (XM → Y) Effect of high warmth and cognitive empathy on patients' treatment adherence intentions according to patients' behaviors.	High warmth -0.2342	0.2574	-0.910	0.363	-0.7416	0.2731
	Empathy 0.2077	0.0611	3.401	0	0.0873	0.3281
Model 3: (X → Y) Direct effect of high warmth on patients' treatment adherence intentions according to patients' health behaviors.	0.5310	0.1282	4.143	0	0.2783	0.7836
Model 4: (X → M → Y) Indirect effect of high warmth on patients' behaviors via cognitive empathy.	0.7652	0.2707	-	-	0.2407	1.2938

Source: Own elaboration.

The data presented in Table 6 reveal that the simple linear regression analysis of the relationship between affective empathy (the mediating variable) and high warmth (the independent variable) on the basis of Model 1 indicate a positive and statistically significant relationship between these two variables. The percentage of variance explained ($R\ 2$) by high warmth via affective empathy is 34.7%. Second, in Model 2, the statistically significant effects of high warmth ($B = 0.6368$; $t = 4.0164$; $p = 0.001$) and affective empathy ($B = 0.432$; $t = 1.1326$; $p = 0.258$) on patients' treatment adherence intentions according to patients' behaviors are presented; these results initially indicate that the model is significant and that the two variables jointly explain 8.19% of the variance in the patient's health behavior. They also indicate that the relationship with high warmth is significant but that emotional empathy alone is insufficient.

Third, Model 3 reveals that the direct effect of high warmth ($B = 0.5310$; $t = 4.1430$; $p = 0$) on patients' behaviors is statistically significant and that the narratives featuring high levels of warmth (53.1%) explain all the variance in the level of patients' treatment adherence intentions. Fourth, the results pertaining to Model 4 are presented in the corresponding table. The lower limit (*BootLLCI* = -0.2800) and the upper limit (*BootULCI* = 0.0834) of the confidence interval of the model include 0, thus indicating that the second hypothesis is not fulfilled in the case of affective empathy. In other words, the model of adherence to treatment that relates the high warmth and health behaviors of the patient mediated by affective empathy is not statistically significant.

Table 6. Effects of warmth on patients' behaviors via affective empathy

Regression analysis	Coeff (B)	Result	t	p	LLCI	ULCI
Model 1: (X → M) Relationship between high warmth and affective empathy.	-2.4524	0.330	-10.526	0	-2.9117	-1.9931
Model 2: (XM → Y) Effect of high warmth and affective empathy on patients' treatment adherence intentions accordance to patients' behaviors.	High warmth 0.6368	0.1586	4.016	0	0.3242	0.9494
	Empathy 0.0432	0.0381	1.132	0.258	-0.0320	0.1183

Regression analysis	Coeff (B)	Result	t	p	LLCI	ULCI
Model 3: (X → Y) Direct effect of high warmth on patients' treatment adherence intentions on the basis of patients' health behaviors.	0.5310	0.1282	4.143	0	0.2783	0.7836
Model 4: (X → M → Y) Indirect effect of high warmth on patient behavior via affective empathy.	-0.1059	0.0925	-	-	-0.2800	0.0834

Source: Own elaboration.

Consequently, when patients' treatment adherence intentions are taken into account, affective empathy does not influence the relationship between a high level of warmth on the part of the doctor and patients' health behaviors. This finding is consistent with data indicating that the direct effect of high levels of warmth on the part the doctor on patients' health behaviors is stronger $(B = 0.6368)$ than the indirect effect of affective empathy on the relationship between high warmth and patients' health behaviors $(B = -0.1059)$.

Conclusions

In general, the results of this research reveal that the version of the narratives that are designed to indicate high warmth on the part of the doctor have a stronger positive impact on patients' treatment adherence intentions that do the narratives that are designed to indicate low levels of warmth on the part of the doctor and that the corresponding impacts on patients' health beliefs are stronger than the impacts on their behaviors. The mediating effect of empathy at the cognitive level is also evident in the relationship between the narratives that indicate high levels of warmth on the part of the doctor and patients' treatment adherence intentions according to patients' health beliefs and behaviors, whereas affective empathy does not affect the relationship between the high warmth exhibited by the doctor and patients' treatment adherence intentions.

The results obtained in this research empirically verify the existence of a directly proportional relationship between the warmth exhibited by the

doctor and patients' treatment adherence intentions. Previous studies on this topic have defined treatment as a single construct; however, treatment is actually a more complex, broad and dynamic concept than has been traditionally proposed. Health behaviors, health experiences and health beliefs can also be considered in this context (De las Cuevas and Sanz, 2016), as can patients' behavior, barriers or beliefs regarding therapeutic adherence (Pagès-Puigdemont and Valverde -Merino, 2018), among other variables.

