PROFESSIONAL EMPATHY AMONG STUDENTS OF DIFFERENT EDUCATIONAL LEVELS AT FACULTY OF DENTISTRY, ALEXANDRIA UNIVERSITY (A CROSS - SECTIONAL STUDY)

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ABSTRACT

BACKGROUND. Dental professionalism is considered an essential component in dental education, with empathy being regarded as one of its primary features. Empathy, the capacity to listen, comprehend, and assist others, is linked to positive outcomes for both patients and clinicians. However, no research has assessed the development of empathy among dental students in Egypt.

OBJECTIVE. To assess empathy level as an aspect of professionalism among dental students of Alexandria University, and to examine its trend throughout the academic years.

METHODS. A cross-sectional study design was adopted, with a sample of 750 students divided into four subgroups: 4th year, 5th year, interns, and postgraduate students. Proportional allocation was used to determine each group's sample size. They were requested to fill out the Jefferson Scale of Empathy questionnaire, which covers different aspects of empathy "perspective taking", "compassionate care" and "standing in patients' shoe". The data were analyzed using appropriate statistical tests.

RESULTS. The mean empathy score was 99.07 ± 15.91. Among the subscales, the highest mean percentage score was on "standing in patients' shoes" 75.78 ± 21.90, followed by "compassionate care" 65.48 ± 15.32 and "perspective-taking" 64.24 ± 13.73. Mean empathy scores significantly decreased with higher education levels. Multiple linear regression revealed that class year, nationality, and training in professionalism were the strongest factors influencing empathy levels.

CONCLUSION. Empathy significantly declines during dental school, as students start patient-focused training when it is most crucial. Incorporating empathy training courses into the curriculum is recommended to enhance student learning and improve patient care outcomes.

KEYWORDS. Professionalism, Empathy, dentist-patient relationship, Dental education, Dental students.

RUNNING TITLE: Professional Empathy Across Educational Levels in Dental Students

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INTRODUCTION

In the late twentieth century, dentistry ultimately gained acknowledgment as a profession, establishing a "social contract" with the general population. In order to attain and maintain their professional status, dentists should adhere to the principles of professionalism (1). The Association for Dental Education in Europe defines professionalism as a competency encompassing professional attitudes, behavior, ethics, and jurisprudence (2).

Attempts to define professionalism in dentistry frequently rely on medical sources for guidance (3). Arnold and Thomas (4) demonstrated professionalism through a basis of clinical competencies, communication skills, and ethical and legal knowledge. These foundations support the core principles of professionalism, namely; excellence, humanism, accountability, and altruism.

Empathy have frequently been mentioned as a key component to operate principles of medical professionalism (5), also the American Dental Education Association (ADEA) ranked empathy as the second most crucial clinical competence for dental training (6), It is defined as a primarily cognitive characteristic that involves comprehending the patients' experiences, worries, and viewpoints, along with the ability to communicate this comprehension and a desire to help (7). Moreover, Stepien and Bernstein (8) stated that "Clinical empathy stands out as the most

effective tool for fostering successful collaboration between patients and dentists."

Although empathy and sympathy are frequently used interchangeably, when it comes to patient care, they should be differentiated (9). Both concepts entails sharing, however empathetic health care workers share their understanding, while sympathetic healthcare workers share their feelings with their patients (10), which if overdone could compromise objectivity of diagnosis and treatment. Conversely, empathy has no limiting boundary, as understanding is considered universally beneficial in patients care. Having too much empathy should never hinder patient care (11).

Empathy in dental literature is acknowledged for reducing dental anxiety, strengthening the connection between the provider and the patient, boosting patient cooperation and compliance, and leading to favorable clinical outcomes and elevated patient satisfaction (12). Consequently, many educators have integrated the development of empathic skills, which are fundamental to therapeutic communication, into programs of health professionals to aid students and practitioners in enhancing their level of empathy (13).

Although many self-report empathy metrics have been created for the populace as a whole, only one has been specifically designed for use in the healthcare setting, which is The Jefferson Scale of Physician Empathy (JSPE) (11), It was designed to empirically assess empathy in healthcare students and professionals, focusing on changes across training stages and different disciplines. Originally designed for medical settings (14), the scale gained global recognition as a widely-used tool in medical education (15). To accommodate other healthcare fields, the scale was adapted into three versions: HP for healthcare professionals, S for medical students, and HPS for students in non-medical health professions (16). The tool, later renamed the Jefferson Scale of Empathy (JSE), is a reliable and valid tool for evaluating empathy levels among dental students (12).

