



Effects of health empathy map on physician's empathic behavior perceived by the patient

O efeito do mapa da empatia em saúde no comportamento empático médico percebido pelo paciente

Paula Vilaça Ribeiro Cançado¹, Eliane Perlatto Moura², Jose Maria Peixoto³

¹ Professor at Faculdade de Ciências Médicas de Minas Gerais (FCMMG), Belo Horizonte (MG), Brazil. Preceptor of the Orthopedics and Traumatology Residency at Hospital São Francisco de Assis, Belo Horizonte (MG), Brazil; ² Pós-doutorado em Patologia pela UFMG. Professora do curso de Medicina e Mestrado Profissional em Ensino em Saúde. Universidade José do Rosário Vellano, Belo Horizonte (MG), Brazil; ³ Permanent Professor of the Professional Master's Program in Health Education at José do Rosário Vellano University (UNIFENAS-BH), Belo Horizonte (MG), Brazil; ³ Permanent Professor of the Professional Master's Program in Health Education at José do Rosário Vellano University (UNIFENAS-BH), Belo Horizonte (MG), Brazil.

*Corresponding author: Jose Maria Peixoto - E-mail: jmpeixoto.prof@gmail.com

ABSTRACT

The objective of this study was to investigate the effect of Health Empathy Map (HEM) on patient's perception of physician's empathic behavior. This was a 3-phase experimental study, conducted with 22 orthopedic residents. In the first phase, the residents' empathic and relational skills was assessed by patients at the orthopedics outpatient clinic, using the Consultation and Relational Empathy Measure (CARE). After a training session (2nd phase), the HEM was implemented by residents in outpatient care for 4 weeks. One week later the interruption of HEM (3rd phase), the CARE scale was again applied to patients. The results showed significant improvement in residents' patient-rated empathy scores, suggesting that the HEM improved the empathic behavior. These findings indicate that HEM can be considered as an auxiliary strategy for empathic skills development.

Keywords: Empathy. Health communication. Health education. Teaching.

RESUMO

O objetivo deste estudo foi avaliar o efeito do uso do Mapa da Empatia em Saúde (MES) na empatia médica percebida pelo paciente durante atendimento ambulatorial. Trata-se de um estudo experimental, em três fases, realizado com 22 médicos residentes de ortopedia. Na primeira fase, avaliou-se a empatia do médico na percepção dos pacientes atendidos no ambulatório de ortopedia, através do instrumento *Consultation and Relational Empathy* (CARE). Na segunda fase, após um treinamento, foi implantado o uso do MES pelo médico residente no atendimento ambulatorial por quatro semanas. Uma semana após a interrupção do uso do MES (3ª fase), foi novamente aplicada a escala CARE nos pacientes. Os resultados demonstraram aumento da percepção da empatia médica percebida pelos pacientes após a intervenção, sugerindo que o MES favoreceu o desenvolvimento do comportamento empático e, portanto, pode ser considerado como estratégia auxiliar para o desenvolvimento da empatia.

Palavras-chave: Comunicação em saúde. Educação em saúde. Empatia. Ensino.

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INTRODUCTION

Empathy is a fundamental humanistic skill for ethical and humanized behavior¹, being related to better therapeutic results, greater satisfaction of patients and professionals, considered one of the essential learning objectives in health professional training^{1,2,3}. Although there is still no universal definition, it has been considered as a multidimensional construct that requires the ability to perceive and understand the perspective of the other, as well as to feel their emotional state^{1,4}. It is an intellectual skill to be learned that represents one of the domains of emotional intelligence⁵.

It has been proposed that empathy has three components: emotional sharing, perspective taking and empathic concern¹. Emotional sharing is an affective component, through which the observer shares the emotional states of others, by mirroring the actions and feelings observed in brain regions known as mirror neurons^{6,7}. This response is influenced by the observer's attitudes and dispositions⁸. Perspective taking and empathic concern are cognitive components that contribute respectively to: the ability to reason about other people's mental states and the management of intensity and the type of empathic response to be deliberated⁹.

