

Continuing education in primary care: evaluation by health professionals with higher education degrees

Educação continuada na atenção primária: avaliação dos profissionais de saúde de nível superior

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ABSTRACT

Introduction: Continuing education (CE) is essential for professional improvement and for improving the quality of health services, which in this study refers to local professional training actions developed in Primary Health Care (PHC).

Objective: To analyze the perception of physicians, nurses, and dentists regarding CE in PHC, identifying differences among professional categories and aspects related to the availability and quality of training activities.

Methods: Cross-sectional, census-based, and analytical study. A previously validated questionnaire was used, adapted for online (Google Forms) and in-person (printed) application, administered to nurses, physicians, and dentists working in the public health service of Caucaia (CE), a municipality with a PHC structure representative of the national context. The dependent variable was the professional category, while the independent variables included sociodemographic factors (sex, age), academic training (type, time since graduation, and nature of the institution), postgraduate education (presence, type, and area), professional training (participation, type, and perceived contribution), and perception of municipal health education policies.

Results: A total of 180 valid responses were obtained (response rate of 83.7%). Statistical analysis (Chi-square / Fisher's exact test) showed significant associations between professional category and frequency of participation in training activities, with higher rates among nurses (69.7%), physicians (48.1%), and dentists (56.4%) ($p=0.0340$). Positive perceptions regarding the contribution of training also varied among categories (nurses = 47.2%; physicians = 25.0%; dentists = 66.7%; $p < 0.0001$), as did the evaluation of municipal CE actions (nurses = 41.6%; physicians = 17.3%; dentists = 69.2%; $p < 0.0001$).

Conclusion: Nurses were the most frequent participants in training activities, while dentists evaluated them most positively. The findings reinforce the relevance of CE and of permanent educational strategies for improving the quality of primary care, providing insights for managers to adapt educational actions to the specific needs of each professional category.

Keywords: Continuing education; Unified Health System; Primary Health Care; Professional training; Professional education.

RESUMO

Introdução: A educação continuada (EC) é essencial para o aprimoramento profissional e para a qualificação dos serviços de saúde, abrangendo neste estudo as ações locais de capacitação profissional na atenção primária à saúde (APS).

Objetivo: Este estudo teve como objetivo analisar a percepção de médicos, enfermeiros e cirurgiões-dentistas sobre a EC na APS, identificando diferenças entre as categorias profissionais e aspectos associados à oferta e qualidade das capacitações.

Método: Trata-se de um estudo transversal, censitário e analítico. Utilizou-se um questionário previamente validado, adaptado para aplicação online (Google Forms) e presencial (impresso), aplicado a enfermeiros, médicos e cirurgiões-dentistas vinculados ao serviço público de Caucaia, no Ceará, município com estrutura de APS representativa do cenário nacional. A variável dependente foi a categoria profissional, enquanto as variáveis independentes incluíram fatores sociodemográficos (sexo, idade), formação acadêmica (tipo, tempo de formação e natureza da instituição), pós-graduação (presença, tipo e área), capacitação profissional (realização, tipo e contribuição percebida) e a percepção sobre as políticas municipais de educação em saúde.

Resultado: Foram obtidas 180 respostas válidas (taxa de resposta de 83,7%). A análise estatística (qui-quadrado/exato de Fisher) revelou associações significativas entre a categoria profissional e a frequência de participação em capacitações, com destaque para enfermeiros (69,7%), médicos (48,1%) e cirurgiões-dentistas (56,4%) ($p = 0,0340$). A percepção positiva sobre a contribuição das capacitações também variou entre as categorias (enfermeiros = 47,2%; médicos = 25,0%; cirurgiões-dentistas = 66,7%; $p < 0,0001$), assim como a avaliação das ações municipais de EC (enfermeiros = 41,6%; médicos = 17,3%; cirurgiões-dentistas = 69,2%; $p < 0,0001$).

Conclusão: Os enfermeiros foram os que mais participaram das capacitações, enquanto os cirurgiões-dentistas as avaliaram mais positivamente. Os achados reforçam a relevância da EC e de estratégias educativas permanentes para a qualificação na APS, oferecendo subsídios para que gestores adaptem ações às particularidades de cada categoria profissional.

Palavras-chave: Educação Continuada; Sistema Único de Saúde; Atenção Primária à Saúde; Capacitação Profissional; Formação Profissional.

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INTRODUCTION

Health education involves producing and systematizing knowledge to support training and competency development in health practice. This process encompasses teaching practices, pedagogical guidelines, and curriculum design¹, with the aim of developing broad competencies that prepare professionals to deal with the unpredictable situations encountered in daily work activities, thereby promoting the continuous development of the necessary skills and qualifications.