Research using the JSPE indicates that empathy decreases during both undergraduate medical education (17), and internship period (18), as well as dental (12, 19) and nursing education (20). Researchers investigating this trend have linked the decrease to various factors such as absence of exemplary figures, the extensive nature of learning demands, time constraints, sleep deprivation, an intimidating academic atmosphere, and the challenges associated with acquiring patient interaction skills (4).

Schouten et al (21) stated that there is lack of research on empathy within the framework of the dentist-patient interaction. Understanding the evolution of empathy among undergraduate dental students throughout their years of education is crucial as it will facilitate the development of a curriculum grounded on evidence for communication skills training (22).

In Egypt, no previous studies were carried out to explore empathy as an aspect of dental professionalism in dental students throughout the educational years, and there is scarce information available to improve teaching this topic in the dental curriculum. Thus, the primary aim of this study is to assess empathy levels as an aspect of professionalism for fourth and fifth-year dental students as well as interns and post graduate students in Faculty of Dentistry Alexandria University by using Jefferson Scale of Empathy-Health Care Provider Student version (JSE-HPS).

The Null Hypothesis of this study is that no significant change in professional empathy is expected in relation to educational level of dental students at Alexandria University.

MATERIALS AND METHODS

Study design

The current study was a cross sectional, analytical design. It was based on a structured, close-ended, survey questionnaire to be completed by the participants. The Alexandria Faculty of Dentistry's Dental Research Ethics Committee's approval was initially acquired where the ethical approval number was (0836-01/2024), approvals were also obtained from the concerned administrative authorities for pre and post graduate students. The completed questionnaire was returned, which was seen as an implicit consent signifying the readiness of dental students and interns to participate in the research.

Study setting

The students were approached during their clinical courses in the outpatients' dental clinics, lecture rooms, dental laboratories and libraries.

Study sample

Dental education in Alexandria University is standardized to last 5 years. Basic biological science courses are typically taken throughout the first, second, and third years of the bachelor's program, while clinical clerkships are completed during the fourth and fifth years., continuing in the internship and graduate dental education with a rise in the involvement and accountability of clinical students. The eligible participants in this study were the students and interns who are receiving clinical training and providing patient care, specifically, dental students who were assigned to fourth and fifth year of dentistry, as well as dental interns and post graduate dental students who were enrolled through the period of 2020 to 2023. The sample size was determined using Regression Analysis within the Power Analysis and Sample Size Software (PASS 2020) "NCSS, LLC. Kaysville, Utah, USA, ncss.com/software/pass."

Assuming a regression-specific effect size (f^2) of 0.15, which corresponds to a moderate effect size as per Cohen's guidelines, with a 95% confidence level and 5% precision, the minimum required sample size was calculated to be 114 participants. In order to account for stratification across the study groups, ensure adequate representation within each group and account for non-response bias, the total sample size was increased to 750 participants (23, 24). The original sizes of the strata were determined based on the total population of eligible participants across the four groups included in the study. The total population across these groups during the study period (2020–2023) was approximately 2387. The original population sizes for each stratum were as follows: 790 fourth-year students, 597 fifth-year students, 400 dental interns, and 600 postgraduate dental students. Stratification was performed proportionally based on the relative size of each group within this population.

Outcome measures: (dependent variable)
 Assessing empathy level through a self-administered questionnaire using Jefferson Scale of Empathy-Health Care Provider Student version (JSE-HPS).

Independent variable:- Educational level.

Confounders: - Gender - Nationality - Whether they received a formal training in dental professionalism or not.

Study tool
The questionnaire consisted of two main sections: The first section included questions related to personal, demographic profiles and educational related data of the study participants, it was divided into two sectors a sector for all participants and the other sector included additional questions for postgraduate students only as their graduation year, place of work, etc.

