



The Role of Empathy in Medical Education and Clinical Practice

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Abstract

This article is a mini review article, which aims to cover focused aspects of the topic empathy in clinical practice and medical education and discuss its recent developments. Empathy is an integral component of the fundamental and dynamic physician-patient relationship. Effective physician-patient relationship is essential to the provision of high-quality patient care. Physician empathy is an indispensable quality in a practicing medicine according to the principles of the so-called “patient-centered model of care”, which in turn, lies at the core of the so-called “good clinical practice” While physician empathetic behavior is necessary in clinical practice, it is rarely applied correctly for various reasons. The present study aims to discuss the nature of empathy (generally and in clinical practice), the role of empathy training during medical studies, and the means by which this can be achieved. Understanding the mechanisms that shape empathy in the physician-patient relationship deserves more careful attention. Empathy training should be integrated into medical curricula in the context of medical education.

Keywords: Empathy; Health Professionals; Physician-Patient Relationship; Patient-Centered Care; Empathy Training; Medical Education; Narrative Medicine; Theatre

Abbreviations: AI: Artificial Intelligence; JSE: Jefferson Scale; TCES: Toronto Empathy Scale; NM: Narrative Medicine.

Introduction

The concept of empathy is multidimensional and has attracted a variety of overlapping definitions [1]. In general terms, empathy is “the process of coming to know, understand, and care for another person” which involves “recognizing the emotions and putting yourself “in the shoes” of others” [2]. Empathy is an integral component of the fundamental and dynamic physician-patient relationship. Effective physician-patient relationship is essential to the

provision of high-quality patient care. Physician empathy is an indispensable quality in a practicing medicine according to the principles of the so-called “patient-centered model of care”, which in turn, lies at the core of the so-called “good clinical practice” [3]. Empathetic care is an integral component of medical professionalism [4]. Hojat M [5] concludes “that empathic engagement in the health care and human services is beneficial not only to the patients, but also to physicians, other health care providers, administrators, managers, health care institutions, and the public at large” [6]. Where there is empathy, interpersonal and international conflicts are reduced, prejudice, stigma and discrimination are combated. It promotes love, solidarity, altruism, respect

for the “Other” and his individual rights, beneficence, justice, and ultimately the values of humanism, morality and, of course, the essentially democratic structure of society.

While physician empathetic behavior is absolutely necessary in clinical practice, it is rarely applied correctly for various reasons. The present study aims to discuss the nature of empathy (generally and in clinical practice), the role of empathy training during medical studies, and the means by which this can be achieved.

Physician empathy can be beneficial to both patient and physician, and their relationship as well. Among other things, it can help build trust in the patient-physician relationship, increase patient satisfaction and improve treatment outcomes [2,3,7]. Furthermore, “it is associated with lower malpractice claims rates, job satisfaction, and reduced burnout” [2]. Being empathetic means to be able to put yourself in the place of the “Other”, to see things as they see them, to understand and share their experiences, thoughts, and feelings. It is the ability to understand the emotions of the “Other”, and/or the sharing of emotions with the “Other”. In short, it is the matching between the emotions of two people. In the context of health care, in particular, the importance of empathy is of great importance. Emotional empathy involves experiencing emotional states that are consistent with the emotional states of others. It is a qualitative construction, which, while can be measured it cannot be fully investigated with quantitative empirical studies. Qualitative and longitudinal empirical studies are needed.

Nowadays Empathy Declines

Empathy is a cornerstone of building of a more humane society. It promotes many forms of pro-society behavior (proposal behavior). Empathy and love overlap with each other, without being fully identical. However, empathy promotes love. Unlike love, empathy can to some extent be studied, measured, and further developed. Now, more than ever we should be interested in empathy. It is a sad fact that empathy has been gradually eroded in society over the last years and is threatened to be further eroded in the future. According to the literature, empathy began to wear off gradually, as early as 2000 [8]. Today, in the era of the electronic-impersonal society, where people find it difficult and torturous to communicate emotionally with each other, they choose to isolate themselves, societies are prone to fragmentation and “democracies” are driven to decay [9]. Especially, in the era of Artificial Intelligence (AI) which is evolving rapidly, while multiple benefits to humans are expected, unprecedented threats to the human condition and democracy/human rights may be posed. Therefore, we need to discuss love is more necessary than ever in human history [10]. However, in this case the following question arises: “how can AI follow the Development Pathway of Natural Empathy? [11]”. The design of artificial empathy is one of the most essential issues in social robotics [12,13].

