RBEM
Revista Brasileira de Educação Médica

ORIGINAL ARTICLE

DOI: https://doi.org/10.1590/1981-5271v45.4-20210224.ING

The Health Empathy Map as an instrument of reflection in a non-care teaching scenario

Mapa da Empatia em Saúde como instrumento de reflexão em cenário de ensino não assistencial

Luíza Uchôa de Resende Sousa[1] uchoaluiza@yahoo.com.br
Eliane Perlatto Moura[2] elianeperlatto@gmail.com
José Maria Peixoto[2] jmpeixoto.prof@gmail.com
Janaina de Souza Aredes[2] janainaaredes@gmail.com
Camila do Carmo Said[2] camiladocarmosaid@gmail.com

ABSTRACT

Introduction: The development of empathy during graduation aims at forming graduates who are more prepared to build a good relationship with their patients. The health empathy map (HEM) is an adapted tool with the purpose of developing empathy in students and future doctors using self-reflection.

Objectives: To evaluate the effect of using the HEM, in the tutorial group scenario, on the empathy score measured by the Jefferson scale and in the assessment of the students' empathic relationship with their patients.

Method: This was a quasi-experimental study that used a mixed-method approach, in the explanatory plan modality carried out with 56 students from the 5th semester of the undergraduate medical course at José do Rosário Vellano University, UNIFENAS-BH. The students were divided into two groups: G1: students who used the HEM in the tutorial group (TG) strategy and G2: students who did not use HEM in the TG. All students completed a sociodemographic questionnaire at the beginning of the study and the Jefferson Empathy Scale at the beginning and the end of the study. Statistical analyses were performed comparing the JSPE-Br scores between the groups and the study phases, and the HEM content analysis was performed.

Results: The global empathy score was high in all phases of the study and did not differ between the groups. The content analysis revealed that the HEM encouraged students to reflect on the patients' conditions, based on the mainstays of empathy, and considering the reading of their narratives. The reflections ranged from the biomedical aspects to complex socio-affective perspectives.

Conclusion: HEM stimulated the students' empathic reflection in a non-care setting and was able to identify the scope of the reflections, allowing the different perspectives to be discussed.

Keywords: Medical Education; Empathy; Medical Students.

RESUMO

Introdução: *O desenvolvimento da empatia durante a graduação tem a finalidade de formar egressos com mais preparo na construção de uma boa relação com seu paciente. O Mapa da Empatia em Saúde (MES) é uma ferramenta adaptada com o propósito de desenvolver, por meio da autorreflexão, a empatia dos estudantes e futuros médicos.*

Objetivo: *Este estudo teve como objetivos avaliar o efeito do uso do MES na empatia autorrelatada em estudantes de Medicina no cenário de grupo tutorial (GT) e analisar as características das reflexões realizadas.*

Método: *Trata-se de estudo quase experimental, com abordagem de métodos mistos, na modalidade plano explicativo, realizado com 59 estudantes do terceiro ano da Unifenas de Belo Horizonte. Quarenta e um estudantes utilizaram o MES no GT, e 18 fizeram o GT de forma habitual. No início do estudo, os participantes responderam a um questionário sociodemográfico e à Escala de Empatia de Jefferson (JSPE-Br), a qual foi reaplicada ao final. Realizaram-se análises estatísticas em que se compararam os escores da JSPE-Br entre os grupos e as fases do estudo, e fez-se ainda a análise de conteúdo do MES.*

Resultado: *O escore global de empatia se mostrou elevado em todas as fases e não diferiu entre os grupos. A análise de conteúdo revelou que o MES estimulou os estudantes a refletir sobre o quadro dos pacientes, com base nos pilares da empatia, a partir da leitura de suas narrativas. As reflexões variaram de aspectos biomédicos a perspectivas socioafetivas complexas.*

Conclusão: *O MES estimulou a reflexão empática dos estudantes em cenário não assistencial e foi capaz de identificar a abrangência das reflexões, o que possibilitou as diferentes perspectivas a serem discutidas aqui.*

Palavras-chave: *Educação Médica; Empatia; Estudantes de Medicina.*

[1] Centro Universitário Presidente Tancredo de Almeida Neves, São João Del Rei, Minas Gerais, Brazil.
[2] Universidade José do Rosário Vellano, Belo Horizonte, Minas Gerais, Brazil.

Chief Editor: Rosiane Viana Zuza Diniz.
Associate Editor: Roberto Zonato Esteves.

Received on 05/25/21; Accepted on 08/19/21.

Evaluated by double blind review process.

 DOI: https://doi.org/10.1590/1981-5271v45.4-20210224.ING

INTRODUCTION

Empathy is a social skill that involves the capacity to put yourself in the other's shoes, providing support and making them feel understood[1]. It is a multidimensional construct with affective, cognitive and behavioral components[2,3]. The emotional states of others are shared through the affective component, while the cognitive and behavioral components are responsible for the capacity to reason about the mental states of other individuals and deliberate on communication and help actions[4].