In this research, the weight of the warmth exhibited the doctor as an explanation of patients' treatment adherence intentions focused more strongly on patients' beliefs than their health behaviors. These results are in line with those reported by Petrie et al. (2007), who viewed health beliefs as a potential influence on patients' responses to their diseases, although health behaviors could also be explained by the doctor–patient relationship to some degree.

With respect to the mediating role of empathy in the relationship between the warmth exhibited by the doctor and patients' treatment adherence intentions, few empirical studies have investigated this factor in this role; in contrast, such studies have assumed that empathy has a direct effect on patients' treatment adherence intentions, thus suggesting that this factor is related to increased patient satisfaction, a good relationship with the patient, greater adherence to treatment, greater diagnostic precision, a reduction in medical errors and positive health outcomes (Kraft-Todd et al., 2017). If empathy is viewed as a socioemotional capacity that features two different components, i.e., the affective (the ability to share the emotions of others) and cognitive (the ability to understand the emotions of others) components (Kraft-Todd et al., 2017), while treatment adherence is analyzed in terms of two of the factors of which it is composed, such as health beliefs and health behaviors, the emerging model reveals that, regarding the relationship between the warmth exhibited by the doctor on adherence according to patients' health beliefs via the mediating effect of cognitive empathy, the results suggest that the higher the levels of warmth and cognitive empathy exhibited by the doctor are, the more likely patients are to exhibit treatment adherence intentions on the basis of their health beliefs.

First, previous studies have not included empathy as a mediator; they have also failed to highlight the mediating role played by the cognitive component (which is more notable than the role played by the affective component). Similarly, although beliefs have been viewed as determinants of adherence, the fact that cognitive empathy is associated with health beliefs represents a theoretical advance on the basis of this model, as the cognitive and rational elements are more closely related to a scenario in which health behaviors prevail over health beliefs if empathy is viewed as a cognitive and behavioral attribute that guides our understanding of the influence of experiences and feelings of the patient as well as the ability to communicate that understanding to the patient (Dávila et al., 2017).

On the other hand, the analyses of the relationship between the high warmth exhibited by doctors and patients' treatment adherence intentions on the basis of patients' health behaviors also revealed the mediating role of cognitive empathy in this relationship. That is, in both models used to analyze cognitive empathy, this factor is identified as a mediator according to the beliefs and health behaviors of the patient when adherence is observed in an integral way; this finding thus represents another theoretical contribution of this study to the field. Research has reported that cognitive empathy is indirectly responsible for promoting treatment adherence among patients. Previous studies have viewed empathy as a more complex attribute, namely, as a form of both intellectual and emotional knowledge (Díaz et al., 2023); accordingly, to the extent that this complexity is understood slightly better, this research could provide a more complete definition of this factor. This behavior, which pertains to the cognitive element in relation to the affective element in this research, could be supported by the explanation provided by Yu and Chou (2018), who noted that a vast amount of evidence has highlighted the association of *affective empathy* and *cognitive empathy* with different neural circuits; although these components are able to act integrally, they can also act independently in certain circumstances, which can be both functional and dysfunctional.

According to the results of the model analysis pertaining to the relationship between high levels of warmth on the part of the doctor and patients' treatment adherence intentions according to patients' health beliefs

(via the mediation of affective empathy), affective empathy alone is insufficient, and in the model, this factor represents a mediator with respect to patients' treatment adherence intentions according to patients' beliefs. The same results are obtained through the analysis of the model in which high levels of warmth on the part of the doctor are related to patients' treatment adherence intentions according to patients' health behavior via the possible mediating effect of affective empathy; namely, this factor is also not observed to act as a mediator of this relationship in this context. In these two cases, the model as a whole (which includes both the cognitive and the affective factors) is significant, but the analysis of empathy in light of these factors reveals that affective empathy alone in insufficient in terms of both patients' health beliefs and their health behaviors.