The Three Domains Associated with Empathy

There are three domains associated with empathy: cognitive, emotional, and a behavioral [14] (Table 1).

Three Domains Associated with Empathy
A. Cognitive Domain: Empathetic people need to understand other’s thoughts, even if they differ from their own. For example, in the physician-patient relationship, the physician should understand what the patient thinks about the causes of his disease, his treatment, his lifestyle, the value of his life, or his suffering.
B. Emotional Domain: Authenticity is very important to ensure communication, otherwise it is pseudo-“empathy”. It is not necessary for the members of the relationship to feel the same thing, but the important thing is that they truly feel something and give each other a voice in each other’s feelings.
C. Behavioral Domain: Behavioral empathy refers to communicative actions, caring not only about what is happening at the current time, but also about what will happen tomorrow. It is of great importance to develop trust between the members of the empathic relationship.

Table 1: The three domains associated with empathy.

The Process of “Production” of Empathy

The literature supports the model of the “binary system”, i.e. empathy is “produced” by two paths, which work together. Heyes presents “a dual system model that distinguishes Empathy [1], an automatic process that catches the feelings of others, from Empathy [2], controlled processes that interpret those feelings” [1].

One path “produces” emotional empathy. Heyes C [1] calls it empathy. It is a mechanism that is created automatically, is fast, does not require effort, is not controlled, is subconscious, and neurophysiologically lower neural substrate this type of empathy. Furthermore, it occurs in humans from infancy, and in a few animal species. The matching of emotions is served by two mechanisms:

Synchronized emotion: two people have the same

emotional reaction to the same stimulus, in the same way and at the same time.

Emotional mirroring: one mimics facial expressions or vocal expressions of emotions, such as in infants. Literature claims matching emotional associations to argue that the mechanism is learned [1]. However, this assumption needs further investigation.

Emotional empathy is influenced by cognitive empathy [2], though not always [15]. Cognitive empathy leads to intentional behavior in favor of society and is “produced” by the mental and meta-mental path, which is slower, controlled, requires effort, is conscious, and neurophysiologically upper neural substrate this type of empathy. Furthermore, cognitive empathy (empathy 2) occurs in humans later and selectively in a few species of animals. Cognitive empathy rarely works without emotional empathy, in which there is emotional connection and sometimes identification. Previously, it has been argued that there is a clear distinction between emotional and cognitive empathy and that cognitive empathy is mainly important in clinical practice [16]. However, there is no clear distinction, and such a concept would lead to over-simplification. The two forms of empathy are neurobiologically interconnected, different anatomical structures underlie them. The neural substrates amygdala and anterior insula underlie emotional empathy [17]. Dorsolateral prefrontal cortex and the anterior cingulate cortex underlie cognitive empathy [18,19]. The anterior cingulate cortex surrounds the brainstem and is inserted between the cerebral hemispheres. It is associated with several different parts of the brain, including areas of the cortex that control thought and action, as well as subcortical areas involved in emotion. After all, both are sometimes observed to another degree in animal species [20].

Empathy and Oxytocin

An association of empathy with the hormone oxytocin is suggested, but the relationship between empathy and oxytocin is multidimensional and multifaceted [21]. The oxytocin-empathy correlation appears to have a genetic/genetic basis [21,22]. However, we should bear in mind that role of genes in empathy is under investigation.

Clinical Empathy and Burnout Syndrome

Scholars have observed symptoms of burnout syndrome in both medical students and residents. It was found that when burnout syndrome begins to gradually increase, empathy levels gradually begin to decrease [23]. However, the researchers argue that burnout syndrome begins to increase first, as occurred in the coronavirus pandemic conditions

[24]. It needs further investigation so that, if true, preventing burnout syndrome can prevent the gradual deterioration of empathy.