Education for work is considered the primary foundation for improving the quality of healthcare provided to the population². Historically, its emergence has been associated with the expansion of the Brazilian healthcare system since the 1970s³. The various educational programs that emerged in this context sought to develop political-pedagogical models committed to fostering dialogue between education and healthcare services³. In this regard, health education management, understood as the process of training and developing healthcare workers, represents a central issue in ensuring the quality of care delivered to the population²⁻⁵.

In 2003, following the restructuring of the Ministry of Health, the Secretariat for Labor Management and Health Education was established and became responsible for the development and implementation of the National Policy for Permanent Health Education (PNEPS). This policy primarily relies on mobilizing managerial actions in the fields of workforce development and training, with the aim of valuing and qualifying healthcare professionals⁶. At the state and municipal levels, its implementation faces challenges such as limited integration between healthcare services and the educational sector, lack of outcome evaluation, insufficient funding, and a mismatch between the training provided and the professional profile required by the healthcare system^{7,8}. More recently, regulatory initiatives have sought to strengthen the Permanent Health Education (PHE) policy within the Brazilian Unified Health System (SUS), including measures that ensure protected time for educational activities within the work process of Primary Health Care (PHC), as established by Ordinance GM/MS No. 3,493/2024⁹, which introduced co-financing mechanisms and quality indicators.

Continuing education, therefore, represents one of the essential pillars supporting the Brazilian Unified Health System (SUS)¹⁰. The quality of healthcare delivery is associated with several factors, including the structure and organization of services, the definition of work processes, adaptation to emerging technologies, the quantity and quality of personnel, the availability of materials and equipment, and, above all, a commitment to the continuous and ongoing development of educational activities. Such activities should be comprehensive

enough to promote the holistic development of healthcare workers, aiming at the continuous improvement of the quality of care provided¹¹.

In Brazil, there are two educational approaches aimed at workforce development in healthcare: Permanent Health Education (PHE) and Continuing Education (CE), whose concepts may vary across different publications¹². Despite their conceptual differences, both seek to promote education within the workplace and function as transformative tools for healthcare practices and actions¹³. PHE, as established by the National Policy for Permanent Health Education (PNEPS)⁶, is understood as an educational process grounded in the problematization of everyday work activities and critical reflection on professional practices, integrating teaching, healthcare services, and management as a strategy for institutional transformation^{12,13}. This perspective aligns with the concept of PHE as an educational process embedded in daily work activities and oriented toward transforming healthcare practices and organizations¹⁴.

Continuing Education (CE), in turn, is also aimed at professional qualification; however, it has an instructional and systematic nature, focusing on the technical and scientific updating of healthcare workers^{15,16}. In this context, it emphasizes information as an essential means for the dissemination of knowledge and the advancement of science within the professional environment, even after graduation¹⁵. This educational approach encompasses technical and scientific training, emphasizing theoretical and practical courses and activities based on specific diagnostic and treatment protocols¹⁵, in addition to involving educational activities that promote the continuous acquisition of technical-scientific knowledge through formal education or professional experiences, both within and outside institutions¹⁶.

In this study, the expression "professional training" is used according to the terminology adopted in the data collection instrument, referring to local CE initiatives aimed at the technical and scientific updating of PHC professionals^{6,17}. This type of training plays a fundamental role in promoting interdisciplinarity among teams and improving the quality of care provided to service users¹⁷.

The commitment of municipal health managers is essential for implementing health education practices, as they are responsible for managing policies and implementing both PHE and CE¹². However, many managers are unaware of, or do not discuss, health education management policies¹⁶. Despite their relevance, these tools are often underestimated and are not fully valued as essential instruments for updating knowledge, improving professional practice, and qualifying healthcare delivery^{8,18}. This lack of recognition compromises

the collaboration and understanding needed for their effective implementation⁸.

Healthcare professionals work in diverse settings that evolve rapidly with the development of new technologies. This requires strategies that ensure the continuous updating of these professionals, guaranteeing comprehensive care, system responsiveness, and user safety¹⁹. Thus, professional competencies and knowledge can be developed through CE²⁰.

The literature on this topic has predominantly explored the concepts and applications of PHE from a qualitative perspective^{11,18}, whereas studies on CE have generally focused on integrative reviews⁴. This predominance indicates a gap in empirical research in PHC, particularly regarding professionals' perceptions of training initiatives promoted by municipalities.