In the health area, empathy stands out in discussions on the improvement of interpersonal relationships, aiming at the humanization of care practices[5,6], in addition to being associated with better therapeutic results, and greater patient and professional satisfaction[7]. Despite its importance, it has been verified that empathy can undergo changes throughout the medical course, ranging from a small increase to the decrease in it[8].

The development of empathy skills is one of the essential learning objectives in the training of health professionals and its improvement should take place since undergraduate school[9]. Several resources have been used to enhance the development of empathy in medical students[10-13]. However, most of the strategies used are restricted to the cognitive component, but not the multidimensional construct.

Studies indicate that the development of empathy skills in students is more effective when the topic is included in the context of academic activities. One of the strategies created for the teaching of empathy in health scenarios is the Health Empathy Map (HEM), which favors the conceptual appropriation of empathy. The HEM was designed to stimulate students' self-reflection and support the practice of empathy[14]. A study conducted by Cançado et al.[15] showed an increase in the perception of medical empathy by patients after the HEM was used, suggesting that this instrument favored the development of empathic behavior by resident physicians.

There is evidence that reading can be used for the development of empathy[16], as it requires imagining the different perspectives of its characters in unwitnessed events [17]. This study aimed to evaluate the effect of using the HEM while reading about clinical cases (without the patient's presence) in the Tutorial Group, a strategy adopted in Problem-Based Learning curriculum models.

METHODS

This was a quasi-experimental study, with a mixed-method approach, in the explanatory plan modality, in which qualitative analyses contribute to explain the initial quantitative results[18].

The sample consisted of medical students from the 5th semester of the medical course of José do Rosário Vellano University - UNIFENAS-BH , state of Minas Gerais, Brazil, who were attending the Cardiac Syndromes discipline, during the first semester of 2019, in the tutorial group (TG) scenario. Regularly enrolled students who agreed to participate in the study and signed the free and informed consent form (FICF) were included. The choice of the 5th semester was based on studies that identified that it was the 3rd year of the medical course, which characterizes the transition to the clinical cycle, a moment when the reduction of empathy starts to be observed among medical students[11].

The quantitative component of the study was carried out in 2 phases:

- Phase 1 – initially, all students were instructed to fill out a questionnaire with sociodemographic questions and the Jefferson Empathy Scale, Brazilian version for students - JSPE-Br[19].
- Phase 2 - in subsequent classes, students were divided into two groups: Intervention Group (G1), in which students were instructed to individually fill out the Health Empathy Map (HEM), after the clinical case analysis session in the TG and, in the Control Group (G2), students attended the TG sessions as usual, without filling out the HEM.

The questionnaires and maps were identified by the student's name and registration number, and the maps also contained the clinical case number. At the end of the five weeks of the discipline duration, the participants filled out the JSPE-Br again during the last class of the discipline. (Figure 1)

During the development of the research, three instruments were used:

- *Sociodemographic questionnaire:* semi-structured questionnaire, with 26 questions, to identify and characterize behavioral, health, family and educational environment factors.
- *Jefferson Scale (JSPE-Br):* this is a self-report instrument that assesses the level of empathy in medical students. It consists of 20 questions, measured by the Likert scale, from 1 ("strongly disagree") to 7 ("strongly agree"). There is no cutoff point in the produced assessment; the score is gradual, and the higher the obtained score, the more empathetic the evaluated student would be[19].
- *Health Empathy Map (HEM):* The HEM has four quadrants that encompass the three components of empathy: perspective taking, emotional sharing and empathetic concern. Each quadrant contains a question: 1. *"What would you feel if you were in this*

DOI: https://doi.org/10.1590/1981-5271v45.4-20210224.ING

person's shoes?"; 2. "What is your perception of this person's needs and desires, current and future ones?"; 3. "How do I feel knowing this person's history?" 4. "How can I help this person?" In the center of the HEM, there is the drawing of an emoji without the eyebrows and mouth, and below are six emojis representing the basic facial expressions[14]. Students were instructed to fill out the HEM, answer the questions and, at the end, indicate the facial expression that they believe represents the feeling of the patient described in the TG case.

In this study, the seven clinical cases that already existed in the Cardiac Syndrome Discipline were used. The problems are related to the main topics of cardiology, with two being related to arterial hypertension, one to stable angina, one to acute coronary syndrome, two to heart failure and one to atrial fibrillation. They are presented through clinical vignettes that address the biomedical aspects and present psychosocial considerations related to the person and family members depicted in the case.

This study was approved by the Research Ethics Committee at Universidade José do Rosário Vellano (CAAE), under number 02657618.0000.5143.

Data analysis

Descriptive statistics carried out by univariate analysis were performed for the analysis of the quantitative data using Student's *t* test and/or Analysis of Variance (ANOVA), Chi-square test, Fisher's exact test and multiple linear regression analysis. The level of significance was set at 5% ($p < 0.05$). The statistical software SPSS, version 14.0 for Windows was used.