Clinical Empathy and Anxiety

It is argued that anxiety levels are loosely correlated with empathy levels. It is argued that empathy predisposes to high levels of anxiety [25]. However, other researchers consider this relationship of anxiety and empathy controversial due to the lack of adequate quantitative synthesis of empirical data.

Empathy and Emotion Regulation

Emotion control is the process by which one manages emotions. Both empathy and emotion control are multidimensional and complex structures. The relationship between them is supported but not yet clear. The processes that support these two constructions and are their components are correlated and overlap.

Similarly, it happens with brain (neuronal) structures, which are activated and support empathy and control of emotions [26]. The scientific community suggests trying to develop empathy through mechanisms that promote emotion control [27,28].

Empathy and Addiction

These are neuronal brain structures that are activated during addiction to toxic substances, overlap and interact with corresponding structures that are activated during the process of empathy [29]. Neural substrates such as insula, paraventricular nucleus of the thalamus and paraventricular nucleus of the hypothalamus are involved in addiction and empathy [30].

Factors Affecting Empathy

Lack of empathy-or low levels of empathy-may be due to several reasons. Among these reasons are included: large number of patients (physicians have to deal with), lack of sufficient time, physicians focusing on treatment, the dominant culture in medical schools, and the lack of training in empathy [31]. Furthermore, among these reasons are included: presumptions, arrogance among physicians, fear of violating boundaries, stress, lack of self-awareness and lack of proper training, as well as different socio-economic status [32].

According to scholars, empathy can be learned and therefore medical schools need to educate their students accordingly [33]. Many studies have stressed the need for future professionals to receive training to enhance their

empathy skills [34,35]. Both students and professional regard education as particularly important for enhancing empathy skills [36].

However, research data on the effectiveness of empathy training is limited [37]. A study conducted in the US explored the impact of education on empathy in health professionals and found that education can contribute significantly to improving the therapeutic relationship [38]. The same study argues that trained professionals are more likely to detect and be aware of the emotions of their patients, and therefore, being more able to meet their needs.

In a qualitative study, health professionals made suggestions about enhancing empathy. These proposals included educational interventions promoting holistic care and behaviors which are essential to address the patient's needs. Health professionals placed an emphasis on personal development, professional training, and supervision programs, rather than training in behavioral and communication skills [39].

Assessment of Empathy

One of the most important tools for quantifying empathy is the Jefferson Empathy Scale (JSE), which was originally used to assess empathy in medical students [40]. Subsequently, the use of the scale was extended to other professional groups, for example doctors, nurses, midwives, and students of other health professions.

The Jefferson scale has been widely used in medical research in many countries, including the USA, Poland, Korea, Italy, Japan and has been standardized for its validity and reliability [3]. The scale has been translated into many languages and detects even the slightest change in empathy [3]. Its widespread use may determine the trends prevailing in the international literature, while in practice it is observed to investigate mainly cognitive (clinical) rather than emotional empathy [3].

Furthermore, an important "tool" for measuring empathy is the Toronto Empathy Scale (TCES), which measures cognitive and emotional empathy equally, both in professional and personal life. Although it consists 85*5of 52 items, it has been used limitedly. TCES has not been widely used in research. A study published in a Chilian journal found that the Spanish version of the TCES demonstrated acceptable validity and reliability and could be used to assess personal and professional empathy in Chilean dental students [41].

In Greece, both scales have been validated and are widely used as different research "tools" for measuring empathy.

Importantly the use of two different empathy measuring scales (JSE and TCES) may result in production of different and inconsistent research results [3].

Empathy in Medical Education

Empathy and the Year of Medical Studies: Many studies conducted in different countries suggest that empathy for medical students begins to wear off in the first clinical year of study (third or fourth academic year) [3]. However, this should be approached with caution. Most literature reviews on this topic remain inconclusive. Studies found stable or even increasing levels of empathy throughout all years of study [3]. This is because studies differ in methodology, use different research "tools", the definition of empathy is not commonly accepted, and the Jefferson scale (JSE) is widely used [3]. The course of cognitive and emotional empathy may be differentiated [3]. Countries with similar cultures have shown similar patterns of empathy in medical studies. Empathy is strongly influenced by the cultural environment [3].