Despite its importance, it has been found in some studies, that as clinical practice develops, the empathy of students and health professionals tends to decrease^{3,4,10,11}. The training period of these professionals is essential to acquire the knowledge, skills and attitudes that will form the basis of their professional identities. During this period, apprentices are faced with the difficulties of professional activity, with the fear of making mistakes, with the limitations of knowledge, and also have to deal with the emotional aspects of illness coming from patients and family members^{11,12}.

In this context, it is difficult for learners to coordinate the cognitive skills necessary for the performance of care activities and also to consider the perspectives of patients¹³. Add, still, the influence of institutional culture and inadequate models of socio-emotional skills^{4,14}. For professors, teaching empathy

in care settings is a challenging task, as teaching and care must be coordinated simultaneously.

Studies have evaluated the results of strategies used to teach empathy during the period of professional training⁴. Authors argue that, if the affective component of empathy can reduce over time, it would be possible to train its cognitive component^{13,15}. A systematic review of the strategies used to teach empathy found that most of the methods employed address the cognitive component, but not its multidimensional construct, in addition to which there is a discrepancy between the taught and the assessed content^{4,16}. In general, the outcomes have been verified through students' self-assessment scales, which have subjective results, since there is a risk of socially accepted responses and little correlation with the observed behaviors^{4,14,15,16}.

Considering the aspects presented, a study was planned with the goal of evaluating the effect of using the Health Empathy Map (HEM), an idealized instrument for the development of empathy in healthcare environments¹³, in the perception of the physician's empathic behavior by the patient, during outpatient teaching activities in a medical residency in orthopedics.

METHODOLOGY

This is a quantitative, experimental study that compared the scores of physician empathy perceived by patients using the Consultation and Relational Empathy (CARE) scale¹⁷, before and after using HEM in outpatient care (Figure 1). The study was carried out with resident physicians in orthopedics at Hospital São Francisco (HSF), in Belo Horizonte, state of Minas Gerais, Brazil, which has a 3-year medical residency program accredited by the Ministry of Education and Culture. During this period the specific topics of orthopedics are discussed, with no activities for the development of empathy. The study population was intentional, non-probabilistic, constituted by all 22 resident physicians in orthopedics in 2019 who performed outpatient care and signed the Informed Consent Form (ICF).

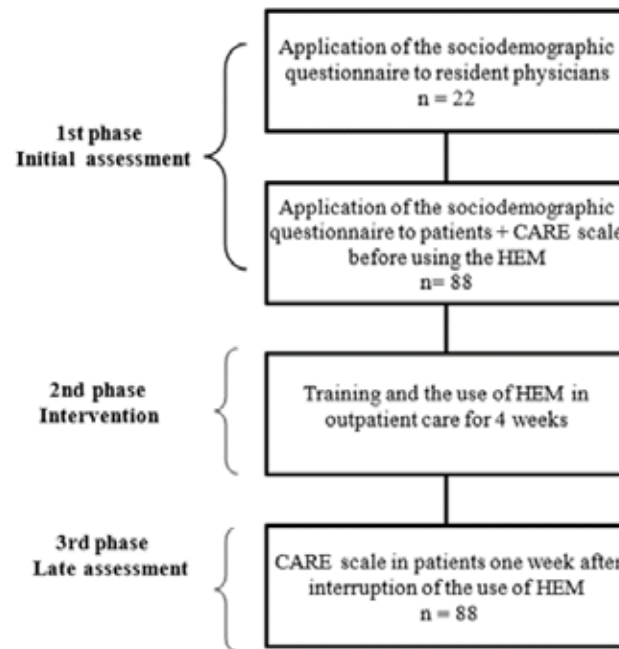


Figure 1. Experimental design of the study

INSTRUMENTS

The Health Empathy Map (HEM) was adapted from the Empathy Map, a tool developed by the visual thinking company XPLANE, to idealize business models based on the perspective of users¹³. This instrument is based on the fact that visual thinking helps to go beyond the linear world of written communication and enters the non-linear world of complex spatial relations, favoring the organization of thoughts, the assimilation of contents, providing a better visualization of customers and improving communication¹⁸. The HEM was adapted for the health areas and has been used in outpatient education for medical students at the José do Rosário Vellano University in Belo Horizonte, state of Minas Gerais, Brazil (Figure 02).