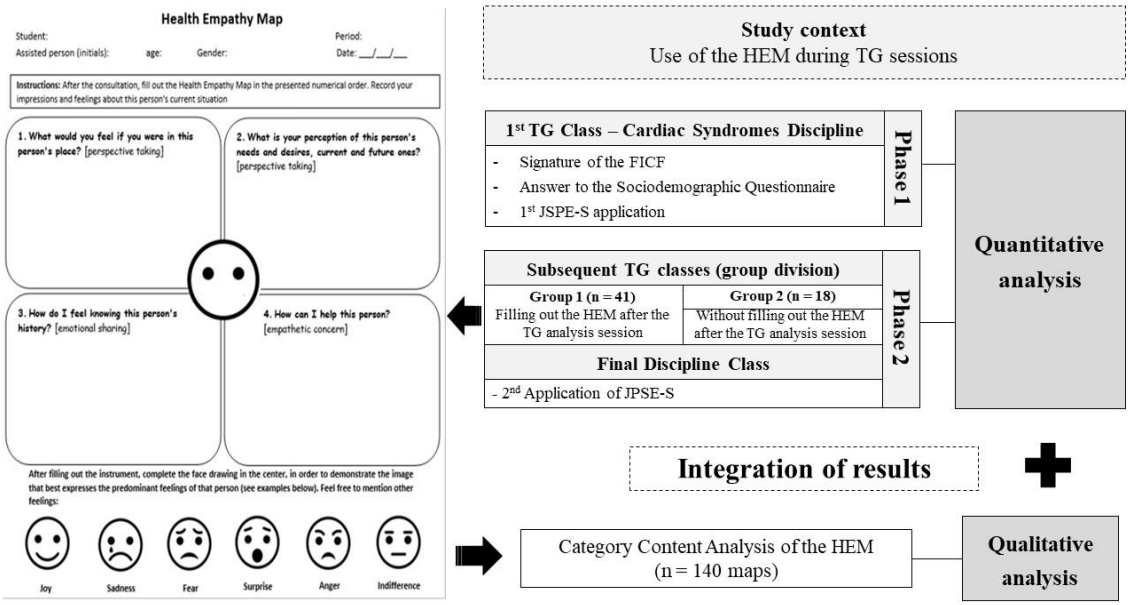
To integrate and complement the obtained results, a qualitative analysis of the HEM was performed using the content analysis technique, categorical modality, as proposed by Bardin[20], which is based on the decoding of a text into several elements thar are then classified and form thematic groups that help to understand and describe the content of the messages.

First, the maps were transcribed in full into Microsoft Excel® files. The answers contained in each map were typed in tables (separated by each clinical case) according to the overall structure of the HEM (4 quadrants).

The data circumscribed in the HEM were organized based on the identification of key ideas arising from the responses[20], restricted to the records contained in each quadrant of the maps and according to the characteristics of the empathetic reflection demonstrated by the student in writing. In quadrant 1, it was considered whether the students reflected on the case, putting themselves in the patient's shoes (yes or no). In quadrant 3, it was considered whether the students were affected by the case after knowing the patient's history (yes or no). In quadrants 2 and 4, the students' responses were classified according to the following axes: identification of needs restricted to the disease and/or biomedical aspects; consideration for the person's feelings and desires and consideration for the person's family and/or social context.

To ensure data validation and reliability, this classification was independently performed by three researchers of the study. The final codifications were defined through research

Figure 1. Study phases.



TG – Tutorial Group.

team meetings, during which the discrepancies were discussed until a consensus was reached.

Aiming to interpret the data obtained from the content analysis, a model was developed for the classification of answers for each quadrant of the HEM (Table 1), using as theoretical references the stages of development of perspective taking in childhood, as proposed by Selman[21] and the classification of levels of empathy by Fuchs[22]. Selman[21] proposes that, in childhood, the perspective taking capacity evolves in stages, in which the child initially does not differentiate their perspectives from others' (4 to 5 years), and subsequently realizes that people's perspectives can differ (6 to 7 years), begins to recognize that other perspectives can be correct (8 to 10 years), then understands that perspectives can be related to groups of people (10 to 12 years), and finally that they are not limited to interpersonal relationships, but also to the social system. Although Selman's (1975) proposal is related to childhood, it is observed, in his classification, that perspectives can differ between people and more, that they can be related to a social group.

Fuchs[22] describes that empathy has two distinct levels in relation to the form of manifestation: 1) primary empathy, which would be an implicit form, in which the emotions observed in others are felt and experienced by the observer, which he calls body resonance; and 2) extended empathy, an explicit way in which the observer imagines what it would be like to be in the other's shoes, reflecting and making inferences, called *imaginative transposition*, a way that provides the possibility of a higher level of social understanding[23].