Medical Students' Empathy and Gender: A large majority of studies have found a statistically significant gender-based difference in levels of empathy. Studies have shown that women have higher levels of empathy than men and that in women the amount of empathy wears off slowly [3]. Importantly, studies that did not use the Jefferson Scale (JSE) have shown similar results [3]. It is suggested that this difference between women and men is due to the neurophysiological substrate [42].

Correlation between Empathy and Medical Specialty Preference: The higher the levels of empathy, the stronger the inclination of medical students towards choosing a specialty of person-centric rather than techno-centric character (e.g. pathology or psychiatry rather than surgery or radiology). This is supported by a large majority of studies, though not all [3].

Correlation between Empathy and Religiosity: Studies have yielded contradictory and inconclusive results regarding this correlation [3].

Empathy Enhancement Techniques

The literature suggests incorporating empathy enhancement techniques into the curriculum of Member States' medical schools. Many methods have been used to enhance empathy. The original developer of the JSE [5] proposed ten approaches to enhance empathy, as presented below (Table 2).

Approaches to Enhance Empathy
The development of skills in interpersonal relationships,
The recording of doctor-patient meetings during the examination of patients using audiovisual means,
Exposure to role models,
Role-playing games,
The observation / monitoring of the patient's experiences and the search for comments from the patient himself (patient shadowing/navigation), in the context of the holistic-patient-centered model of care,
The recording of experiences from the patient's stay in the hospital (hospitalization),
The Balient Method,
Studies in literature and arts,
The development of narrative skills,
Theatrical performances

Table 2: Approaches to enhance empathy.

To this effect, it is to be noted that several studies used games [42] in which a healthcare professional/user connected to a network to participate in a series of virtual situations in which the user played the role of caregiver and was instructed to choose the most empathetic or caring response to situations [43].

"Diversity dolls" is a practical educational method, which is used to enhance empathy among social care students at a Greek university. Students can develop empathetic attitudes towards socially vulnerable populations [44]. It is believed that the use of such art-based methods helps social care students feel safe, explore, and give meaning to the real-life conditions in which people live, through enjoyable, participatory, interactive activities [45,46]. It serves the fundamental rights of the patient and significantly reduces prejudice [47,48].

At any rate, it is not easy to decide what is the most effective method of enhancing empathy. Studies have shown different or even contradictory results in terms of their effectiveness. More longitudinal studies are needed [3].

Narrative Medicine

The so-called "narrative medicine" can be used to form empathetic relationships between physicians and patients [49]. Narrative medicine has been gaining ground in recent years over evidence-based medical education [49-52]. Narrative Medicine is cultivated along with empathy and places storytelling in the centre. However, there is still no complete consensus on its effectiveness, especially its long-term effectiveness and its positive effects on the patient.

In the context of narrative medicine, the following questions arise: Could a physician become better physician,

namely a physician who paying attention to their patients and communicate with them, by writing and studying stories? How could a physician become better physician, able to empower patient to be aware of their values and preferences and tell stories that are of great importance to them?

Narrative competence includes the development of physicians' skills to listen, communicate, perceive, explore their inner world, understand content in depth, think, interpret, and respond to patients' stories sensitively and in a way that provides the patient with assistance. "Narrative medicine (NM) is an educational tool that can be used to promote the professional competencies of medical students [53]. The trained physician remains committed to ethical values and "good medical practice".

In addition, specific training of physicians is needed to become able to address the needs of patients belonging to socially marginalized populations. Multimodal mixed-methods approach is better using multiple means, such as theoretical training, knowledge acquisition, audiovisual media, imaginary reality, live or distance communication with other people, close reading of humanitarian books and writing, discussing, and recording the patient's thoughts [49,51,52].

The Role of Theatre

Theatre is an important "tool" in empathy training. There are many common traits between the actor and the empathetic health professional [54-56]. Medicine is a representative art in the final analysis. The physician must play his role correctly, including improvisation, especially when dealing with complex and unpredictable situations. Importantly, one skill of a physician is "practical wisdom": doing the right thing, at the right time in certain

circumstances. The physician, as well as the actor, must be mentally and physically in front of the patient and find the factors that shape their “role” in the specific circumstances. Theater techniques can be used to teach empathy to medical students in groups. “Empathy and improve have many skills in common” [55]. The doctor’s communication with his patient is not only verbal. Some things are not said in words. Some things are unspoken. A deep understanding of one’s experiences and communication with another’s feelings goes beyond oral discussion. Communication and total presence in a human relationship is done with building emotional ties and staying mentally focused [56]. In the final analysis, the aim of using theatre to enhance empathy is to blur the line of distinction between the “objectivity of science” and the “subjectivity of culture”. Therefore, intellectual freedom, mutual understanding, and desire to exchange emotions with “others” required.