The use of HEM aims to stimulate patient's reflection and perspective taking during academic activities. Unlike the instrument developed for the business area¹⁸, in HEM, the 4 quadrants explicitly contemplate the three components of empathy: the "perspective taking" which is the ability to put yourself in the other's shoes and imagine what he/she is thinking or feeling, "emotional sharing", which is related to affective empathy and "empathic concern", which is

the motivation to care for vulnerable or distressed individuals. When explaining these components to the apprentice, the HEM provides opportunities, in addition to the exercise of empathy, the appropriation of its concepts¹³.

At the center of the HEM, there is an incomplete drawing of an emoji, where the eyebrows and mouth are missing. Like emojis, they are ideograms that represent emotions, there are 6 emojis below the HEM quadrants representing the prototypes of basic facial expressions¹³. The current orientation for apprentices is to fill the HEM quadrants with their impressions after attending the patient, and at the end to complete the drawing of the emoji, with the facial expression that they believe represents the patient's feeling.

The CARE (Consultation and Relational Empathy) scale, created in Scotland, has been validated for use in primary care clinics¹⁷. It is a public domain instrument, which is based on the principle that medical empathy to be effective, needs to be demonstrated to the patient, and that this fact has an impact on therapeutic effectiveness¹⁷. The Brazilian version is a simple instrument, easy to understand and use by users of the public health system. It consists of 10 items,

with colloquial language that facilitates understanding by patients. Graduation is performed with a score ranging from 1 to 5, providing a final score between 10 and 50¹⁷.

To characterize the study participants, two questionnaires were developed. In the questionnaire of resident physicians, the following variables were

evaluated: year of residence in course, age, gender, marital status, if have children, if believe in God, if have another specialization or degree in the health area, time since graduation, experience with serious personal illness or in the family. Variables in the patients' questionnaire were: age, sex, marital status, whether or not they have children.


Health Empathy Map

Student: _____ Period: _____
 Assisted person (initials): _____ age: _____ Gender: _____ Date: __/__/__

Instructions: After the consultation, fill out the Health Empathy Map in the presented numerical order. Record your impressions and feelings about this person's current situation

1. What would you feel if you were in this person's place? [perspective taking]


2. What is your perception of this person's needs and desires, current and future ones? [perspective taking]





3. How do I feel knowing this person's history? [emotional sharing]


4. How can I help this person? [empathetic concern]


After filling out the instrument, complete the face drawing in the center, in order to demonstrate the image that best expresses the predominant feelings of that person (see examples below). Feel free to mention other feelings:


Joy


Sadness


Fear


Surprise


Anger



Indifference

Figure 2. Health empathy map

FIRST PHASE PROCEDURES:

At this stage, resident physicians were invited to participate in the study during a clinical meeting of the service. Then they answered the sociodemographic questionnaire and signed the informed consent form. Between April 29 and May 26, 2019, to assess the empathy of each resident physician from the patient's perspective, the CARE scale was applied to 4 patients chosen at random by the following criteria: the first and the last patient treated in two consecutive days for each resident physician. In addition to the CARE scale, patients answered the sociodemographic questionnaire.

SECOND PHASE PROCEDURES:

In the intervention phase, initially resident physicians received training on how to use HEM in outpatient care with a 15-minute tutorial done by the researcher. After training, the use of HEM was implemented in the outpatient practice of the service, and was made available in print. The guidance provided was for the HEM to be completed by the resident physician responsible for the care at the end of each consultation. The completed HEM was collected weekly by the main researcher. After 4 weeks, the use of this instrument was stopped.

THIRD PHASE PROCEDURES:

One week after the interruption of the use of HEM, in the period between July 8 and July 28, 2019, the physician's empathy scores in the patients' perception were again evaluated, using the same methodology as in the first phase of the study.