The second section included the Jefferson Scale of Physician Empathy-Health Profession Students (JSE-HPS). It was created especially to measure the empathy of students of healthcare professions (7). Evidence imply that the Jefferson Scale of Physician Empathy is a valid and reliable way to measure the empathy of dental students (12). It consists of 20 items which assess self-reported empathy among students of different health professions. Exploratory factor analysis conducted in a previous study by Hojat et al. (11) on the JSE among healthcare professionals revealed three core factors. The primary factor, central to the scale, revolves around "perspective-taking," The second component, "compassionate care, Lastly, the third component emphasizes "standing in the patient's shoes". Each item in the instrument was answered using a 7-point Likert-type scale, where 1 represents strongly disagree and 7 represents strongly agree. Positively worded remarks make up half of these things, while negatively worded statements make up the other half. The positively

framed statements were scored based on their Likert scale values (1=Strongly disagree, 7=Strongly agree), while the negatively framed statements underwent reverse scoring (1=Strongly agree, 7=Strongly disagree). The scale's overall score falls between 20 and 140.The higher the score the more empathetic orientation toward patient care.

Response bias was a significant concern, as students may feel compelled to provide answers that portray them in a more favorable light. This could lead students to overreport empathetic behaviors or attitudes. To mitigate this issue, we ensured the anonymity and confidentiality of participants' responses, reducing the pressure to conform to socially desirable norms. Additionally, reverse-scored items were included in the questionnaire to detect any tendencies toward socially desirable responding.

Statistical analysis
IBM SPSS software package version 20.0 was utilized to analyze the data that was fed into the computer. (IBM Corp., Armonk, NY). The t-test and One way ANOVA test were used to analyze the relation between the mean scores of the total empathy level and different independent variables, the latter was also used to examine the relationship between the mean empathy scores and different educational levels. Multiple linear regression analysis was also performed to assess the components that independently correlated with the empathy score. The results' significance was assessed at the 5% level.

RESULTS
 In the present study, a total of 938 questionnaires were distributed, and any questionnaire with more than three missing answers was considered invalid and discarded from the study to reach the predetermined number of 750 valid responses. This corresponded to a non-response rate of approximately 20.04%. Among the valid responses 248 (33%) were from the fourth-year, 187 (25%) from the fifth-year, 126 (16.8%) dental interns, and 189 (25.2%) postgraduate dental students in Alexandria University of different academic levels of dental education agreed to complete a questionnaire to assess their professional empathy level and the factors affecting it. Table (1) provides an overview of the demographic and academic characteristics of dental study participants, including a subset of post-graduate students. The participants range in age from 20 to 41 years, with an average age of 24.32 years. The majority (60.8%). In terms of academic performance, 41.3% have an "Excellent" grade, while 42.7% have a "Very Good" grade. The majority (86.8%) are Egyptian, with 77.3% residing in Alexandria. Formal training in dental professionalism was received by only 40.3% of participants. Notably, 88.3% expressed a need for

additional knowledge and training in dental professionalism and empathy, and 49.6% rated their empathy level as "Good."

The assessed scores of the Jefferson Scale of Empathy among study participants ranged from 40 to 134, with a mean of 99.07 ± 15.91 and a median of 100 (IQR: 88-111). Regarding the three subscales: "perspective taking," "compassionate care," and "standing in patients' shoes.", the highest mean percentage score was observed in the "standing in patients' shoes" subscale at 75.78 ± 21.90, followed by "compassionate care" at 65.48 ± 15.32 and "perspective taking" at 64.24 ± 13.73. The association between Jefferson Scale of Empathy (JSE) scores and education level in Table (2) revealed a clear trend of decreasing empathy scores as education progresses. The total empathy scores declined from 103.1 ± 15.09 among 4th-year students to 95.75 ± 17.07 among post-graduate students, showing a significant difference (F = 9.453, p < 0.001). For the subscales, both "perspective taking" and "compassionate care" scores similarly decreased with higher education levels. "Perspective taking" scores dropped from 50.54 ± 7.81 in 4th-year students to 46.95 ± 8.63 in post-graduate students (F = 8.502, p < 0.001). "Compassionate care" scores decreased from 40.88 ± 7.20 in 4th-year students to 38.24 ± 7.67 in post-graduate students (F = 5.314, p = 0.001). However, for the "standing in patients' shoes" subscale, the scores decreased from 11.71 ± 2.63 in 4th-year students to 10.48 ± 2.28 in interns, with a slight increase to 10.56 ± 2.79 for post-graduates, yet the difference remained significant (F = 9.905, p < 0.001).