These results of this research are in line with those reported by Rojas et al. (2009), who assumed that experiencing emotions is not important with respect to understanding what the patient is feeling. It is possible that empathy in the context of health care is viewed as a cognitive and behavioral attribute that refers to the ability to understand how the patient's experiences and feelings influence and are influenced by the disease as well as the ability to communicate that understanding to the patient (Dörr, 2004). If empathy is defined as a two-stage process in which, on the one hand, the patient's feelings are understood and appreciated and, on the other hand, the patient is informed that his or her emotional state is understood (Silverman et al., 2008), the role is played by two components, i.e., the affective and cognitive components. According to the results of this research and those reported by Rojas et al. (2009) - it can thus be assumed that the doctor's ability to experience the patient's emotions is not important with regard to the doctor's ability to understand what the patient is feeling, thus influencing patients' treatment adherence intentions. Empathy seems to be generated through a relatively long-term process (Díaz et al., 2014); thus, in short, the doctor recognizes the emotional aspect of this situation but nonetheless distances himself or herself from such emotionality with the goal of providing the patient with the necessary help.

One limitation of this research is that, due to the cross-sectional design of this study, it was not possible to assess the process of training and

development or the strengthening of the lasting relationship with health professionals, which could enrich our understanding of the variables on which this research focuses. Similarly, the difficulty of conducting research of this type in real medical consultation scenarios is highlighted in light of the possible reluctance of the actors involved in this process to express themselves as they normally would if no observer were present as well as in light of the ethical considerations that must be taken into account in the field of health care. In addition, the reproduction of a specialized medical consultation scenario does not allow dramatic staging that could promote the emergence of nonverbal aspects.

References

Alcorta Garza, A., González, J. F., Tavitas, S. E., Rodríguez, F. J. y Hojat, M. (2005). Validación de la escala de empatía médica de Jefferson en estudiantes de Medicina mexicanos. *Salud Mental, 28*(5), 57-63. https://www.scielo.org.mx/pdf/sm/v28n5/0185-3325-sm-28-05-57.pdf

Anderson, R. M. y Funnell, M. M. (2010). Patient empowerment: myths and misconceptions. *Patient Education and Counseling, 79*(3), 277-82. https://doi.org/10.1016/j.pec.2009.07.025

Arroyave, J. y Erazo, A. M. (2017). La comunicación en salud desde la perspectiva institucional: orígenes y evolución del campo. En Cuesta, U. Peñafiel, C., Terrón, J. L., Bustamante, E. y Gaspar, S. (eds.), *Comunicación y salud* (pp. 403-414). Dextra.

Chamorro, M. (2008). Efecto de la actuación farmacéutica en la adherencia del tratamiento farmacológico de pacientes ambulatorios con riesgo cardiovascular. [Tesis doctoral, Universidad de Granada, Granada, España].

Dávila Pontón, Y., Neira Molina, V. A., Aguilera Muñoz, J., Martínez Reyes, F. C., Vélez Calvo, X. y Díaz-Narváez, V. P. (2017). La empatía y los

estudiantes de medicina en la Universidad de Azuay, Ecuador. *Salud Uninorte, 3*(1), 39-47. https://doi.org/10.14482/sun.33.1.10120

De las Cuevas, C. y Sanz, E. J. (2016). Métodos de valoración de la adherencia al tratamiento psiquiátrico en la práctica clínica. *Revista Iberoamericana de Psicología y Salud, 7*(1), 25-30. https://doi.org/10.1016/j.rips.2015.10.001

De Marco, M. A., Vessoni, A. L., Capelo, A. y Camargo Dias, C. (2010). Laboratório de comunicação: ampliando as habilidades do estudante de medicina para a prática da entrevista. *Comunicação, Saúde e Educação, 14*(32), 217-227. https://doi.org/10.1590/S1414-32832010000100018

Del Duca, M., Gallegos, Y., Da Col, G. y Trenchi, M. N. (2013). Adherencia al tratamiento desde la perspectiva del médico de familia. *Biomedicina, 8*(1), 6-15. https://www.medigraphic.com/pdfs/revcubangcirvas/cac-2015/cac152f.pdf

Derksen, F., Bensing, J. y Lagro-Janssen, A. (2013). Effectiveness of empathy in general practice: A systematic review. *British Journal of General Practice, 63*(606), 76-84. https://doi.org/10.3399/bjgp13X660814

Díaz Galván, K. X., Lozano Gutiérrez, A., González González, J. J. y Ostrosky Shejet, F. (2023). The empathy in psychopaths. *eduPsykhé, 20*(1), 44-64. https://doi.org/10.57087/edupsykhe.v20i1.4533

Díaz Narváez, V., Alonso L. M., Caro, S. E., Silva, M. G., Arboleda, J., Bilbao, J. L. e Iglesias Acosta, J. (2014). Orientación empática de estudiantes de medicina en tres universidades de Barranquilla, Colombia y en una universidad de República Dominicana. *Archivos Argentinos de Pediatría, 112*(1), 41-49. https://doi.org/10.5546/aap.2014.41