Actors can teach healthcare professionals important skills for practicing medicine more effectively, including the following: Accepting the perceptions of the “other” and the way they deal with situations, Being an active listener, Improvising in pressing conditions, Understanding without verbal communication, and Being able to manage their negative emotions [56].

Conclusion

Empathy between health professionals and healthcare recipients is indispensable element of an effective relationship between them and their well-being. The development of empathy skills is an important priority in the education of health and social care students and should be encouraged. Educational programs should primarily be carried out in a practical way that will enhance medical students’ personal and social skills and enable them to communicate effectively with their patients. Empathy training interventions should be integrated in medical curricula. In addition, health professionals should be supported through continuous and personal development programs, as well as supervision sessions that will allow them to develop empathy skills. Political will is a prerequisite for funding and encouraging further action.

Further research into the mechanisms of clinician empathy and effectiveness of empathy training methods is needed to help medical educators guide students to a better understanding of their own strengths and help them develop empathy skills. Narrative medicine in medical education can promote the so-called “patient-centered model of care”. Furthermore, teaching theater techniques to medical students (or physicians) seems to be a suitable tool for enhancing empathy among them. Empathy enhancement should be one of the main concerns of medical education in

the immediate future.

References

1. Heyes C (2018) Empathy is not in our genes. *Neurosci Biobehav Rev* 95: 499-507.
2. Robinson R, Meluski K, Hellem T, Hedwig T, Hansen N, et al. (2023) Rapid Scoping Review: Empathy in Health Sciences Curriculum. *Healthcare (Basel)* 11(10): 1429.
3. Voultsos P, Galanis P, Dafni MF, Velonaki VS, Andreou GN, et al. (2024) The Greek Jefferson Scale of Empathy-Medical Student Version (JSE-S): Psychometric Properties and Its Associated Factors. *Behav Sci (Basel)* 14(3): 195.
4. Schattner A (2022) Empathy-Now More Than Ever. *Am J Med* 135(4): 418-420.
5. Hojat M (2009) Ten Approaches for Enhancing Empathy in Health and Human Services Cultures. *Journal of Health and Human Services Administration* 31(4): 412-450.
6. Voultsos P, Chatzinikolaou F, Papana A, Deliliga A (2021) A Validation Study of The Greek Version of The Toronto Empathy Questionnaire In Medical Students And A Measurement of Their Empathy. *Research Square* pp: 1-29.
7. Lelorain S, Gehenne L, Christophe V, Duprez C (2023) The association of physician empathy with cancer patient outcomes: A meta-analysis. *Psychooncology* 32(4): 506-515.
8. Mangione S (2024) The Empathy Gap. *Am J Med* 137(3): 290-291.
9. Guibernau M (2013) *Belonging: Solidarity and division in modern societies*. Polity Press, 31: 255.
10. Arocena F, Sansone S, Alvarez N (2022) Technological disruption and democracy in the twenty-first century. *European Journal of Futures Research* 10(1): 3.
11. Zhu Q, Luo J (2023) Toward Artificial Empathy for Human-Centered Design: A Framework. *International Design Engineering Technical Conferences and Computers and Information in Engineering Conference*, 87318: 1-12.
12. Asada M (2015) Towards artificial empathy: how can artificial empathy follow the developmental pathway of natural empathy. *International Journal of Social Robotics* 7: 19-33.
13. Park S, Whang M (2022) Empathy in human-robot interaction: Designing for social robots. *International journal of environmental research and public health*

