Received: 26 July 2024 | Revised: 25 October 2024 | Accepted: 29 October 2024

DOI: 10.1111/scd.13087

SYSTEMATIC REVIEW

WILEY

The effects of compassionate care on oral health outcomes: A scoping review

Mariana Sarmet Smiderle Mendes[1] | **Camila Lopes Ferreira**[2] | **Maria Aparecida Neves Jardini**[1] | **Christopher Andrew Childs**[3] | **Leonardo Marchini**[4]

[1]Department of Diagnosis and Surgery, the Institute of Sciences and Technology of São Paulo State University, São José dos Campos, Sao Paulo, Brazil

[2]Health Science Postgraduate Program, University of Taubate, Sao Paulo, Brazil

[3]Clinical Education Librarian, Hardin Library of Health Sciences, the University of Iowa, Iowa City, USA

[4]Department of Preventive and Community Dentistry, the University of Iowa College of Dentistry and Dental Clinics, Iowa City, USA

Correspondence
Leonardo Marchini, Department of Preventive and Community Dentistry, the University of Iowa College of Dentistry and Dental Clinics, Iowa City, USA.
Email: leonardo-marchini@uiowa.edu

Funding information
Capes

Abstract

Purpose: To access and synthesize the existing literature about the effects of compassionate care on oral health outcomes.

Methods: A scoping review was performed following Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines to identify articles from six electronic databases: MEDLINE via the PubMed interface, Embase, Age-Line, Scopus, CINAHL, and Cochrane.

Results: Among 30 studies reporting on compassion in dental treatment, only two reported on the effects of compassionate care on oral health outcomes. One study is cross-sectional and evaluated oral health outcomes in children, while the other is a cohort study evaluating oral health outcomes in older adults. Each study used different tools to assess oral health outcomes. However, both studies used the Jefferson Scale of Physician Empathy (JSPE) to assess empathy among dental students, dentists, or dental hygienists.

Conclusion: The retrieved studies used different methodologies and had discrepant results. More clinical studies investigating the effects of compassionate care on the outcomes of dental treatment are necessary.

KEYWORDS
compassionate care, dental care, dentist-patient relations, empathy, oral health

1 | INTRODUCTION

The central nervous system allows people to share feelings with others through mirror neurons, which are complex neural circuits in the brain that respond to observed actions. They were first recognized in 1992 in Parma, Italy.[1] These neurons activate when observing others' intentional actions, causing the observer to experience similar sensations. This mechanism allows people to feel what others are feeling, such as physical or emotional pain or happiness and is generally known as empathy.[2]

Compassion, in turn, is the emotional response to another's pain or suffering, accompanied by a genuine desire to help.[3] Therefore, compassionate behavior can influence the feelings and attitudes of others. In healthcare, when providers treat patients with compassion, it can lead to improved clinical outcomes.[3]

In medicine, studies have shown that compassionate care can relieve psychological pain, depression, and anxiety, increase motivation and life purpose.[4] and can also positively impact physiological outcomes, such as reducing the risk of heart attack.[5] and the common cold.[6] Compassion can also improve diabetes control,[7] speed up the wound healing process[8] and enhance overall quality of life and survival.[9] It is believed that similar results might be achievable in dentistry if dental providers are specifically trained to offer compassion to their patients.[10]

The dentist who makes the patient feel at ease, allows them to tell their story, actively listens, demonstrates interest, positivity, and care, understands concerns, clearly explains instructions, helps the patient practice self-care, and develops an action plan for their oral conditions in collaboration with the patient, makes the patient feel better and that they are receiving compassionate care.[11] Additionally, effective communication between the dentist and the patient seems to enhance patient compliance with treatment, whereas poor communication reduces it.[10] However, there has been little research about compassionate care's impact on tangible oral health outcomes as it has been shown for medical outcomes.

Therefore, this scoping review aims to access and synthesize the existing research findings about the effects of compassionate care on the oral health outcomes of dental treatments.