Domingo, C. B. (2010). Doctor-patient communication in the medical interaction: context, implications, and practice. [Tesis doctoral, Uni-

versity of Texas School of Public Health]. http://search.proquest.com/docview/205409330

Donoso-Sabando, C. A. (2014). La empatía en la relación médico-paciente como manifestación del respeto por la dignidad de la persona. Una aportación de Edith Stein. *Persona y Bioética, 18*(2), 184-193. https://doi.org/10.5294/pebi.2014.18.2.8

Dörr, A. (2004). Acerca de la comunicación médico-paciente desde una perspectiva histórica y antropológica. *Revista Médica de Chile, 132*, 1431-1436. https://doi.org/10.4067/S0034-98872004001100014

Elliott, R., Bohart, A. C., Watson, J. C. y Greenberg, L. S. (2011). Empathy. *Psychotherapy, 48*(1), 43-49. https://doi.org/10.1037/a0022187

Erazo, A. M. y Arroyave, J. (2017). Comunicación médico-paciente. En Cuesta, U. Peñafiel, C., Terrón, J. L., Bustamante, E. y Gaspar, S. (eds.), *Comunicación y salud* (pp. 141-158). Dextra.

Guerrero-Vaca, D. J., Guerrero-Vaca D. I., Escobar-Zabala, O. D. y Herrera-Abarca, J. M. (2022). La relación médico-paciente en la actualidad. Una revisión. *Polo del Conocimiento*, *7*(4), 1038-1056. https://www.polodelconocimiento.com/ojs/index.php/es/article/view/3873

Hayes, A. F. (2013). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach*. The Guilford Press.

Herrera Medina, N. E, Gutiérrez-Malaver, M. E., Ballesteros-Cabrera, M., Izzedin-Bouquet, R., Gómez-Sotelo, A. P. y Sánchez-Martínez, L. M. (2010). Representaciones sociales de la relación médico paciente en médicos y pacientes en Bogotá, Colombia. *Revista de Salud Pública, 12*(3), 343-355. http://www.scielo.org.co/scielo.php?script=sci_arttext&pid=S0124-00642010000300001

Igartua, J. J. (2010). Identification with characters and narrative persuasion through fictional feature films. *Communications, 35*, 347-373. https://doi.org/10.1515/comm.2010.019

Igartua, J. J. y Hayes, A. F. (2021). Mediation, moderation, and conditional process analysis: Concepts, computations, and some common confusions. *The Spanish Journal of Psychology*, *24*, e49. https://doi.org/10.1017/SJP.2021.46

Kraft-Todd, G. T., Reinero, D. A., Kelley, J. M., Heberlein, A. S., Baer, L. y Riess, H. (2017). Empathic nonverbal behavior increases ratings of both warmth and competence in a medical context. *PLoS ONE*, *12*(5), 1-16. https://doi.org/10.1371/journal.pone.0177758

Leal Quevedo, F. J. (2004). Calidad y calidez en la atención pediátrica. *Archivos Argentinos de Pediatría, 102*(5), 390-393. http://www.scielo.org.ar/pdf/aap/v102n5/v102n5a11.pdf

Lu, T., Chen, H., Xu, Y. y Zhang, C. (2016). Internet usage, physician performances and patient's trust in physician during diagnoses: Investigating both pre-use and not-use internet groups. En *System Sciences (HICSS), 49th Hawaii International Conference* (pp. 3189-3198). IEEE. https://doi.org/10.1109/HICSS.2016.400

Maldonado Recio, M. T. y Barajas Esteban, C. (2018). Teoría de la mente y empatía. Repercusiones en la aceptación por los iguales en niños y niñas de Educación Infantil, Primaria y Secundaria. *Escritos de Psicología*, *11*(1), 10-24. https://doi.org/10.5231/psy.writ.2018.0105

Marroquín Rivera, A., Botero Bermúdez, M., Gómez-Restrepo, C. (2020). Una revisión temática de las expectativas de los pacientes frente a las conductas del médico. *Universitas Médica*, *61*(3), 1-13. https://doi.org/10.11144/Javeriana.umed61-3.expe

Muñoz Sánchez, A. I., Cruz Martínez, O. A. y Rubiano Mesa, Y. L. (2013). Trabajadores de la salud y sus significados en torno a la adheren-

cia al tratamiento de la tuberculosis. *Enfermería Global, 31*, 86-108. https://doi.org/10.6018/eglobal.12.3.151901