The study variables were the CARE scale scores obtained in the first and third phases and the sociodemographic data of participants. The statistical treatment of quantitative variables was described as mean and standard deviation, when normally distributed. Frequencies and percentages were used to describe qualitative variables. The Shapiro-Wilk test was applied to check whether the data evaluated in the

sample had a normal distribution. In order to compare the mean values of the CARE scale obtained by the patients treated before and after the intervention, the Student's t test for independent samples was used. The Levene's test was used to check the homogeneity of variances of each studied variable, by group. In this study, it was decided to assume the heterogeneity of variances, with that, it was decided to use the values of the Student's t-test, assuming the non-equality of variances, which contributes to more robust results. The results were considered significant for a probability of significance less than 5% ($p < 0.05$), therefore having at least 95% confidence in the conclusions presented.

As for ethical aspects, the study was subjected to and approved by the Research Ethics Committee of the José do Rosário Vellano University (CAAE: 03909018.9.0000.5143). All participants were invited to participate in the research as volunteers, and were included after signing the informed consent form, with no remuneration whatsoever.

RESULTS

Regarding the sociodemographic characterization of resident physicians participating in the study, all 22 (100%) resident physicians agreed to participate and met the described inclusion criteria. The mean age of the participants was 30.3 ± 3.6 years, 20 (90.9%) were male, 17 (77.3%) were single, 18 (81.8%) had no children, 20 (90.9%) reported believing in God and 17 (77.3%) had no personal or family experience of serious illness. Only two (9.1%) resident physicians had previously completed another specialization and five (22.7%) had another degree in the health area. Regarding the period of residency, 9 (40.9%) were in the 1st year, 4 (18.2%) in the 2nd year and 9 (40.9%) in the 3rd year. The average time since graduating from medical school was 3.1 ± 2.4 years, with a minimum of less than 1 year and a maximum of 10 years. The Shapiro-Wilk test demonstrated that the data of the studied sample had a normal distribution.

For the assessment of empathy based on the patient's perspective, 196 (100%) patients participat-

ed in the study, with 88 (50%) evaluated in the 1st phase being different from the 88 (50%) evaluated in the 3rd phase. Table 01 lists the characterization of patients who participated in each phase of the study regarding age, sex, marital status and whether they have

children or not. The mean age of patients who participated in the 1st phase was 49.9 ± 21.3 years and in the 3rd phase 44.8 ± 18.6 years. For the total sample of patients, 98 (55.7%) participants were women, 65 (36.9%) were married and 92 (52.3%) had children.

Table 1. Characterization of patients participating in the study

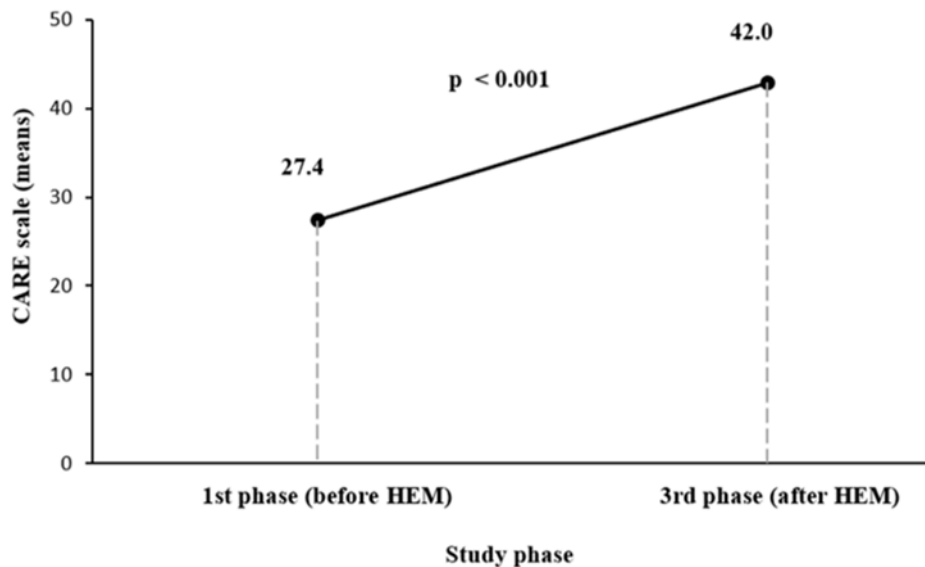
Variables	1st phase		3rd phase	
	n	%	n	%
Sex				
Male	39	44.3	39	44.3
Female	49	55.7	49	55.7
Total	88	100.0	88	100.0
Marital status				
Married	36	40.9	29	33.0
Single	28	31.8	28	31.8
Separated	10	11.4	15	17.0
Stable union	14	15.9	16	18.2
Have children				
Yes	47	53.4	45	51.1
No	41	46.6	43	48.9