Thus, this study aimed to analyze the perceptions of physicians, nurses, and dentists regarding CE in PHC in the municipality of Caucaia, Ceará, identifying differences among professional categories and aspects associated with the availability and quality of training activities.

METHODS

This was a census-based, analytical, cross-sectional study with a quantitative approach, conducted with PHC professionals with higher education degrees (physicians, dentists, and nurses) who were actively working in their primary healthcare units during the data collection period (August to November 2023). This study was reported in accordance with the STROBE guideline, which provides recommendations for reporting observational cross-sectional studies²¹.

The municipality of Caucaia, located in the state of Ceará, Brazil, has an estimated population of 368,918 inhabitants²² and is the second most populous municipality in the state. Ceará is divided into five health regions: Fortaleza, Sertão Central, Litoral Leste/Jaguaribe, North, and Cariri. Caucaia belongs to the Metropolitan Region of Fortaleza and is subdivided into six districts. PHC in the municipality follows the Family Health Strategy (FHS) model, comprising 46 primary healthcare units that include 78 Family Health teams and 42 linked Oral Health teams (OHTs), reaching coverage rates of 81.9% for FHS and 41.6% for OHTs²³.

The municipality's health education policy began on September 3, 2020, with the enactment of Law No. 3,160/2020, which established the Permanent Health Education Center (NEPS). This department is responsible for developing activities aimed at the training and professional development of healthcare workers, as well as contributing to the development, implementation, and execution of the Municipal and Regional Permanent Health Education Plan. NEPS establishes educational priorities through collective discussions based on the objectives

and targets approved in the aforementioned plan²⁴. The present study was conducted within the context of the municipality's NEPS activities, which are responsible for coordinating training and CE activities across the PHC network.

For data collection, a structured questionnaire proposed by Oliveira et al.⁵ was used and adapted to the Google Forms platform; it was also made available in printed format and administered in person at healthcare units. The questionnaire consisted of six sections:

- Section 1. Participant identification: Three questions related to sex (female; male; no information), date of birth, and the health district where the participant works.
- Section 2. Academic background: Three questions related to academic training (Nursing; Medicine; Dentistry), year of graduation, and type of higher education institution (public; private; no information).
- Section 3. Graduate education: Three questions related to postgraduate education (yes or no), type of postgraduate education (specialization; residency; master's degree; doctoral degree), and area of postgraduate training.
- Section 4. Professional experience: Three questions related to type of employment relationship with the municipality (temporary/contracted or permanent/civil servant), length of work experience in the Family Health Strategy (FHS) (up to six months; six months to less than one year; one to five years; five to ten years; more than ten years), and length of work experience in the current FHS team (up to six months; six months to less than one year; one to five years; five to ten years; more than ten years).
- Section 5. Professional training: Four questions related to the evaluation of training activities offered by the municipality (1 – did not contribute at all; 2 – contributed little; 3 – indifferent; 4 – contributed greatly; 5 – contributed extremely), participation in any training activity offered by the municipality during the previous 12 months (yes or no), type of training activity attended (short-term course/training up to 15 hours; medium-duration course/training from 16 to 60 hours; in-service training; workshop involving technical and/or theoretical production; congress, seminar, meeting, forum, symposium, workshop; distance learning; introductory FHS course; other/specify), and the contribution of these training activities to routine patient care (did

not contribute at all; contributed little; indifferent; contributed greatly; contributed extremely).

- Section 6. Perceptions regarding training activities: Two questions: one closed-ended question regarding perceptions of the frequency, quantity, and quality of training activities offered by the municipality (Likert-scale responses: very satisfied, satisfied, indifferent, dissatisfied, very dissatisfied) and one open-ended question requesting criticism, compliments, or comments regarding the CE activities offered.

The variables were classified as dependent (professional category: nursing, medicine, and dentistry) and independent (sex, age, years since graduation, type of institution attended, postgraduate education, years of professional experience, participation in and type of training activity, perceived contribution, and evaluation of municipal health education policies).

Between August and October 2023, invitations to participate were sent to the professionals' contacts and included the Informed Consent Form, which, upon agreement, allowed access to the questionnaire items. Beginning in November 2023, the researcher actively followed up with professionals who had not yet completed the questionnaire and offered a printed version at healthcare units, personally approaching professionals so they could choose to complete the questionnaire in paper format if preferred.

After data tabulation, sample profile variables and professionals' perceptions regarding the existence and importance of CE in the workplace were described according to professional category. Associations between categorical variables and professional category were assessed using Pearson's chi-square and Fisher's exact tests. Comparisons among groups regarding age and years since graduation were performed using the nonparametric Kruskal-Wallis test followed by Dunn's post hoc test.