Therefore, the classification model proposed in this study was based on the evolution characteristics of Selman's perspective-taking[21], on Fuchs' classification proposal[22], which can be applied to all ages, and on the student's capacity to identify the patient's perspective at progressive levels of their relationship (levels 1, 2 and 3): 1) when the student demonstrates the observation of the biomedical aspects only related to their professional practice; 2) when they consider the individual's psycho-emotional components; and 3) when they are able to consider the social relationships involved in the patient's perspective (Chart 1).

RESULTS

Sample characterization

A total of 59 students participated in the study, as they met the proposed inclusion criteria. Regarding the participants' sociodemographic profile: 55.9% (n=33) were females; 55.2% (n=32) were aged between 19 and 21 years; 69.5% (n=41) self-declared white ethnicity; 79.7% (n=47) practiced some type of religion; 96.6% (n=57) were single; 89.8% (n=53) attended high school in a private school; 67.8% (n=40) did not have a scholarship; 42.4% (n=25) had a family income > R$15,000.00; 96.6% (n=57) did not have a paid job; 86.4% (n=51) had some type of hobby; 74.6% (n=44) did not practice any artistic activity; 66.1% (n=39) attended artistic events; 79.7% (n=47) had no chronic diseases; 74.6% (n=44) had a history of family chronic disease and 88.1% (n=52) declared Medicine as their 1st university course. The two groups were homogeneous in relation to the analyzed sociodemographic variables.

Chart 1. Model for the classification of responses by HEM quadrants in empathy dimensions.

Quadrants of HEM	Characteristics of the answers	Empathy Dimensions
Quadrant 3 How do I feel knowing this person's history? *[emotional sharing]*	Feelings and reflections expressed in the answers indicate whether the student was affected by knowing the patient's case; if the history of the other "affected" the student.	**Primary Empathy** *Body Resonance*
Quadrant 1 What would you feel if you were in this person's place?"; *[perspective taking]*	They demonstrate that the students put themselves or not in the other's shoes. The feelings and reflections expressed in the answers indicate that the students put themselves in the patient's shoes.	**Extended Empathy** *Imaginative transposition*
Quadrant 2 What is your perception of this person's needs and desires, current and future ones? *[perspective taking]* **Quadrant 4** "How can I help this person? *[empathetic concern]*	Level 1: They demonstrate the identification of needs with a restricted focus on the disease and/or biomedical aspects. Level 2: It considers the wishes, feelings and needs expressed by the patient described in the clinical vignette. Level 3: It considers the family context (other actors involved in the case) and/or social context (employment, breadwinner, etc.).	**Extended Empathy** *Higher level of understanding*

Source: Created by the authors based on the HEM content analysis and theoretical references proposed by Selman[21] and Fuchs[22].

Empathy score in the analyzed groups

The mean of the participants' overall empathy score was high in all study phases (Table 1). There were no differences in the obtained scores between the groups, in each domain of the scale or within the same group, in the different phases of the study ($p > 0.05$ – ANOVA). However, students from both groups had significantly lower values in the domain "Capacity to put oneself in the other's shoes" compared to the other domains of the scale in the two phases of the study (p=0.040 - Friedman) (Table 2).

It was observed that students with a family history of chronic disease had higher mean empathy scores than those who did not, both in the overall score (p=0.033 – Mann-Whitney) and in the Compassion domain (p=0.029 Mann-Whitney). The other sociodemographic variables did not show correlations with the scores obtained at the JSPE-Br.

Content analysis of the Health Empathy Maps

A total of 140 HEMs were considered, which included 7 clinical cases: Case 1 (n=23); Case 2 (n=23): Cases 3 and 4 (complementary - n=31): Case 5 (n=25); Case 6 (n=20) and Case 7 (n=18). The analysis was performed for each case and each quadrant of the HEM.

To evaluate the affective component, the answers that demonstrated the students' feelings and reflections when they learned about the case and the patient's history, obtained in the 3rd quadrant of the HEM – "*How do I feel knowing this person's history*?" were considered. It is the primary empathy linked to body resonance according to the classification proposed in this study (Chart 1).

As for the cognitive component, the answers that demonstrated how the students imagined what they would feel if they were in the patient's shoes, obtained in the 1st quadrant of the HEM - "*What would you feel if you were in this person's shoes*?" were analyzed. It is the extended empathy, in which the imaginative transposition takes place (Chart 1).

Most students, 72.9% (n=102), were able to identify their own feelings regarding the patient's situation; however, 27.1% (n=38) showed difficulty in expressing emotional sharing (Graphic 1), according to with report below:

> *"I feel that patients like Mr. Eduardo are people who are not so concerned about their own health, but who do everything for others (S2- case 2)"*

Regarding the extended empathy, 95.7% (n=134) of the students showed that they reflected on what they would feel if they were in the patient's shoes (imaginative transposition) (Graphic 1), with fear, anxiety, sadness and concern being the most common feelings. mentioned in the answers:

> *"I would feel scared and anxious with so many signs and symptoms that had got worse along the way (S7- case 5)".*

Regarding the higher-level understanding of extended empathy, quadrants 2 (What is your perception of this person's needs and desires, current and future ones?") and 4 ("How can

Table 1. Mean of the overall empathy scores of students by group and study phase, obtained by the Jefferson Scale.