2 | METHODS

This review was performed following the PRISMA Extension for Systematic Reviews (PRISMA 2020)[12] (Figure 1). However, as this is a scoping review, its purpose differs from that of systematic reviews. The purpose of a scoping review is to broadly map the available literature on a topic without necessarily assessing the quality of the included studies. Therefore, a risk of bias assessment table was not created, as these studies would not align with many of the criteria commonly used in such tables {Tricco, 2018, PRISMA Extension for Scoping Reviews (PRISMA-ScR): Checklist and Explanation}.[13,14]

A literature search was performed by a health sciences librarian on the following electronic databases: MEDLINE via PubMed interface, EMBASE, Cumulative Index of Nursing & Allied Health Literature (CINAHL), Cochrane, AgeLine, and Scopus from May 29, 2024 to June 5, 2024, starting with PubMed and progressing in order as listed. The search terms were developed by the primary investigator and the health sciences librarian, who combined the terms to create a comprehensive search strategy. The search utilized in PubMed can be viewed in full in the supplementary material. The original search strategy was then adapted by the health sciences librarian for the other databases listed which can also be fully viewed in supplementary material. The English and Portuguese language and human studies filters were used in PubMed, EMBASE, & CINAHL. The human studies filter was not available in Scopus. None of the filters were available in AgeLine or Cochrane.

TABLE 1 Table of the PICO question.

PICO question	
P	Dental patients (without restriction by age, sex, and demographics)
I	Compassionate care training for dental providers
C	No specific compassionate care training for dental providers
O	Oral health outcomes (DMFT, periodontal indexes, plaque levels, etc.)

A total of 5358 citations were retrieved from all six databases: 1175 in PubMed, 1485 in EMBASE, 266 in Cochrane, 745 in CINHAL, 213 in AgeLine, and 1474 in Scopus. After duplicates were removed, 2907 citations remained. The resulting 2907 references were added to an Excel spreadsheet, which was screened by two examiners independently. During this initial screening, the examiners included references reporting qualitative, quantitative, and mixed-methods studies, review articles in English and Portuguese languages, without date restrictions, which specifically targeted studies that analyzed the effect of compassionate care provision in oral healthcare outcomes, according to the PICO question: *What are the effects of compassionate care in the outcomes of dental treatment?* (Table 1) This initial screening was performed by reading titles and, when necessary, abstracts.

Finally, the two independent examiners' lists of selected references were compared and discrepancies were discussed with a third researcher until consensus was achieved. From a total of 30 references reporting about compassionate care in dentistry, only two references investigated the effect of providing compassionate care on oral health outcomes and have been included in the analysis.

3 | RESULTS

Of the thirty full-text articles evaluated, 27 reported on compassion in dental treatment without correlating it to oral health outcomes.[11,15–40] (see Supplementary Material) and one study showed no dental results. The remaining two studies included in this review (see Table 2) were in Turkey[41] and Japan,[42] both from 2021.

The Turkish study is cross-sectional and evaluated oral health outcomes in children,[41] while the Japanese study