In Table (3) univariate analysis, younger age (p < 0.001) and being female (p = 0.009) were associated with higher empathy scores compared to older age and males, respectively. Students in their fourth year showed significantly higher scores (B = 7.379, p < 0.001) compared to postgraduate students. Similarly, Egyptian nationality was significantly associated with higher empathy scores (B = 8.933, p < 0.001) compared to non-Egyptians, and students who had received formal training in dental professionalism had higher scores (B = 4.661, p < 0.001) compared to those without such training. On the other hand, students with a "Good" grade had significantly lower empathy scores (B = -5.596, p = 0.001) compared to those with an "Excellent" grade.

In the multivariable analysis, younger age remained a significant factor associated with higher empathy scores (B = -0.567, p = 0.023) relative to older age. Students in their fourth year showed significantly higher empathy scores (B = 4.956, p = 0.048) compared to postgraduate students. Egyptian nationality continued to be associated with higher scores (B = 8.151, p < 0.001) compared to non-Egyptians. Formal training in dental professionalism was also positively associated with higher empathy scores (B = 4.355, p < 0.001) compared to those without training. However, gender, marital status, level of education beyond the fourth year, and previous year grades did not show statistically significant associations in the multivariable model. Overall, the model was statistically significant. (F = 15.112, p < 0.001)

Table (1): Distribution of the studied cases according to all study participants (n = 750)

Q		No.	%
1	Age (years) Min. – Max. Mean ± SD. Median (IQR)		20.0 – 41.0 24.32 ± 3.85 23.0 (22.0 – 24.0)
2	Gender Female Male	 456 294	 60.8 39.2
3	Marital status Single Married	 639 111	 85.2 14.8
4	Previous year grade or graduation grade Excellent Very good Good Satisfactory	 310 320 120 0	 41.3 42.7 16.0 0.0
5	Nationality Egyptian Other	 651 99	 86.8 13.2
6	Residence Alexandria	 580	 77.3

	Other	170	22.7
7	Did you receive formal training in dental professionalism?		
	Yes	302	40.3
	No	448	59.7
8	Do you feel that you need extra knowledge and training in dental professionalism and professional empathy?		
	Yes	662	88.3
	No	88	11.7
9	Rank your perceived empathy level		
	Excellent	152	20.3
	Good	372	49.6
	Fair	213	28.4
	Poor	13	1.7

SD: Standard deviation   IQR: Inter quartile range

Table (2): Relation between level of education with Total score for Jefferson Scale of Empathy (n = 750).

Jefferson scale of empathy JSE-HPS	Level of education				F	p
	4th (n = 248)	5th (n = 187)	Intern (n = 126)	Post graduate (n = 189)		
Perspective taking Min. – Max. Mean ± SD.	18.0 – 65.0 50.54 ± 7.81	27.0 – 69.0 48.36 ± 8.18	25.0 – 64.0 47.27 ± 7.83	70.0–20.0 46.95 ± 8.63	8.502^*	$<0.001^*$
Sig. bet. grps.	$p_1=0.029^*, p_2=0.001^*, p_3<0.001^*, p_4=0.650, p_5=0.332, p_6=0.986$					
Compassionate care Min. – Max. Mean ± SD.	17.0 – 54.0 40.88 ± 7.20	22.0 – 56.0 39.09 ± 7.07	19.0 – 52.0 38.87 ± 7.22	56.0–17.0 38.24 ± 7.67	5.314^*	0.001^*
Sig. bet. grps.	$p_1=0.056, p_2=0.058, p_3=0.001^*, p_4=0.994, p_5=0.673, p_6=0.876$					
Standing in patients shoes Min. – Max. Mean ± SD.	2.0 – 14.0 11.71 ± 2.63	3.0 – 14.0 11.24 ± 2.48	3.0 – 14.0 10.48 ± 2.28	14.0–2.0 10.56 ± 2.79	9.905^*	$<0.001^*$
Sig. bet. grps.	$p_1=0.237, p_2<0.001^*, p_3<0.001^*, p_4=0.057, p_5=0.053, p_6=0.995$					
Total score Min. – Max. Mean ± SD.	40.0 – 131.0 103.1 ± 15.09	62.0 – 130.0 98.68 ± 15.13	49.0 – 128.0 96.63 ± 15.26	134.0–43.0 95.75 ± 17.07	9.453^*	$<0.001^*$
Sig. bet. grps.	$p_1=0.018^*, p_2=0.001^*, p_3<0.001^*, p_4=0.664, p_5=0.264, p_6=0.961$					

SD: Standard deviation

F: One way ANOVA test, Pairwise comparison bet. each 2 groups was done using Post Hoc Test (Tukey**)**

Table (3): Univariable and multivariable linear regression analysis for the parameters affecting total score Jefferson scale of empathy.