Responses to the open-ended question were read in full and categorized according to content similarity, resulting in five themes: satisfaction; insufficient availability of courses; management-related issues; low course quality; and ineffective dissemination. The analysis had a descriptive approach, and categories were quantified according to their frequency of occurrence.

Statistical analyses were performed using R software, adopting a significance level of 5%.

This study was conducted in accordance with the ethical principles established by Resolution No. 466/2012 of the National Health Council of the Ministry of Health for research involving human subjects and was approved by the Research

Ethics Committee under Protocol No. 6.130.035 (CAAE: 70156723.0.0000.5374).

RESULTS

Of the 215 higher-education professionals working in PHC in Caucaia (41 dentists, 91 nurses, and 83 physicians), 35 did not participate in the study. Of these, 21 declined to complete the questionnaire (12 physicians, seven nurses, and two dentists), while 14 were on vacation, off duty, on leave, or were part of incomplete teams during the data collection period. Ultimately, 70 professionals completed the online questionnaire and 110 completed the printed version, resulting in a total of 180 participants and an overall response rate of 83.7%, including 39 dentists (95.2%), 89 nurses (97.8%), and 52 physicians (62.6%).

The mean age of professionals who participated in the study was 30.0 ($\pm$ 6.7) years for physicians, 36.5 ($\pm$ 7.5) years for nurses, and 38.8 ($\pm$ 8.6) years for dentists ($p < 0.0001$). Regarding years since graduation, the mean was 3.6 ($\pm$ 4.9) years for physicians, 10.6 ($\pm$ 6.8) years for nurses, and 16.1 ($\pm$ 8.4) years for dentists ($p < 0.0001$).

Table 1 presents the profile of participating professionals and highlights significant differences among professional categories regarding the variables analyzed. Most physicians (69.2%) and nurses (91.0%) were female, whereas among dentists the distribution was more balanced (48.7%, $p < 0.0001$). Although most professionals graduated from private higher education institutions (HEIs), the majority of dentists (69.2%) graduated from public HEIs. Regarding educational qualifications, the highest proportion of professionals with postgraduate education was observed among nurses and dentists. Temporary employment contracts predominated overall; however, among dentists, permanent civil servant positions were more prevalent (76.9%). Regarding years of experience in the FHS, nurses and dentists had longer experience in the FHS.

Table 2 presents the variables related to professionals' perceptions of the participation in and importance of training activities within the scope of CE. Nurses showed the highest participation in training activities (69.7%). There was a significant association between professional category and perceived contribution of training activities promoted or proposed by the municipality throughout the professional trajectory ($p < 0.05$), with dentists reporting the most positive perceptions regarding its contribution to professional development (physicians = 25.0%; nurses = 47.2%; and dentists = 66.7%). A significant association was also observed between professional category and participation in training activities promoted or proposed by the municipality in the previous 12 months (physicians = 48.1%; nurses = 69.7%; and dentists = 56.4%; $p < 0.05$).

Table 1. Sociodemographic and educational profile of health professionals by professional category – Caucaia, Ceará, Brazil, 2023 (n = 180).

Variable	Category	Professional category			Total	p-value ¹
		Physician	Nurse	Dentist		
		Frequencies (%)				
Sex	Female	36 (69.2)	81 (91.0)	19 (48.7)	136 (75.6)	< 0.0001 ²
	Male	15 (28.8)	7 (7.9)	19 (48.7)	41 (22.8)	
	No information ¹	1 (1.9)	1 (1.1)	1 (2.6)	3 (1.7)	
Type of HEI ⁴	Public	20 (38.5)	23 (25.8)	27 (69.2)	70 (38.9)	< 0.0001 ²
	Private	31 (59.6)	66 (74.2)	12 (30.8)	109 (60.6)	
	No information ¹	1 (1.9)	0 (0.0)	0 (0.0)	1 (0.6)	
Highest degree	Undergraduate degree	42 (80.8)	28 (31.5)	7 (17.9)	77 (42.8)	0.0005 ³
	Specialization	10 (19.2)	54 (60.7)	24 (61.5)	88 (48.9)	
	Master's degree	0 (0.0)	6 (6.7)	8 (20.5)	14 (7.8)	
	Doctoral degree	0 (0.0)	1 (1.1)	0 (0.0)	1 (0.6)	
Employment relationship	Temporary/contracted	39 (75.0)	49 (55.1)	9 (23.1)	97 (53.9)	< 0.0001 ²
	Permanent/civil servant	10 (19.2)	39 (43.8)	30 (76.9)	79 (43.9)	
	No information ¹	3 (5.8)	1 (1.1)	0 (0.0)	4 (2.2)	
Time working in the FHS	Up to 6 months	23 (44.2)	14 (15.7)	4 (10.3)	41 (22.8)	0.0005 ³
	6 months to 1 year	5 (9.6)	5 (5.6)	2 (5.1)	12 (6.7)	
	1 to 5 years	16 (30.8)	24 (27.0)	4 (10.3)	44 (24.4)	
	5 to 10 years	7 (13.5)	10 (11.2)	0 (0.0)	17 (9.4)	
	More than 10 years	1 (1.9)	35 (39.3)	29 (74.4)	65 (36.1)	
	No information ¹	0 (0.0)	1 (1.1)	0 (0.0)	1 (0.6)	