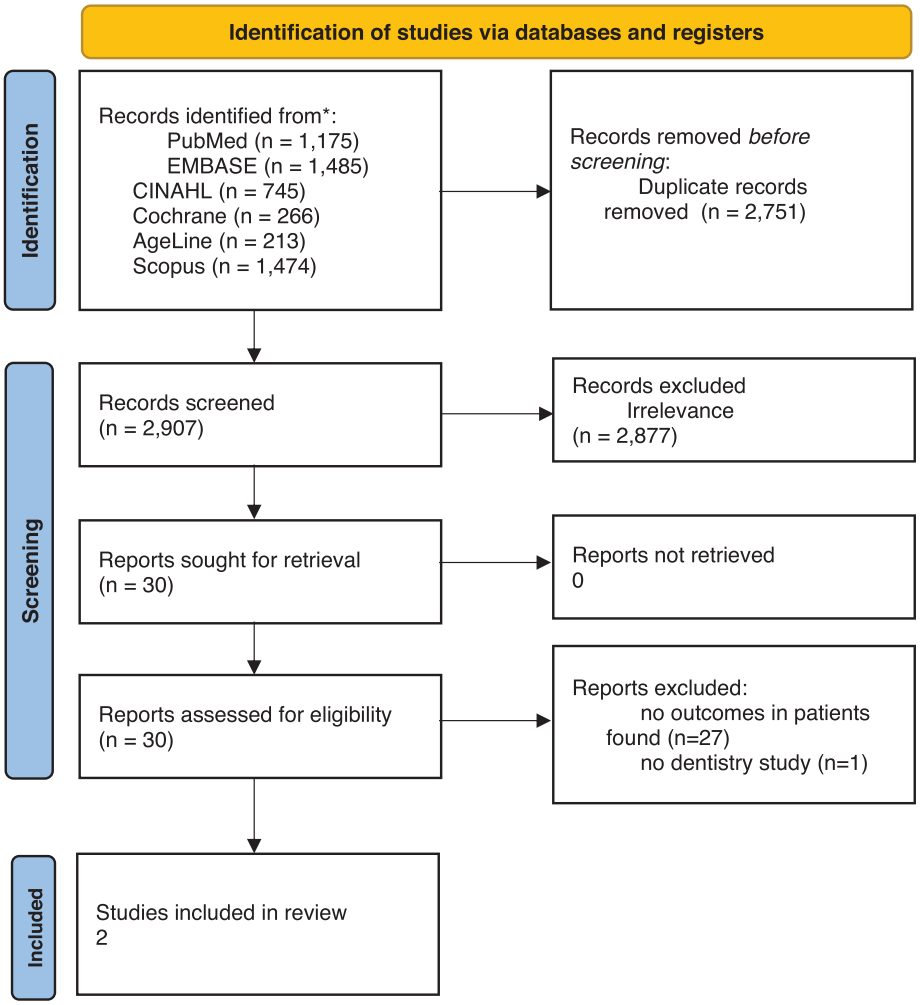

FIGURE 1 PRISMA 2020 flow diagram for new systematic reviews.

is a cohort study evaluating oral health outcomes in older adults.[42] The Turkish study[41] evaluated pain on local anesthesia administration and Anxiety using the Visual Analog Scale (VAS), Children's Fear Survey Schedule (CFSS-DS), Facial Image Scale (FIS), Venham Picture Test (VPT), and the other study[42] used the Oral Health Assessment Tool (OHAT)[43] to evaluate comprehensive care. However, both studies used the Jefferson Scale of Physician Empathy (JSPE) to assess empathy among dental students, dentists, or dental hygienists. Each study used a different version of the JSPE: The Student Version for evaluating pediatric dentistry postgraduates,[41] and the Health Professionals Version for evaluating dentists and dental hygienists.[42]

Regarding empathy training, the cross-sectional study[41] had no training while the cohort study had a 7-h French Multimodal Comprehensive Care Training Program called "the Humanitude" care methodology.[42,44]

The Japanese study[42] showed that Empathy improved the tongue appearance, natural teeth condition (presence of cavities), and oral hygiene scores of the OHAT, and the Turkish one[41] showed no correlation between Empathy and Pain on local anesthesia administration and a positive correlation between Empathy and Anxiety.

Both studies were conducted in different cultural contexts, with varying sample age profiles and distinct dental providers. Additionally, each study employed a different study design, namely cross-sectional and cohort.

4 | DISCUSSION

Empathy is defined as the emotional experience of another's feelings, while compassion is the emotional response to another's pain or suffering, involving an authentic desire to help. Empathy, when accompanied by action, can lead to compassion.[3] However, to search for articles related to compassion, the most appropriate MeSH term is "Empathy". In other words, in terms of behavior, empathy and compassion are different, but in general, in

TABLE 2 Studies included in this review.