Ordóñez Jaramillo, C. (2014). Modelo de Gestión de Talento Humano para mejorar la calidad y calidez en la atención al cliente del Departamento de Ginecología en la Asociación Médica de la Caridad San José, Santo Domingo de los Tsáchilas. [Tesis de Maestría, Universidad Regional Autónoma de los Andes, Ecuador]. http://dspace.uniandes.edu.ec/bitstream/123456789/384/1/TUAMGSS012-2015.pdf

Ortega Cerda, J. J., Sánchez Herrera, D., Rodríguez Miranda, O. A. y Ortega Legaspi, J. M. (2018). Adherencia terapéutica: un problema de atención médica. *Acta Médica Grupo Ángeles, 16*(3), 226-232.

Pagès-Puigdemont, N. y Valverde-Merino, M. I. (2018). Métodos para medir la adherencia terapéutica. *Ars Pharmaceutica, 59*(3), 163-172. https://doi.org/10.30827/ars.v59i3.7387

Peralta, M. y Carbajal, P. (2008). Adherencia a tratamiento. *Revista del Centro Dermatológico de Pascua, 17*, 84-88. https://www.medigraphic.com/pdfs/derma/cd-2008/cd083b.pdf

Petracci, M. y Waisbord, S. (eds.) (2011). *Comunicación y salud en la Argentina*. La Crujía.

Petracci, M., Schwarz, P. K. N., Sánchez Antelo, V. I. M. y Mendes Diz, A. M. (2017). Doctor–patient relationships amid changes in contemporary society: a view from the health communication field. *Health Sociology Review, 26*(3), 266-279. https://doi.org/10.1080/14461242.2017.1373031

Petrie, K. J., Jago, L. A. y Devcich, D. A. (2007). The role of illness perceptions in patients with medical conditions. *Current Opinion in Psychiatry, 20*(2), 163-7. https://doi.org/10.1097/YCO.0b013e328014a871

Rojas Serey, A. M., Castañeda Barthelemiez, S. y Parraguez-Infiesta, R. A. (2009). Orientación empática de los estudiantes de dos escuelas de kinesiología de Chile. *Educación Médica, 12*(2), 103-109. https://doi.org/10.33588/fem.122.518

Sánchez-Angarita, J. (2017). La dimensión comunicativa en la formación del médico: una propuesta para fortalecer la relación médico-paciente. *Revista de la Facultad de Medicina, 65*(4), 641-648. https://doi.org/10.15446/revfacmed.v65n4.59892

Santander-Díaz, K., Castro-Pastén, P., Calzadilla-Núñez, A., Aguilera-Olivares, F. y Díaz-Narváez, V. (2021). Empatía y declinación empática por curso y sexo en estudiantes de enfermería. *Revista Cubana de Medicina General Integral, 37*(2), 1-15. http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S0864-21252021000200015&lng=es&tlng=es

Silverman, M. J. (2008). Nonverbal communication, music therapy, and autism: A review of literature and case example. *Journal of Creativity in Mental Health, 3*(1), 3-19. https://doi.org/10.1080/15401380801995068

Urtasun, M., Janer Tittarelli, M. A., Díaz Pumará, C. y Davenport, M. C. (2021). Habilidades comunicacionales del médico. Experiencia en el Departamento de Medicina de un hospital pediátrico. *Revista de la Facultad de Ciencias Médicas, 78*(3), 270-275. https://doi.org/10.31053/1853.0605.v78.n3.29306

Vega Hurtado, C. (2020). Importancia de las estrategias de comunicación entre médico y paciente. *Revista Médica del Instituto Mexicano del Seguro Social, 58*(2), 197-201. https://doi.org/10.24875/RMIMSS.M20000017

Yu, C. L. y Chou, T. L. (2018). A dual route model of empathy: A neurobiological prospective. *Frontiers in Psychology, 9*, 1-5. https://doi.org/10.3389/fpsyg.2018.02212

Zelada Vargas, J. (2018). Los valores humanos, que el médico del siglo XXI debe conocer y practicar en su desempeño profesional. *Cuadernos Hospital de Clínicas*, *59*(2), 63-71. http://www.scielo.org.bo/scielo.php?script=sci_arttext&pid=S1652-67762018000200010

Zemmour, K., Tinland, A., Boucekine, M., Girard, V., Loubière, S., Resseguier, N. … Videau, B. (2016). Validation of the Medication Adherence Rating Scale in homeless patients with schizophrenia: Results from the French housing first experience. Scientific Reports, 6, 31598. https://doi.org/10.1038/srep31598