¹ Cases with “no information” were excluded from the statistical test. ² Chi-square test. ³ Fisher's exact test.⁴ Higher education institution.

Source: Prepared by the authors.

Table 2. Health professionals' perceptions of training activities and continuing education in the workplace by professional category – Caucaia, Ceará, Brazil, 2023 (n = 180).

Variable	Category	Professional category			Total	p-value
		Physician	Nurse	Dentist		
		Frequencies (%)				
Contribution to professional development of training activities carried out throughout the professional trajectory that were promoted or proposed by the municipality	Did not contribute at all	3 (5.8%)	2 (2.2%)	0 (0.0%)	5 (2.8%)	< 0.0001 ³
	Contributed little	9 (17.3%)	23 (25.8%)	3 (7.7%)	35 (19.4%)	
	Indifferent	19 (36.5%)	7 (7.9%)	3 (7.7%)	29 (16.1%)	
	Contributed greatly	13 (25.0%)	42 (47.2%)	26 (66.7%)	81 (45.0%)	
	Contributed extremely	3 (5.8%)	15 (16.8%)	7 (18.0%)	25 (13.9%)	
	No information ²	5 (9.6%)	0 (0.0%)	0 (0.0%)	5 (2.8%)	
Participation in any type of training activity promoted or proposed by the municipality in the previous 12 months	Yes	25 (48.1%)	62 (69.7%)	22 (56.4%)	109 (60.6%)	0.0340 ³
	No	27 (51.9%)	27 (30.3%)	17 (43.6%)	71 (39.4%)	

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Table 2. Continuation.

Variable	Category	Professional category			Total	p-value
		Physician	Nurse	Dentist		
Frequencies (%)						
Type of training activity attended in the previous 12 months ¹	Short-term course/training (up to 15 hours)	11 (21.2%)	32 (36.0%)	12 (30.8%)	55 (30.6%)	0.1836 ³
	Medium-duration course/training (16 to 60 hours)	7 (13.5%)	25 (28.1%)	7 (18.0%)	39 (21.7%)	0.1031 ³
	In-service training	9 (17.3%)	4 (4.5%)	1 (2.6%)	14 (7.8%)	0.0166 ⁴
	Workshop (including technical and/or theoretical group production)	3 (5.8%)	1 (1.1%)	2 (5.1%)	6 (3.3%)	0.1798 ⁴
	Congress, seminar, meeting, forum, symposium, workshop	6 (11.5%)	6 (6.7%)	4 (10.3%)	16 (8.9%)	0.5158 ⁴
	Distance learning	5 (9.6%)	11 (12.4%)	4 (10.3%)	20 (11.1%)	0.8663 ³
	Introductory Family Health Strategy course	3 (5.8%)	3 (3.4%)	0 (0.0%)	6 (3.3%)	0.4091 ⁴
	Postgraduate course (specialization, master's degree, and/or doctoral degree)	1 (1.9%)	1 (1.1%)	3 (7.7%)	5 (2.8%)	0.3727 ⁴
Contribution of training activities attended in the previous 12 months to routine healthcare delivery for the population served	Did not contribute at all	0 (0.0%)	2 (2.2%)	1 (2.6%)	3 (1.7%)	0.1278 ⁴
	Contributed little	10 (19.2%)	15 (16.8%)	2 (5.1%)	27 (15.0%)	
	Indifferent	7 (13.5%)	8 (9.0%)	1 (2.6%)	16 (8.9%)	
	Contributed greatly	12 (23.1%)	29 (32.6%)	15 (38.5%)	56 (31.1%)	
	Contributed extremely	3 (5.8%)	15 (16.8%)	5 (12.8%)	23 (12.8%)	
	Did not participate or did not report	20 (38.5%)	20 (22.5%)	15 (38.5%)	55 (30.6%)	
Perception of the frequency, quantity, and quality of training activities already offered by the municipality	Very satisfied	2 (3.8%)	5 (5.6%)	3 (7.7%)	10 (5.6%)	< 0.0001 ⁴
	Satisfied	7 (13.5%)	32 (36.0%)	24 (61.5%)	63 (35.0%)	
	Indifferent	20 (38.5%)	13 (14.6%)	11 (28.2%)	44 (24.4%)	
	Dissatisfied	14 (26.9%)	30 (33.7%)	0 (0.0%)	44 (24.4%)	
	Very dissatisfied	1 (1.9%)	7 (7.9%)	1 (2.6%)	9 (5.0%)	
	No information ²	8 (15.4%)	2 (2.2%)	0 (0.0%)	10 (5.6%)	
Criticisms, positive feedback, and comments regarding the continuing education activities offered ¹	Satisfaction	2 (3.8%)	21 (23.6%)	16 (41.0%)	39 (21.7%)	< 0.0001 ³
	Insufficient availability of courses	22 (42.3%)	38 (42.7%)	5 (12.8%)	65 (36.1%)	0.0029 ³
	Management-related issues	1 (1.9%)	5 (5.6%)	4 (10.3%)	10 (5.6%)	0.2405 ⁴
	Low course quality	3 (5.8%)	10 (11.2%)	6 (15.4%)	19 (10.6%)	0.3216 ³
	Ineffective dissemination	0 (0.0%)	0 (0.0%)	1 (2.6%)	1 (0.6%)	0.2167 ⁴
	Did not participate or did not report	24 (46.2%)	16 (18.0%)	7 (18.0%)	47 (26.1%)	0.0008 ³