Title	Effect of self-efficacy and empathy characteristics of post-graduate residents on local anesthesia administration performances: Pilot study	The effect of multimodal comprehensive care methodology training on oral healthcare professionals' empathy for patients with dementia
Author, year, country	Kuscu et al., 2021; Turkey	Kobayahi et al., 2021; Japan
Number and type of participants	10 female pediatric dentistry post-graduate; 91 children	45 dentists/dental hygienists and 71 care-resistant patients
Type of study	Cross-sectional study	Prospective study with 1 month of follow-up
Patient pool average age (range)	Mean = 8 ± 2.31 (5–13years)	6%[42]; 38% (75–84 years); 56% (over 85 years)
Description of the study	Assessment of the self-efficacy and empathy of post-graduate residents on oral pain and anxiety scores of children during local anesthesia administrations.	Evaluation of the oral health status of dementia patients before and after empathy training.
Oral health outcome	Pain on local anesthesia administration and Anxiety	Comprehensive Care
Oral health assessment tool	VAS, CFSS-DS; FIS; VPT;	OHAT
Empathy training	There was no training.	7-h multimodal comprehensive care training programme
Empathy Scale	GSS; JSPE-S	JSPE-HP
Results of the study	There was no correlation between Empathy and Pain on local anesthesia administration ($p = .693$). However, there was a positive correlation between Empathy and Anxiety (CFSS—$p = .003$; FIS—$p = .049$; VPT—$p = .007$).	Empathy improved tongue appearance ($p = .04$), natural teeth condition (presence of cavities) ($p = .02$), and oral hygiene ($p = .01$).
Additional notes	The explanation for the positive correlation between empathy and anxiety scores is that empathetic students can establish successful communication with anxious children, identifying the need to treat them using local anesthesia.	

Abbreviations: CFSS-DS, Children's Fear Survey Schedule; FIS, Facial Image Scale; JSPE-HP, Jefferson Scale of Physician Empathy-Health Professionals Version; JSPE-S, Jefferson Scale of Physician Empathy Student Version; GSS, General self-efficacy scale—Turkish version; OHAT, Oral Health Assessment Tool; VAS, Visual Analog Scale; VPT, Venham Picture Test.

the most current studies on this topic, compassion and empathy have been used interchangeably.

According to the findings of this review, there has been discussion about the importance of empathy in dentistry.[16,22,24,25,30], as well as the importance of compassion training in different formats.[17,29,34,35,40] However, this review found only two studies.[41,42] developed in 2021 that reported on the effects of dental students, dentists, and oral hygienists' empathy scores on the oral health outcomes of their patients. Both studies have used the JSPE for assessing empathy among dental providers. The JSPE has been translated into 59 languages and is a well-established scale in the literature for measuring empathy, originally developed for physicians but widely used across all healthcare professionals, including dental providers for offering versions for students and health professionals, enhancing evaluation accuracy for these respective groups. Its strong presence in research enables better comparisons between studies and significantly increases result reliability. It is recommended that future research should also be conducted using JSPE to facilitate comparison and meta-analyses.

The results, measured using the OHAT scale, indicated that the provider's empathy improved oral hygiene and reduced tooth cavities, with statistical significance. This was evidenced by lower scores in the "tongue" and "oral hygiene" categories, reflecting better oral hygiene, and in the "natural teeth" category, indicating a reduction in tooth cavities following compassion training.[45] It also found a positive correlation between the patient's anxiety and the dentist's empathy.[42] While this may initially seem contradictory, the authors explained that, because

the study was cross-sectional and the questionnaire was administered only once before treatment, dentists caring for more anxious patients had to adopt a more empathetic approach. It is suggested that an empathetic approach helps reduce patients' fear, build trust, and ultimately facilitate the procedure. It is noticeable that dental literature is scarce on this topic as compared to the same topic in medicine, in which there is abundant evidence that compassionate care improves health outcomes, and providers' well-being, and elevates the healthcare system overall.[3,41,5,8] This scarcity of studies on the effects of compassionate care on oral health outcomes can be because dentistry is often seen as a field focused more on technical skills and procedures rather than compassion and emotional care. Besides, dental appointments are often focused on specific technical issues, and due to the nature of the care, the patient is often unable to speak, which can limit the opportunities for interactions between the patient and the dentist.[10,6] Additionally, some dental schools do not emphasize the importance of empathetic communication and compassion as much as medical and nursing curricula.[15,46] This can lead to less awareness about how a compassionate approach affects oral health outcomes.