Source: Research data, 2019; **Data base:** 176 patients

Note: n= number of patients; % = percentage

EVALUATION OF MEDICAL EMPATHY PERCEIVED BY PATIENTS

The analysis of the scores of physician empathy perceived by the patient using the CARE scale, showed statistically significant differences between the study phases ($p < 0.001$). In the first 1st phase, a mean score of 27.4 ± 8.8 was obtained on the scale and, in the 3rd phase, 42.9 ± 6.2 (Graph 1).



Data base: 88 patients in each phase

Note: HEM= Health Empathy Map; p: Student's t-test

Graph 1. Perception of empathy by the patient, according to the CARE scale, before and after using the Health Empathy Map

DISCUSSION

This study aimed to evaluate the effect of using HEM on physician empathy perceived by patients, during outpatient care in a medical residency in orthopedics. The results found showed that after using the HEM, there was an increase in the perception of the physician's empathic behavior from the patient's perspective. The novelty of this study lies in the fact that it evaluates the impact of using a tool that facilitates the teaching and practice of empathy constituted by the components of empathy in an explicit way, evaluating as an outcome the empathic behavior of the physician perceived by the patient and not through self-report scales. Regarding the characteristics of the physicians participating in this study, despite being a convenience sample, the sociodemographic profile is similar to that found in a study carried out with 250 residents of the last year of residency who underwent the title of Specialist in Orthopedics and Traumatology in 2018¹⁹. The majority of participants: were men, single, without children, with an average age of 30 years, believed in God, were studying their first specialty and had no personal or family experience with serious illness.

Several studies have shown less empathy in men and among students who prefer a surgical spe-

cialty^{3,20,21}. The low empathy among doctors in surgical specialties can be explained by the influences of negative factors such as lack of model, predominance of technical content to be learned, hostile work environment, fear of making mistakes, traditional curriculum model and even reduction in the quality of the sleep^{10,11}. This is especially true in the period of medical residency, when there is an overload due to a steep knowledge learning curve, increasingly complex patients, time constraints and administrative responsibilities.

The performance of empathy is also influenced by a variety of external factors, such as the patient population or the need for self-defense in the face of stressful work^{11,20,21}. Descriptive studies that evaluated the surgeon's communication with patients showed that surgeons spend most of their time exchanging medical information and rarely addressing emotional and psychosocial aspects of care¹⁵. Other studies have reported a surgeon's response to empathic opportunities by only 10-30%¹⁵.

A study that evaluated by telephone interviews 886 patient visits to orthopedic surgeons, found that patients reported only 53% of their real concerns about surgery to physicians, rarely bringing up issues such as lack of social support and other barriers to

surgery¹⁵. In the study by Tongue et al., 22 75% orthopedic surgeons believed that they communicated well with their patients, but only 21% patients reported having perceived adequate communication by their physicians.

A question to be raised is whether the studies that have been carried out to assess physician empathy by self-report scales are able to identify behavioral aspects, that is, whether the doctor effectively transforms what he/she thinks into action during patient care. In the present study, we opted for the analysis of medical empathy in the patient's perception after outpatient care, performed by the CARE scale, which assumes that empathy impacts the results of treatment, but that to be effective, it needs to be communicated to the patient^{1,17}.

A systematic review of tests to assess empathy in medicine argues that the analysis of the patient's perception, in contrast to the physician's self-report, is a more relevant measure to measure the physician's empathy²³. Other studies question whether patient assessments and physicians' self-assessments measure the same phenomenon²⁴. An important consideration about the CARE scale is that its content accurately reflects the opinions of patients in all sectors of the community, its wording was developed to produce a meaningful measure for patients across the socioeconomic spectrum¹⁷.