¹ Each professional's response could be classified into more than one category. ² Cases with "no information" were excluded from the statistical test. ³ Chi-square test. ⁴ Fisher's exact test.

Regarding satisfaction with the frequency, quantity, and quality of training activities offered by the municipality, 17.3% of physicians, 41.6% of nurses, and 69.2% of dentists reported being very satisfied or satisfied. However, 28.8% of physicians, 41.6% of nurses, and 2.6% of dentists reported being dissatisfied

or very dissatisfied with these aspects ($p < 0.05$).

In addition to the closed-ended questions, the questionnaire included an open-ended question aimed at capturing participants' criticisms, compliments, and suggestions regarding the CE actions promoted by the municipality.

The responses were grouped into five thematic categories: satisfaction; insufficient availability of courses; management-related issues; low course quality; and ineffective dissemination (Table 2). The most frequent categories were “insufficient availability of courses” (36.1%) and “satisfaction” (21.7%), with significant differences among professional categories ($p < 0.05$).

DISCUSSION

Continuing Education (CE) is essential for healthcare professionals to expand their knowledge and competencies, developing the personal and professional qualities required throughout their professional careers²⁵. Considering that competent and patient-centered care is both a right of service users and a responsibility of professionals, the development of educational actions that promote behavioral changes and encourage the active participation of healthcare professionals in care delivery is of utmost importance²⁶.

This study found that professional category was associated with participation in CE activities and with perceptions of their contribution to professional development. Differences were also observed in the evaluation of the availability and quality of training activities. Physicians were the least likely to participate and were the most critical in their evaluations, whereas nurses reported the highest participation, and dentists most strongly recognized the importance of these activities in routine healthcare delivery.

The professional profile of participants reflects a trend observed in studies involving healthcare professionals, characterized by the predominance of women and individuals graduating from private higher education institutions (HEIs). The feminization of health professions is a well-established phenomenon in Brazil⁵, within a context in which the private sector plays a major role in higher education, accounting for 78.0% of undergraduate enrollments in the country in 2022²⁷. However, in the present study, the distribution by sex among dentists was more balanced between men and women, and most dentists had graduated from public institutions. This finding is noteworthy and warrants further studies to investigate the possible reasons underlying this pattern in the municipality.

Regarding educational qualifications, 60.7% of nurses and 61.5% of dentists held specialization degrees. This proportion may be associated with financial incentives offered to permanent municipal employees, which include 43.8% of nurses and 76.9% of dentists. However, these benefits are not extended to professionals employed under temporary or contracted arrangements. The career and salary plan of the municipality of Caucaia²⁸ establishes guidelines aimed at valuing healthcare workers by regulating and supporting

their professional career progression, including remuneration policies, which may contribute to workforce development²⁹.