However, it is necessary to consider that compassion might have a significant impact on dental treatment adherence, patient experience,[19] and consequently, clinical outcomes. However, new clinical cohort studies are needed to investigate how oral health outcomes in patients of different ages and conditions are impacted by training their dental providers in compassionate care.

It is important to note some limitations of this review. Despite being thorough, it identified only two relevant articles. The authors conducted an extensive search of available literature databases, but it did not include grey literature nor screening of references of included papers. It is important to recognize that no review can encompass all relevant materials in the literature. Researchers with access to different databases might uncover additional articles and abstracts that contribute to this topic. Moreover, the authors acknowledge that their search strategy could be improved and expanded by other researchers with different viewpoints on the subject.

This review found interesting results but did not establish the relationship between compassion and oral health outcomes. However, the positive results of one of the studies.[11] seem promising and could serve as a model for future investigations.

5 | CONCLUSION

Several studies have been discussing compassionate care in dentistry, but there is little research-based evidence to show that compassionate care can improve oral health outcomes. This scoping review found only two studies assessing the effects of compassionate care on oral health outcomes. These studies used different methodologies and had discrepant results. Therefore, it is important to develop more clinical studies to evaluate the effects of compassionate care on oral health outcomes.

AUTHOR CONTRIBUTIONS

All authors have contributed to the conception and design of the article. Mariana Sarmet Smiderle Mendes, Camila Lopes Ferreira, Christopher Andrew Childs and Leonardo Marchini have contributed to the acquisition, analysis, and interpretation of data. Mariana Sarmet Smiderle Mendes, Christopher Andrew Childs, and Leonardo Marchini have drafted the manuscript. All authors have approved the final version of the manuscript.

ACKNOWLEDGMENTS

The publication of this article was funded by Capes.

ORCID

Leonardo Marchini https://orcid.org/0000-0003-1291-6684

REFERENCES

1. Rizzolatti G, Craighero L. The mirror-neuron system. *Annu Rev Neurosci*. 2004;27:169-192.
2. Rakel D. *The Compassionate Connection: The Healing Power of Empathy and Mindful Listening*. 1st ed. W. W. Norton & Company; 2018.
3. Trzeciak SM, Mazzarelli A, Booker C. *Compassionomics: The Revolutionary Scientific Evidence That Caring Makes a Difference*. Studer Group; 2019.
4. Kirby JN, Tellegen CL, Steindl SR. A meta-analysis of compassion-based interventions: current state of knowledge and future directions. *Behav Ther*. 2017;48(6):778-792.
5. Berkman LF, Leo-Summers L, Horwitz RI. Emotional support and survival after myocardial infarction. A prospective, population-based study of the elderly. *Ann Intern Med*. 1992;117(12):1003-1009.
6. Cohen S, Doyle WJ, Skoner DP, Rabin BS, Gwaltney JM. Social ties and susceptibility to the common cold. *JAMA*. 1997;277(24):1940-1944.
7. Hojat M, Louis DZ, Markham FW, Wender R, Rabinowitz C, Gonnella JS. Physicians' empathy and clinical outcomes for diabetic patients. *Acad Med*. 2011;86(3):359-364.
8. Kiecolt-Glaser JK, Loving TJ, Stowell JR, et al. Hostile marital interactions, proinflammatory cytokine production, and wound healing. *Arch Gen Psychiatry*. 2005;62(12):1377-1384.
9. Temel JS, Greer JA, Muzikansky A, et al. Early palliative care for patients with metastatic non–small-cell lung cancer. *N Engl J Med*. 2010;363(8):733-742.
10. Lindow R, Gisch M, Marchini L. The importance of compassionate care. *Braz Dent Sci*. 2023;26(1):e3694. https://doi.org/bds.2023.e3694.