- 19(3): 1889.
14. Haidet P, Cooper AB, Fecile MLE, Melro CM, Moniz T, et al. (2024) The Empathy Conundrum. *Patient Educ Couns* 119: 108056.
 15. Smith A (2006) Cognitive Empathy and Emotional Empathy in Human Behavior and Evolution. *Psychol Rec* 56: 3-21.
 16. Neumann M, Bensing J, Mercer S, Ernstmann, N, Ommen O, et al. (2009) Analyzing the “nature” and “specific effectiveness” of clinical empathy: a theoretical overview and contribution towards a theory-based research agenda. *Patient education and counseling* 74(3): 339-346.
 17. Gu X, Hof PR, Friston KJ, Fan J (2013) Anterior insular cortex and emotional awareness. *Journal of Comparative Neurology* 521(15): 3371-3388.
 18. Montag C, Schubert F, Heinz A, Gallinat J (2008) Prefrontal cortex glutamate correlates with mental perspective-taking. *PloS one* 3(12): e3890.
 19. Rêgo GG, Lapenta OM, Marques LM, Costa TL, Leite J, et al. (2015) Hemispheric dorsolateral prefrontal cortex lateralization in the regulation of empathy for pain. *Neuroscience letters* 594: 12-16.
 20. Schnell K, Bluschke S, Konradt B, Walter H (2011) Functional relations of empathy and mentalizing: an fMRI study on the neural basis of cognitive empathy. *Neuroimage* 54(2): 1743-1754.
 21. Barchi-Ferreira AM, Osório FL (2021) Associations between oxytocin and empathy in humans: A systematic literature review. *Psychoneuroendocrinology* 129: 105268.
 22. Zhang W, Li X, Chen G, Cao Y (2021) The relationship between positive parenting and adolescent prosocial behavior: The mediating role of empathy and the moderating role of the oxytocin receptor gene. *Acta Psychologica Sinica* 53(9): 976.
 23. Wilkinson H, Whittington R, Perry L, Eames C (2017) Examining the relationship between burnout and empathy in healthcare professionals: A systematic review *Burnout research* 6: 18-29.
 24. Crump WJ, Ziegler C, Fricker S (2022) Empathy and Burnout During Residency: Which Changes First. *Fam Med* 54(8): 640-643.
 25. Nair TK, Waslin SM, Rodrigues GA, Datta S, Moore MT, et al. (2023) A meta-analytic review of the relations between anxiety and empathy. *J Anxiety Disord* 101: 102795.
 26. Singer T, Critchley HD, Preuschoff K (2009) A common role of insula in feelings, empathy and uncertainty. *Trends in cognitive sciences* 13(8): 334-340.
 27. Decety J, Meghan M (2008) From emotion resonance to empathic understanding: A social developmental neuroscience account. *Development and psychopathology* 20(4): 1053-1080.
 28. Thompson NM, Uusberg A, Gross JJ, Chakrabarti B (2019) Empathy and emotion regulation: An integrative account. *Prog Brain Res* 247: 273-304.
 29. Massey SH, Rebecca L, Newmark BA, Wakschlag LS (2018) Explicating the role of empathic processes in substance use disorders: A conceptual framework and research agenda. *Drug and alcohol review* 37(3): 316-332.
 30. Cox SS, Reichel CM (2023) The intersection of empathy and addiction. *Pharmacol Biochem Behav* 222: 173509.
 31. Hojat M, Louis DZ, Maio V, Gonnella JS (2013) Empathy and health care quality. *American Journal of Medical Quality* 28(1): 6-7.
 32. King JS, Holosko MJ (2012) The development and initial validation of the empathy scale for social workers. *Research on Social Work Practice* 22(2): 174-185.
 33. Riess H, Kelley JM, Bailey RW (2012) Empathy Training for Resident Physicians: A Randomized Controlled Trial of a Neuroscience-Informed Curriculum. *Journal of General Internal Medicine* 27(10): 1280-1286.
 34. Dadgari A, Kasaeian A, Atash SG, Naseri FL, Dadvar L, et al. (2009) Efficacy of Midwifery Clinical Curriculum in achieving Core Learning Goals Tutors and student's point of view. *Knowledge and health* 4(3): 28-33.
 35. Gazzaz ZJ, Baig M, Alhendi AI, Suliman AI, Alhendi AI, et al. (2018) Perceived stress, reasons for and sources of stress among medical students at Rabigh Medical College. *BMC medical education* 18(1): 1-9.
 36. Moudatsou M, Stavropoulou A, Philalithis A, Koukouli S (2020) The role of empathy in health and social care professionals. *In Healthcare* 8(1): 26.
 37. Pollak KI, Arnold RM, Jeffreys AS, Alexander SC, Olsen MK, et al. (2007) Oncologist communication about emotion during visits with patients with advanced cancer. *Journal of Clinical Oncology* 25(36): 5748-5752.