	Univariate		#Multivariable	
	p	B (LL – UL 95%C.I)	p	B (LL – UL 95%C.I)
Age (years)	<0.001*	-0.483)–0.774 (-1.065	0.023*	-0.079)–0.567 (-1.054
Gender Female Male	0.009*	5.441)–3.114 (0.786 Ref	0.349	3.388)–1.095 (-1.198 Ref
Marital status [Married] Single Married	0.804	3.620)–0.406 (-2.808 Ref		
Level of education 4th 5th Intern Post graduate student	<0.001* 0.069 0.625	10.345)–7.379 (4.412 6.107)–2.938 (-0.230 4.414)–0.881 (-2.653 Ref	0.048* 0.947 0.964	9.877)–4.956 (0.034 4.410)–-0.154 (-4.719 4.499)–-0.106 (-4.712 Ref
Previous year grade or graduation grade Good Very good Excellent	0.001* 0.107	-2.257)–-5.596 (-8.934 0.442)–-2.032 (-4.507 Ref	0.089 0.127	0.482)–-3.132 (-6.746 0.546)–-1.926 (-4.398 Ref
Nationality Egyptian Non-Egyptian	<0.001*	12.243)–8.933 (5.622 Ref	<0.001*	11.638)–8.151 (4.665 Ref
Residence Alexandria Out of Alexandria	0.655	2.105)–-0.621 (-3.347 Ref		
Received formal training in dental professionalism Yes No	<0.001*	6.964)–4.661 (2.358 Ref	<0.001*	6.597)–4.355 (2.113 Ref
F= 15.112* p₀<0.001*		R²= 0.109	Adjusted R Square= 0.102	

Durbin-Watson = 1.498; VIF = 1.014 – 2.365
F, p_0: f and p values for the model R^2: Coefficient of determination
B: Unstandardized Coefficients   C.I: Confidence interval   LL: Lower limit   UL: Upper Limit
#: All variables with $p<0.05$ was included in the Multivariable
*: Statistically significant at $p \leq 0.05$

DISCUSSION

This study aims to evaluate empathy levels and influencing factors among dental students and interns at Alexandria University's Faculty of Dentistry, with the goal of contributing to curriculum development that strengthens communication skills and fosters compassionate patient care. The findings reveal that empathy levels tend to decrease as educational levels increase. Furthermore, nationality and prior formal training related to empathy emerged as the strongest predictors of empathy levels among participants. These insights emphasize the need for targeted interventions to address empathy decline and promote a more patient-centered approach in dental education. Therefore, we reject the null hypothesis of this study.

The study has several limitations as being based on self-reported questionnaires. It is prone to self-report bias. Also, the cross-sectional design limits causal inferences and tracking changes in empathy over time.

A diverse sample of 750 dental students from different educational stages was involved, namely: 4th-year students, 5th-year students, interns, and postgraduate students, with the largest group being fourth-year students (33%) and the smallest group being dental interns (16.8%), reflecting their relative group sizes. The majority noted a lack of formal training in dental professionalism, highlighting a curriculum gap. Although postgraduate students had one course that briefly covered certain aspects of professionalism, they only recalled minimal emphasis on empathy, highlighting the need for early and consistent integration of professionalism in the dental curriculum to effectively foster empathy.

The present study reported an overall mean empathy score of dental students at Alexandria University of 99.07 (±15.91), which was significantly lower than those reported at

various dental institutions worldwide, such as the University of Washington (117.71) (12), India (103-117) (19), and Nigeria (104.01) (22). In contrast, Saudi Arabia had a slightly lower score of 96.75 (25). These variations could be attributed to multiple factors, including cultural differences that influence how empathy is perceived and valued across societies (26). Emotional factors, such as the differences in emotional training, exposure, and the stressors faced by students, including academic pressure, clinical workload, and the challenges of balancing personal and professional life, may also play a significant role (27). Furthermore, socio-economic contexts may shape how students relate to others and develop empathy, further contributing to the observed differences (28). Additionally, empathy scores in dental students were generally lower than those in medical (11, 23) and nursing students (29), highlighting the need for enhanced empathy training to meet the international standards.