11. Babar MG, Hasan SS, Yong WM, Mitha S, Al-Waeli HA. Patients' perceptions of dental students' empathic, person-centered care in a dental school clinic in Malaysia. *J Dent Educ*. 2017;81(4):404-412.
12. Page MJ, McKenzie JE, Bossuyt PM, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ*. 2021;372:n71.
13. Gupta A, Singh A, Aneja K, Aggarwal V, Wadhwa J, Abraham D. How to write a scoping review?—A comprehensive guide. *Endodontology*. 2023;35, 9-14.
14. Tricco AC, Lillie E, Zarin W, et al. PRISMA Extension for Scoping Reviews (PRISMA-ScR): checklist and explanation. *Ann Intern Med*. 2018;169(7):467-473.
15. Marchini L. Educating dental students to provide compassionate age friendly care for older adults. *J Dent Educ*. 2023;87(8):1153-1160.
16. Epstein S. Empathy in dental care of geriatric patients. *N Y J Dent*. 1967;37(3):98-102.
17. Nestel D, Betson C. An evaluation of a communication skills workshop for dentists: cultural and clinical relevance of the patient-centred interview. *Br Dent J*. 1999;187(7):385-388.
18. Wiltshire AD, Ross MW, Brimlow DL. Empathic communication between dental professionals and persons living with HIV and AIDS. *J Dent Educ*. 2002;66(1):86-93.
19. Sherman JJ, Cramer A. Measurement of changes in empathy during dental school. *J Dent Educ*. 2005;69(3):338-345.
20. Eriksen HM, Bergdahl J, Bergdahl M. A patient-centred approach to teaching and learning in dental student clinical practice. *Eur J Dent Educ*. 2008;12(3):170-175.
21. Loggia ML, Schweinhardt P, Villemure C, Bushnell MC. Effects of psychological state on pain perception in the dental environment. *J Can Dent Assoc*. 2008;74(7):651-656.
22. Nash DA. Ethics, empathy, and the education of dentists. *J Dent Educ*. 2010;74(6):567-578.
23. Loignon C, Allison P, Landry A, Richard L, Brodeur JM, Bedos C. Providing humanistic care: dentists' experiences in deprived areas. *J Dent Res*. 2010;89(9):991-995.
24. Waldrop D, Nochajski T, Davis EL, Fabiano J, Goldberg L. Empathy in dentistry: how attitudes and interaction with older adults make a difference. *Gerontol Geriatr Educ*. 2016;37(4):359-380.
25. Aggarwal VP, Garg R, Goyal N, et al. Exploring the missing link—Empathy among dental students: an institutional cross-sectional survey. *Dent Res J*. 2016;13(5):419-423.
26. Ameh PO, Uti OG, Daramola OO. Empathy among dental students in a Nigerian institution. *Eur J Dent Educ*. 2019;23(2):135-142.
27. Carvajal M, López S, Sarabia-Alvarez P, et al. Empathy levels of dental faculty and students: a survey study at an Academic Dental Institution in Chile. *J Dent Educ*. 2019;83(10):1134-1141.
28. Brekalo Prso I, Mocny-Pachońska K, Trzcionka A, et al. Empathy amongst dental students: an institutional cross-sectional survey in Poland and Croatia. *Eur J Dent Educ*. 2020;24(4):687-694.
29. Amini H, Gregory ME, Abrams MA, et al. Feasibility and usability study of a pilot immersive virtual reality-based empathy training for dental providers. *J Dent Educ*. 2021;85(6):856-865.
30. Díaz-Narváez V, Oyarzún-Muñoz M, Reyes-Reyes A, et al. Psychometry and empathy levels and its dimensions in postgraduate students of dental specialties. *Eur J Dent Educ*. 2021;25(4):785-795.