38. Bonvicini KA, Perlin MJ, Bylund CL, Carroll G, Rouse RA, et al. (2009) Impact of communication training on physician expression of empathy in patient encounters. *Patient education and counseling* 75 (1): 3-10.
39. Shapiro J (2002) How do physicians teach empathy in the primary care setting. *Academic medicine* 77(4): 323-328.
40. Hojat M, Mangione S, Nasca TJ, Cohen MJ, Gonnella JS, et al. (2001) The Jefferson Scale of Physician Empathy: development and preliminary psychometric data. *Educational and psychological measurement* 61(2): 349-365.
41. Carrasco DM, Henry EF, Villalobos CP (2014) Psychometric properties of the Yarascavitch Personal and Professional Empathy Scale in Chilean dental students.. *Revista de Educación en Ciencias de la Salud* 11(2): 8.
42. Rochat MJ (2022) Sex and gender differences in the development of empathy. *Journal of Neuroscience Research* 101(5): 718-729.
43. Sterkenburg P, Olivier L, Van Rensburg E (2019) The effect of a serious game on empathy and prejudice of psychology students towards persons with disabilities. *African journal of disability* 8(1): 1-10.
44. Papouli E (2019) Diversity dolls: A creative teaching method for encouraging social work students to develop empathy and understanding for vulnerable populations. *Social Work Education* 38(2): 241-260.
45. Harz D, Begin A, Alansari R, Esparza R, Zimmermann C, et al. (2023) The art of empathy: Teaching empathy through art. *The Clinical Teacher* 20(5): e13643.
46. Papouli E (2017) The role of arts in raising ethical awareness and knowledge of the European refugee crisis among social work students. An example from the classroom. *Social Work Education* 36(7): 775-793.
47. Hoffman ML (2011) Empathy, justice, and the law. In: Coplan A, Goldie P (Eds.), Chapter 4th, *Empathy: Philosophical and psychological perspectives* (Edn.). Oxford University Press, pp: 230-254.
48. Bäckström M, Björklund F (2007) Structural modeling of generalized prejudice: The role of social dominance, authoritarianism, and empathy. *Journal of Individual Differences* 28(1): 10-17.
49. Zhang J, Wang X, Chen O, Li J, Li Y, et al. (2023) Social support, empathy, and compassion fatigue among clinical nurses: structural equation modeling. *BMC nursing* 22(1): 425.
50. Charon R (1993) *The narrative road to empathy and the Practice of Medicine*. Yale University Press, pp: 147-159.
51. Zaharias G (2018) What is narrative-based medicine. *Canadian Family Physician* 64(5): 352-356.
52. Milota MM, van Thiel GJMW, van Delden JJM (2019) Narrative medicine as a medical education tool: A systematic review. *Med Teach* 41(7): 802-810.
53. Daryazadeh S, Adibi P, Yamani N (2021) The role of narrative medicine program in promoting professional ethics: perceptions of Iranian medical students. *J Med Ethics Hist Med* 6 (14): 21.
54. Harz D, Begin AS, Alansari R, Esparza R, Zimmermann C, et al. (2023) The art of empathy: Teaching empathy through art. *Clin Teach* 20(5): e13643.
55. Zelenski AB, Saldivar N, Park LS, Schoenleber V, Osman F, et al. (2020) Interprofessional Improv: Using Theater Techniques to Teach Health Professions Students Empathy in Teams. *Academic Medicine* 95(8): 1210-1214.
56. de Carvalho Filho MA, Ledubino A, Frutuoso L, da Silva Wanderlei J, Jaarsma D, et al. (2020) Medical Education Empowered by Theater (MEET). *Academic Medicine* 95(8): 1191-1200.