During the evaluated period, nurses showed the highest participation in training activities (69.7%), which may reflect the role played by this professional category in organizing care delivery and managerial activities within PHC, potentially facilitating their participation in professional updating processes¹². This greater adherence is relevant because CE promotes learning gains and technical-scientific updating^{30,31,32}, which are essential competencies for healthcare delivery in PHC. However, this setting remains underexplored in the literature on CE among nurses, which has predominantly focused on hospital settings³³, highlighting the need for further research in PHC, which was the focus of the present study.

In contrast, physicians were the professionals least likely to participate in training activities during the previous 12 months (51.9%) and expressed dissatisfaction regarding the frequency, quantity, and quality of the training activities offered by the municipality. In PHC in Caucaia, physicians were predominantly younger, with fewer years since graduation and less experience in the Family Health Strategy (FHS) compared with the other professional categories evaluated. This scenario is supported by studies⁵ demonstrating the ongoing renewal of the medical workforce in the FHS³⁴ and the high turnover rates among these professionals. This phenomenon has been associated with the entry of recently graduated physicians seeking professional experience in public healthcare services⁵. Consequently, a low rate of specialization was observed among physicians in the municipality, with only 19.2% holding a specialty qualification.

The low participation of physicians in training programs was corroborated by a study conducted in Minas Gerais³⁵. However, that study focused on socioprofessional characteristics and participation in training activities related to specific topics, rather than directly addressing participation in structured CE activities offered by municipal management. This difference in focus may partly explain the variations observed between studies. Lower participation in training activities may be associated with lack of time, frequently attributed to multiple employment relationships³⁶, although this aspect was not investigated in the present study. Therefore, further studies examining physicians' employment conditions in the municipality are recommended to better understand the reasons underlying lower adherence to CE programs.

In this context, it is essential to plan and implement continuing and permanent health education activities on an ongoing basis, ensuring sufficient time for professionals to update their knowledge³⁷. More recently, regulatory initiatives

have sought to address this barrier by providing protected time for educational activities within the PHC work process, including professional qualification among the components of primary care co-financing⁹. A viable alternative to overcome availability constraints is the use of distance learning platforms, which offer greater flexibility by allowing access to recorded materials and asynchronous participation. This strategy may facilitate training for professionals with multiple employment relationships and restricted schedules, potentially increasing adherence to educational programs.

In addition to multiple employment relationships, the low adherence of physicians to CE programs may also be related to difficulties in coordination and cooperation within municipal management, which may avoid releasing professionals from their duties so as not to reduce productivity⁷. In this regard, physicians exposed to more consistent CE strategies have been shown to present better professional performance³⁸ and lower rates of complaints related to quality of care³⁹.

Among dentists, 76.9% held permanent civil servant positions, having entered public service through competitive examinations. This finding has also been reported in other studies^{40,41}, which showed that most dentists obtained their positions through competitive public selection processes. Notably, 84.7% stated that the training activities undertaken throughout their professional trajectory contributed significantly to their professional improvement. In addition, this category had the highest proportion of professionals with specialization degrees (61.5%) and master's degrees (20.5%), a trend similar to that observed in a previous study⁴⁰, which found that 75.5% of dentists in southern Brazil had complementary training, most commonly focused on specialization. Dentists were the professional category that most strongly recognized the importance of training activities in the routine of healthcare delivery. Training activities offered to dentists working in PHC play an important role in professional development, motivation, and accountability for the care provided⁴².

Updating professional knowledge is essential for addressing the challenges of professional practice in healthcare, highlighting the need for CE to improve the quality of care⁴³. Although 69.2% of dentists expressed satisfaction with the frequency, quantity, and quality of the training activities offered, this perception contrasts with findings from a previous study⁴¹, which found that 73.1% of the dentists interviewed were not participating in complementary training courses. Thus, it is essential that the coordination of educational programs include activities aimed at encouraging, monitoring, and strengthening the qualification of these professionals⁴⁴. In addition, a critical-reflective and committed stance is necessary, especially among managers, who are able to facilitate this process⁴⁵.

These differences may be related to the way in which the Permanent Health Education Policy has been operationalized in the municipality. In the local context of Caucaia, oral health management reports the regular provision of educational activities aimed at dentists, whereas training activities intended for physicians and nurses tend to occur less regularly, according to the dynamics of the local work process (information obtained through consultation with local management). Although this information was not included among the variables analyzed, it may help contextualize the findings related to this group's participation in training activities. This greater frequency of educational provision for dentistry may partially reflect principles underlying PHE, particularly when educational activities are linked to routine work demands and local needs¹⁴.