Participants	n	Phase	Descriptive measures			
			Minimum	Maximum	Mean	SD
Group 1	41	1	5.3	6.6	6.1	0.4
		2	4.6	6.7	6.0	0.5
Group 2	18	1	5.3	6.6	5.9	0.4
		2	4.9	6.7	5.8	0.5

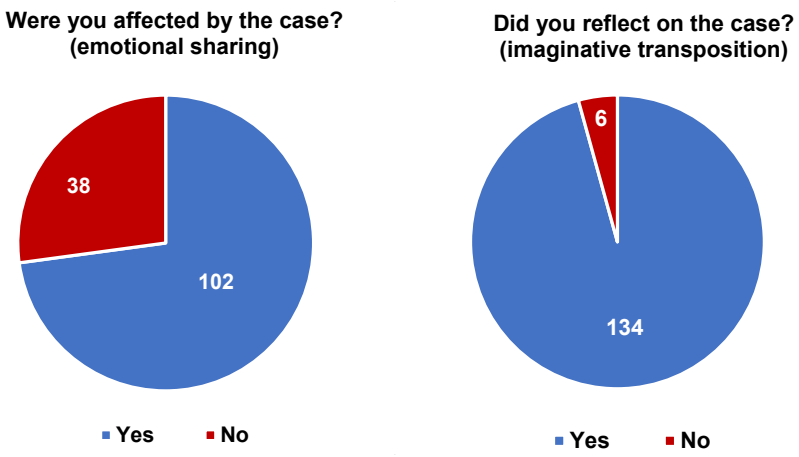
Table 2. Means of students' empathy scores between the Jefferson Scale domains, by group and study phase.

DOMAINS	GROUP / PHASE			
	GROUP 1		GROUP 2	
	PHASE 1	PHASE 2	PHASE 1	PHASE 2
	Mean ± SD	Mean ± SD	Mean ± SD	Mean ± SD
Perspective taking	5.9 ± 0.5	5.9 ± 0.5	5.8 ± 0.3	5.8 ± 0.6
Compassion	6.2 ± 0.3	6.1 ± 0.5	5.9 ± 0.5	5.9 ± 0.6
Capacity to put oneself in the other's shoes	4.2 ± 1.6	4.1 ± 1.5	4.4 ± 1.5	4.4 ± 1.4
p	< 0.001	0.006	< 0.001	0.040

The significance probability value (p) refers to Friedman's test.

 DOI: https://doi.org/10.1590/1981-5271v45.4-20210224.ING

Graphic 1. Distribution of answers according to the affective and cognitive components of empathy, obtained in the 140 evaluated HEMs.



I help this person?") of the HEM were analyzed. In quadrant 2, it was observed that 50% of the answers demonstrated a perception with a restricted focus on the disease: "*I feel that the patient needs help to treat their symptoms* (S9- case 5). Some answers (22.1%) considered the patient's feelings and desires, and in 15% of them only the patient's feelings were expressed:

> *"I see that this patient has hope for better days and a good view of the future, they aspire to grow and improve (S15- case 6)".*

While 7.1% of the answers considered the dimensions of the disease and the patient's feelings:

> *"They want to help treat their symptoms, because they feel very worried and afraid that it is something more serious, causing their death (S14- Case 7)".*

The social and/or family context was considered in 25.7% of the responses, with 3.6% considering only the social dimension:

> *"The patient was not worried about themselves, but with the effects that "their disease" or even their death would have on their family, which depends on them (S10-Case 1);*

Whereas a total of 15% considered the disease and its social dimensions:

> *"Improving their health to take care of their children and mother (S9-Case 1)";*

A total of 4.3% considered the personal and social levels:

> *"I believe that at this moment it is with the people they will leave behind, worrying about their loved ones. Thus, it is important to bring them into the care to calm the patient and help them resolve pending issues (S10-Case 5)"*

And only 2.9% considered levels 1 (disease and/or biomedical aspects), 2 (psycho-emotional components) and 3 (social and family context) simultaneously:

> *"The patient feels scared due to the possibility of losing their sight. They feel worried about having to work and pay for their son's college education (S3- Case 2)".*

Still, when reflecting on how they could help the patient (Quadrant 4), 42.8% of the answers focused only on the disease:

> *"I can explain to them how the drug treatment works and show how important it is. Thus, the patient will possibly adhere to the treatment and have a controlled health condition (S13-Case 2)";*

A total of 42.8% considered the patient's feelings and desires when reflecting on how they could help them, and 12.8% considered the personal level:

> *"Putting myself in their shoes, listening to their fears and trying to provide the necessary support at that moment" (S8 -Case 5)*

And 30% considered the disease and personal levels:

> *"Assisting in the treatment and emotional support to make them adhere and feel safe having me as their doctor" (S7-Cases 3 and 4)".*

Only 19% of the students reflected on the patient's social and/or family context when deciding how they could help them, and of these, 1.4% reflected only on the social level:

> *"Advising about solving unfinished business and talking to the family" (S1-Case 5)";*

A total of 2.9% of students considered the disease and social levels:

> *"Family support. And, before that, a way to treat and help (S11- Case 5)";*

And 2.9% considered the personal and social levels

> *"If it were their moment to depart, I would say that I would help their family with whatever they needed and that they had been a good person and had reached the end of their life with dignity" (S9- Case 5)".*

Only 6.4% of students considered the three levels: disease, personal and social when reflecting on what they could do to help the patient:

> *"I would refer them to a psychologist so there would be emotional support in relation to the situation of divorce, alcoholism, care for the dependent mother. Reinforce LSCs [Lifestyle Changes] for them to improve their quality of life. Medications (S10 - Case 6)."*

DISCUSSION

The results of this study showed high levels of general empathy scores obtained in the JSPE-Br by the participants, in both phases of the study. Similar results were found by Caires[24] in a study carried out at the same institution.

It is interesting to note that, in this study, despite the high scores, the subscale that assesses the "*capacity to put oneself in someone else's shoes*" was reduced for the entire sample, regardless of the study phase. Similar results were obtained by Mohammadi et al.[25] and Diaz-Narváez[26] who evaluated medical and dental students.

These data are intriguing, as the empathy ability presupposes the capacity to put oneself in someone else's shoes. According to Decety and Cowell[27], this domain is included in the sphere of *perspective taking*. From a psychometric point of view, a residual factor in the original scale was considered, reinforcing the low discriminatory power of the levels of empathy in the Jefferson scale[28-30].

Empathy has a cognitive and emotional dimension, with the cognitive dimension being easier to be measured by scales[31]. However, it is the affective component that mobilizes the willingness for compassionate care which, in turn, is influenced by sociocultural and idiosyncratic issues. For these reasons, the assessment of empathy requires the association of methodological instruments with different approaches, as previously pointed out by Ren et al.[32] and Berg et al.[33] Since it is a construct whose analysis is a complex and multidimensional one, the incorporation of qualitative instruments has the potential to offer additional contributions to the understanding of empathy and its own assessment in different teaching and learning settings.

The HEM used in the context of the TG, in which the students have contact with the description of clinical cases, was able to stimulate reflections on the students' own feelings, if they were in the patient's shoes, awakening the emotional component of empathy: the capacity to be affected by another's emotions. This ability to assess one's own feelings is particularly important, since, according to Dymnond[34], the imaginative transposition of oneself into the thought, feeling or action of another is a fundamental component of perspective taking, which influences the nature of empathetic emotional experiences.

Moll, Meltzoff[35] consider the perspective taking as one of the most important socio-cognitive skills, as it reflects a general understanding that the same event can be seen and interpreted in different ways, depending on the observer's point of view. For Rogers C.[36,37], one of the most powerful forces in a relationship is the capacity to accurately capture the feelings and personal meanings that the patient is experiencing.

It was also identified that some students find it difficult to reflect on their own feelings regarding the patient's situation. This reflection is important in a world where emotions have been considered obstacles and distracting elements in a technicist medical practice[16]. D'Andrea[38], when presenting some difficulties in establishing an empathetic relationship, points out the physician's incapacity to recognize themselves as a total person, aware of their own feelings and the fact that Medicine is centered more on itself than on the individual.

The reflection on their own feelings and those of the patient exemplify the domain of compassion, which constitutes the construct of empathy. Weingartner et al.[39] define compassion as the recognition of the emotional suffering of oneself or others, associated with the desire to reduce this suffering, and associates it with positive results in the patient's health, in addition to improving their satisfaction.

The analysis of the map contents also revealed that a significant percentage of students only considered the patient's disease and a few students considered the three levels of empathy: disease, feelings and social context. These data indicate the need to develop educational strategies that aim to expand the student's understanding of the patient.

It is observed that, although the students' overall empathy scores at the JSPE-Br were high, the analysis of their responses by the HEM showed that the students had difficulties with some of empathy components, such as establishing the needs of patients and of compassionate empathy, where attention predominantly focused on the disease prevailed, not being able to identify the perspectives related to the feelings arising from the process of getting ill.

This study has some limitations such as: the fact that it was carried out at the beginning of the 3rd year, before the assistance activities started, may have prevented the finding of

lower values for the JSPE-Br scale scores, since previous studies indicate that the decrease in these scores has occurred from the 3rd year onwards. Another limitation is that it is a cross-sectional study and at a single moment of the course and only includes the contents related to cardiology, which does not allow transferring their findings to students at the beginning of the course and those attending the last years, as well as to other thematic areas of Medicine.