Bernardo et al.²⁵ demonstrated the lack of correlation between the levels of empathy obtained by self-assessment instruments and the perceptions of patients and suggest that patients should be included in the empathy assessment process. They also identified that the CARE scale was able to capture differences between the measurements of empathy from initial and subsequent medical visits. This finding suggests that the CARE measure can capture subtle nuances of patients' interactions with their physicians, confirming its value for assessing the relationship between the measure of empathy and the intervention performed²⁵.

In the present study, although the respondents in the 1st phase are different from those in the 3rd phase, the sociodemographic characteristics of

the two samples were similar. Mercer et al.²⁶ demonstrated that the CARE scale scores did not vary between groups of patients, in terms of gender, reason for medical visit or type of disease, supporting the scale's validity in different scenarios.

With regard to the patient's perception of the resident physician's empathy, the data analysis showed an improvement in the mean scores of the CARE scale after the intervention, suggesting that after using the HEM, physicians somehow, explicitly or implicitly, expressed empathy for the patients. This is surprising, as it reflects a behavioral result of empathic ability, after all, to be perceived empathy needs to be communicated¹. It is noteworthy that the patients were not aware of the study during the consultation and consequently were not influenced to focus on their physicians' behavior.

In this study, it was observed that the HEM, which aims to increase the physician's awareness of his/her patients and their own emotional states, in addition to providing behavioral tools to transmit empathic understanding, proved effective in a real care setting. The change in the scores obtained by the CARE scale indicates that empathy can indeed be taught and corroborates the findings in the literature that demonstrate that empathy training can reverse its decline during medical residency^{2,4}. Patel et al.², in a systematic review identified that the curricular insertion of activities in real settings, which allow the apprentice to practice compassionate care, as is done for the training of other skills, favors the development of empathy, a fact observed in this study and easily feasible with HEM.

In general, empathy studies have intrinsic limitations of assessment, both in terms of the scope of the assessment instrument construct and the self-reported form of the interviewees' perceptions, which depends on their socio-cultural values and self-knowledge. In order to minimize this problem, it was essential in the present study to guarantee the confidentiality of information during the entire data collection. Furthermore, the availability of researchers during the study period, providing all the support for respondents, favored the quality of the responses to the questionnaires used.

Some limitations of this study are highlighted. The first one, inherent to the method, refers to the acceptance of the subjects, who may have constituted a public “selected by affinity with the project’s theme”. That is, a group with a greater positive predisposition in relation to the researched topic, which may have influenced the research findings. This study may also reveal limited conclusions as it was carried out in just one medical residency program. It is admitted that the results obtained are representative of the population of residents in orthopedics at Hospital São Francisco, but it cannot be said that they are generalizable to all residents in orthopedics in Brazil, as it is a convenience sample. Another limitation was the fact that there was no long-term monitoring of the effects of using the HEM.

Future research could examine the retention of the empathic behavior skill, as well as the need for reinforcement training, so that the HEM mental model can be incorporated into daily practice. It is important that future studies evaluate the use of HEM in other medical specialties, other health professions, during the undergraduate period and even in simulated scenarios.

Despite these limitations, this study contributed to the discussion on teaching empathy. Since it is a skill that can be taught, the data in this study suggest that the HEM is a facilitating tool for the practice of empathy, able to improve the perception of patients about the empathic behavior received in care settings. This information may generate subsidies for the incorporation of this instrument as part of the strategies for developing empathy in real practice scenarios. Future studies could assess whether the use of HEM results not only in improvements in patients’ perceptions, but also in the effectiveness of interventions, resulting in greater adherence to therapy, better satisfaction by health professionals, reduced burnout, and less allegations of negligence.

CONCLUSION

Using HEM for 4 weeks, during orthopedics outpatient care, promoted an increase in the resident

physician’s perception of empathy from the patient’s perspective, demonstrating that empathic behavior can be taught, integrating the use of the HEM with care training in residency programs. Faced with the decline in empathy skills reported in the health professions, this study contributes by presenting an instrument that is simple to use and has the potential to be incorporated as part of the auxiliary strategies for the development of empathic ability in the training programs of health professionals.

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