31. Díaz-Narváez VP, Silva-Vetri MG, Calzadilla-Núñez A, García ALL, Lopez ADLP, Reyes-Reyes A. Empathy in professors and students of a school of dentistry in the Caribbean. *Pesqui Bras Odontopediatria Clin Integr*. 2022;22:e200240.
32. Lamenha-Lins RM, Paiva SM, Prado IM, et al. Facial type, sex and skin color of pediatric patients are associated with dental students' empathy and self-confidence during dental care. *J Dent Child*. 2022;89(2):75-82.
33. Varela AE, Rodriguez JE, Farrell TW. Oral health is an integral component of age-friendly care. *J Am Geriatr Soc*. 2022;70(8):2442-2444.
34. Anishchuk S, Kubacki A, Howell Y, van Harten MT, Yarascavitch C, MacGiolla Phadraig C. Can a virtual learning module foster empathy in dental undergraduate students?. *Eur J Dent Educ*. 2023;27(1):118-125.
35. Arany S, Eliav E, Medina-Walpole A, Caprio TV. Postgraduate dental resident education: a pilot in age-friendly "mentation" training. *Spec Care Dentist*. 2023;43(6):765-771.
36. Detsomboonrat P, Theppanich S, Banyen S, et al. Empathy level towards patients among Thai dental students: a cross-sectional study. *BMC Oral Health*. 2023;23(1):184.
37. Haddad YG, Sturzu L, Bisch M, Yasukawa K, Baudet A. Empathy of dental students and educators in French hospitals: a cross-sectional study. *Nurs Health Sci*. 2023;25(2):209-215.
38. Alam BF, Bashir R, Nayab T, et al. Evaluating empathy level amongst the dental students using Jefferson Scale Of Physician Empathy- health professional students. *BMC Oral Health*. 2024;24(1):516.
39. Macpherson I, Sanagustín E, Roqué MV. Giner-Tarrida L. Evaluation of relational factor in patient satisfaction with the treatment received by dental students. *Eur J Dent Educ*. 2024;28(2):548-558.
40. Reddington AR, Weir SO. Incorporating special needs simulations into allied dental education curriculum to encourage inclusion, understanding, and empathy: a mixed method study. *J Dent Educ*. 2024;88(1):16-22.
41. Kuscu OO, Ozcelik SM, Kucuktepe C, Akyuz S. Effect of self-efficacy and empathy characteristics of post-graduate residents on local anesthesia administration performances: pilot study. *J Dent Educ*. 2022;86(1):38-46.
42. Kobayashi M, Ito M, Iwasa Y, et al. The effect of multimodal comprehensive care methodology training on oral health care professionals' empathy for patients with dementia. *BMC Med Educ*. 2021;21(1):315.
43. Chalmers JM, King PL, Spencer AJ, Wright FA, Carter KD. The Oral Health Assessment Tool–validity and reliability. *Aust Dent J*. 2005;50(3):191-199.
44. Henriques LVL, Dourado MARF, Melo RCCP, Tanaka LH. Implementation of the Humanitude Care Methodology: contribution to the quality of health care. *Rev Lat Am Enfermagem*. 2019;27:e3123.
45. Thomas Jefferson University. 2024. Scale of Empathy. University TJ Jefferson. Accessed July 20, 2024. https://www.jefferson.edu/academics/colleges-schools-institutes/skmc/research/research-medical-education/jefferson-scale-of-empathy.html

46. Tehranineshat B, Rakhshan M, Torabizadeh C, Fararouei M. Compassionate care in healthcare systems: a systematic review. *J Natl Med Assoc*. 2019;111(5):546-554.

SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

How to cite this article: Mendes MSS, Ferreira CL, Jardini MAN, Childs CA, Marchini L. The effects of compassionate care on oral health outcomes: A scoping review. *Spec Care Dentist*. 2025;45:e13087. https://doi.org/10.1111/scd.13087