However, the study shows important contributions to the understanding of the development of empathy in health professions, where the use of mixed methods allowed a consistency validation element among the obtained data. This is the first study developed with the HEM in a non-care teaching setting, which used the reading of clinical cases as a strategy to stimulate the imaginative and empathetic reflection of medical students. The study showed that the content analysis of students' reflections in the HEM captured features that would not be identified through the self-report scales, commonly used in empathy studies.

The HEM contributes by explaining to educators the points where students need support so they can develop their perspective taking capacity at more complex levels. This study also presents a proposal for the categorization of perspective-taking in the health areas, which can be used as a reference to analyze the contents of the HEM, considering that there have been few attempts at categorization in adults.

FINAL CONSIDERATIONS

Based on the present results, one can infer that the HEM is an instrument with the potential to stimulate the development of empathy also in non-care environments, using the reading of clinical cases as a stimulating source to imagine and reflect on the several perspectives of the doctor-patient relationship. The HEM content analysis was able to capture features about the students' capacity of perspective taking that were not identified by the JSPE-Br self-report scale. The study results also showed that the HEM can be a useful tool to assess empathy in students, being able to indicate the differences in empathy dimensions among students and highlight specific points that can be worked on in a more individualized manner or in a group.

AUTHORS' CONTRIBUTION

Luíza Uchôa de Resende Sousa participated in the study design, data collection, discussion, results and writing of the manuscript. Eliane Perlatto Moura participated in the study design, data collection, discussion, results, manuscript writing and review, orienting the entire process. José Maria Peixoto participated in the study design and review. Janaina de Souza Aredes and Camila do Carmo Said participated in the study design, data collection, discussion, results, manuscript writing and review.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

SOURCES OF FUNDING

The authors declare no sources of funding.

REFERENCES

1. Thomazi L, Moreira FG, De Marco MA. Avaliação da evolução da empatia em alunos do quarto ano da graduação em medicina da Unifesp em 2012. Rev Bras Educ Med. 2014;38(1):87-93.
2. Decety J, Jackson P. La arquitectura funcional de la empatía humana. Behav Cogn Neurosci Rev. 2004;3(2):71-100.
3. Falcone EMDO, Pinho VD, Ferreira MC, Fernandes CS, D'Augustin JF, Krieger S, et al. Validade convergente do Inventário de Empatia (IE). Psico USF. 2013;8(2):203-9.
4. Thompson NM, Uusberg A, Gross JJ, Chakrabarti B. Empathy and emotion regulation: an integrative account. Prog Brain Res. 2019;247:273-304.
5. Costa FDD, Azevedo RCSD. Empatia, relação médico-paciente e formação em medicina: um olhar qualitativo. Rev Bras Educ Med. 2010;34(2):261-9.
6. Batista NA, Lessa SS. Aprendizagem da empatia na relação médico-paciente: um olhar qualitativo entre estudantes do internato de escolas médicas do Nordeste do Brasil. Rev Bras Educ Med. 2019;43(1):349-56.
7. De Benedetto MAC, Moreto G, Janaudis MA, Levites MR, Blasco PG. Educando as emoções para uma atuação ética: construindo o profissionalismo médico. Rev Bras Med. 2014; 71(n. esp. m 2):15-24.
8. Ponnamperuma G, Yeo SP, Samarasekera DD. Is empathy change in medical school geo-socioculturally influenced? Med Educ. 2019;53(7):655-65.
9. Nascimento HCF, Ferreira Júnior WA, Silva AMTC, Carvalho IGM, Bastos GCFC, Almeida RJ. Análise dos níveis de empatia de estudantes de medicina. Rev Bras Educ Med. 2018;42(1):152-60.
10. Suartz CV, Quintana MI, Lucchese AC, De Marco MA. Avaliação de empatia em residentes de especialidades clínicas e cirúrgicas da Universidade Federal de São Paulo. Rev Bras Educ Med. 2013;37(3):320-5.
11. Moreto G, Blasco PG. A Erosão da empatia nos estudantes de Medicina: um desafio educacional. Rev Bras Med. 2012;69(1):12-7.
12. Torres AR, Smairal SI, Vellozol AP, Trench EV, Lovadinil GB, Lima MCP. Ensinando a anamnese psiquiátrica para estudantes de medicina através da inversão de papéis: relato de experiência. Rev Bras Educ Med. 2019;43(2):200-7.
13. Vogel D, Meyer M, Harendza S. Verbal and non-verbal communication skills including empathy during history taking of undergraduate medical students. BMC Med Educ. 2018;18(1):157-64.
14. Peixoto JM, Moura EP. Mapa da Empatia em Saúde: elaboração de um instrumento para o desenvolvimento da empatia. Rev Bras Educ Med. 2020;44(1):e029.
15. Cançado PVR, Moura EP, Peixoto JM. O efeito do Mapa da Empatia em Saúde no comportamento empático médico percebido pelo paciente. Saude e Pesqui. 2021;14(2):e9081.
16. Medeiros NS, Santos TR, Trindade EMV, Almeida KJQD. Avaliação do desenvolvimento de competências afetivas e empáticas do futuro médico. Rev Bras Educ Med. 2013;37(4):515-25.
17. Prestes Z, Tunes E. A trajetória de obras de Vygotsky: um longo percurso até os originais. Estud Psicol. 2012;29(3):327-40.
18. Creswell JW, Clark VL. Pesquisa de métodos mistos. 2a ed. Porto Alegre: Penso; 2013.