By analyzing the Jefferson Scale of Empathy subscales, the current study demonstrated mean empathy scores of 64% for "perspective-taking", 65% for "compassionate care", and 75% for "standing in patients' shoes". Compared to Carvajal et al.'s study in Chile, which reported higher scores for perspective-taking (89.7%) and compassionate care (90.1%), (30). Notably, the lower score in "perspective taking" here highlights a weakness in the curriculum and an educational gap in fostering this cognitive aspect of empathy (31), enhancing educational strategies targeting this aspect of empathy is therefore essential. While "compassionate care" is seen as challenging to develop solely through education (32), integrating experiential learning and reflective exercises into the curriculum could foster this aspect. However, "standing in patients' shoes" scored higher, especially among postgraduate students. Their greater experience and maturity, along with frequent patient encounters, allowed them to engage in realistic situations, deepening their understanding of patients' experiences, this strength can be used to improve other aspects of empathy in the program.

Dental literature reports three identifiable empathy trends: a decline over time, an increase, or no significant change (33). Our study found a significant decrease in empathy scores among dental students and professionals as they advance in their education, with fourth-year students showing the highest levels that gradually diminish in later years. This decline aligns with prior research (4, 12, 17-19), suggesting that increasing clinical responsibilities and exposure contribute to this trend. Factors like fading idealism, increased cynicism, and high-pressure training environments likely play a role (19). However, some studies, particularly in Latin America and Saudi Arabia (25,

34), report rising empathy levels with advancing education, attributed to enhanced clinical exposure and targeted educational programs. Moreover, stable empathy levels were observed in Denmark (23), where medical curricula emphasize empathy through reflective and humanistic training methods. The univariate analysis identified key factors influencing empathy scores. Younger participants, females, those with lower education levels, and those with higher academic performance demonstrated greater empathy. Notably, being Egyptian and having formal training were the strongest predictors of empathy. The multivariable regression analysis revealed that nationality and formal training in dental professionalism were the strongest predictors of empathy, highlighting the influence of cultural background and specialized education. The significant association with nationality suggests that shared cultural norms and experiences play a critical role in fostering empathy, as they enhance mutual understanding and relatability (35). Formal training, on the other hand, directly equips students with the skills needed to demonstrate empathetic behaviors in professional settings. Notably, factors such as age, gender, and academic performance, which were significant in the univariate analysis, became less influential in the multivariable model. This shift suggests that their impact may be mediated by deeper cultural and educational influences rather than acting independently.

Identifying key predictors that affect empathy can guide the development of targeted educational strategies to enhance empathy throughout training. Approaches like communication training, narrative immersion, experiential learning, and self-care practices have proven effective (8). Communication training focuses on the behavioral aspect of empathy by using lectures, small group workshops (36), while narrative immersion addresses both emotional and cognitive aspects of empathy by using literature and theater to deepen students' emotional understanding of patients' perspectives (37). Experiential learning, such as having students experience patient care (38), and promoting wellness through self-care practices, also increase empathy (39). These methods, if applied in dental education in Alexandria University's Faculty of Dentistry, they could counteract the decline in students' empathy while also improving patient satisfaction and clinical outcomes.

The focus on dental students from a single institution limits the study's scope and generalizability, as it may not reflect the diversity of students in other faculties or regions. To improve generalizability, it is recommended that future research include dental students from various public and private institutions across Egypt.

CONCLUSION

Empathy levels among dental students at Alexandria University are notably lower compared to global institutions and other healthcare professions, underscoring the need for enhanced training. One area in particular that requires focused improvement is "Perspective-Taking," the cognitive aspect of empathy. Additionally, there is a concerning decline in empathy among dental students as they progress through their studies. To address this issue, it is essential for dental educators to introduce empathy-focused teaching activities early in the dental curriculum, aiming to promote empathy development and prevent its decline. Furthermore, longitudinal studies are needed to assess the impact of communication training on enhancing empathy in dental students.

CONFLICT OF INTEREST

The authors declare that they have no conflicts of interest.

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