19. Paro HB, Daud-Gallotti RM, Tiberio IC, Pinto RM, Martins MA. Brazilian version of the Jefferson Scale of Empathy: psychometric properties and factor analysis. BMC Med Educ. 2012;1:12-73.

20. Bardin L. Análise de conteúdo. São Paulo: Edições 70; 2015.

21. Selman RL. The relation of role taking to the development of moral judgment in children. Child Dev. 1971;42:79-91.

22. Fuchs T. Levels of empathy–primary, extended, and reiterated empathy. In: Lux V., Weigel S, editors. Palgrave studies in the theory and history of psychology. Empathy: epistemic problems and cultural-historical perspectives of a cross-disciplinary concept. London: Palgrave Macmillan; 2017. p. 27-47.

23. Schmidsberge F, Löffler-Stastka H. Empathy is proprioceptive: the bodily fundament of empathy – a philosophical contribution to medical education. BMC Med Educ. 2018;18(1):1-6.

24. Caires VV. Análise da empatia no estudante de medicina da Faculdade de Medicina – Unifenas-BH ao longo da graduação [dissertação]. Belo Horizonte: Universidade José do Rosário Vellano; 2019.

25. Mohammadi A, Kamali K, Jahandizi MH. Level of empathy for patients among students of Zanjan University of Medical Sciences in 2016. Preventive Care in Nursing and Midwifery Journal. 2016-2017;6(4):38-46.

26. Díaz-Narváez V, Oyarzún-Muñoz M, Reyes-Reyes A, Calzadilla-Núñez A, Martínez PT, González-Valenzuela C, et al. Psychometry and empathy levels and its dimensions in postgraduate students of dental specialties. Eur J Dent Educ. 2021.

27. Decety J, Cowell JM. The complex relation between morality and empathy. Behav Cogn Neurosci Rev. 2014;18(7):337-9.

28. Velicer WF, Fava JL. Effects of variable and subject sampling on factor pattern recovery. Psychol. Methods. 1998;3(2):231-51.

29. Hojat M, Gonnella JS. What matters more about the interpersonal reactivity index and the Jefferson Scale of Empathy? Their underlying constructs or their relationships with pertinent measures of clinical competence and patient outcomes? Acad Med. 2017;92(6):743-75.

30. Nunes RAA. Perfil da empatia médica de residentes do 3º ano de ortopedia e traumatologia [dissertação]. Belo Horizonte: Universidade José do Rosário Vellano; 2018.

31. Ickes W, Marangoni C, García S. Studying empathic accuracy in a clinically relevant context. In: Ickes W, editor. Empathic accuracy. New York: Guilford; 1997. p. 282-310.

32. Ren GSG, Min JTY, Samarasekera DD. Complex and novel determinants of empathy change in medical students. Korean J Med Educ. 2016;28(1):67-78.

33. Berg K, Blatt B, Lopreiato J, Jung J, Schaeffer A, Heil D, et al. Standardized patient assessment of medical student empathy. Acad Med. 2015;90(1):105-11.

34. Dymond RF. Personality and empathy. J Consult Psychol. 1950;14(5):343-50.

35. Moll H, Meltzoff AN. Perspective-taking and its foundation in joint attention. In: Roessler J, Lerman H, Eilan N, editors. Perception, causation, and objectivity. Oxford, UK: Oxford Scholarship Online; 2011. p. 286-304.

36. Rogers CR. Definições das noções teóricas. In: Rogers CR, Kinget MS. Psicoterapia e relações humanas: teoria e prática da terapia não-diretiva. Belo Horizonte: Interlivros; 1977. p. 54-82.

37. Rogers CR. Um jeito de ser. São Paulo: EPU, 1983 [access in 30 aug 2019]. Available from: https://www.ufpe.br/documents/38958/229603/ata/5b609c0d-0f53-4450-a2f8- 012c41b95428?version=1.0.

38. D'Andrea FF. Desenvolvimento da personalidade. São Paulo. Difusão Européia do livro, Edusp; 1972.

39. Weingartner LA, Sawning S, Shaw MA, Klein JB. Compassion cultivation training promotes medical student wellness and enhanced clinical care. BMC Med Educ. 2019;19(1):139.