From this perspective, moving beyond an exclusively transmissive logic toward educational processes grounded in the problematization of work in healthcare represents a necessary, although challenging, direction¹⁴. Thus, the systematic investment observed in Caucaia, although captured in this study predominantly through the instructional dimension of CE, may be understood as an initial indication of this approximation. Its further development depends not only on the provision of courses, but also on the reorganization of work processes and management at the municipal level.

To this end, the development of municipal training plans based on local diagnoses of competency gaps identified within teams is recommended, using tools such as learning needs assessments and PHC performance indicators. In addition, these plans should incorporate participatory methodologies that foster the exchange of experiences among professionals, as well as hybrid strategies (in-person and distance learning), which expand access and flexibility of participation. The implementation of a structured annual calendar of educational activities, developed in partnership among managers, professionals, and educational institutions, may optimize working time and promote continuity in learning.

Evaluating the training activities offered is important for identifying opportunities for improvement, measuring the impact of these activities on professional practice, and understanding participant satisfaction. To strengthen this process, the inclusion of systematic monitoring and evaluation mechanisms is recommended, encompassing outcome indicators such as changes in care practices, strengthening of bonds with service users, and improvements in PHC performance indicators. This continuous monitoring allows the content, methodology, and periodicity of training activities to be adjusted, ensuring that CE remains relevant and effective.

Considering this evidence, this study contributes to addressing an underexplored gap by investigating professionals' perceptions of CE in the context of public-sector PHC in Caucaia. A quantitative, census-based design was chosen because it allowed the distribution of perceptions to be analyzed across all professional categories in the municipal network, enabling objective comparisons between groups. However, the quantitative and cross-sectional nature of the study is acknowledged as a limitation. These limitations could be mitigated through complementary studies using qualitative approaches, which would allow a deeper exploration of professionals' individual opinions and experiences, as well as the factors that motivate or hinder their participation in training programs.

Another limitation was the inability to analyze, in greater depth, the frequency and specific topics of the training activities offered to professionals. Although this information was sought from the relevant authorities, the records available during the study period were not systematized in a way that would allow their analysis. Finally, although no formal comparative analysis was performed between the profiles of respondents who completed the questionnaire online and those who completed it in person, it should be noted that the questionnaire maintained the same structure and content in both modes of administration. The open-ended responses were also categorized uniformly, which contributes to the consistency of the data obtained and mitigates potential effects resulting from heterogeneity in the mode of questionnaire completion.

One strength of this study was the inclusion of different professional categories as participants. This diversity is essential, as healthcare professionals perform functions that go beyond clinical practice, focusing on strengthening the capacity of individuals and communities to make decisions and act in favor of health⁴⁶. The benefits of education for multiprofessional teams include improved patient care, greater efficiency, reduced costs, and increased team satisfaction⁴⁷. Professional qualification is essential for effective performance, and the experiences of oral health managers may serve as a valuable model, as they were positively evaluated by dentists. Thus, collaboration among managers from different areas may contribute to training all categories of healthcare professionals in an integrated and efficient manner.

More broadly, although the study was conducted in the municipality of Caucaia, the organization of PHC and the profile of health professionals observed reflect characteristics common to several SUS contexts nationwide. Therefore, the findings may have broader applicability and may support reflections and professional qualification strategies in other

municipalities with similar structures and challenges, especially when there is coordination among municipal management bodies, Permanent Health Education Centers, and local HEIs, strengthening teaching-service-community integration and the sustainability of training actions within SUS.

FINAL CONSIDERATIONS

This study identified relevant differences among professional categories regarding participation in training activities and the importance attributed to CE in PHC. While physicians showed lower adherence and more critical evaluations, nurses were the professionals who most frequently participated in the activities, and dentists were those who most strongly recognized their impact on daily practice. These findings provide support for managers to adapt educational strategies to the specific characteristics of each group, strengthening engagement and the effectiveness of training actions.

The experience of oral health management in Caucaia, marked by greater regularity and appreciation of training activities, may serve as a reference for other professional categories. Promoting integration between managers and teams, with a focus on CE, contributes to improving the quality of care, strengthening multiprofessional teamwork, and advancing the consolidation of SUS, reinforcing the role of CE as a strategic axis for professional qualification in the context of PHC.

This study contributes to addressing an important gap in the literature by generating evidence on CE in PHC, with potential applicability across different contexts within the public health system.

AUTHOR CONTRIBUTIONS

Anna Lucia Iague Fraes Vasques contributed to project administration, formal analysis, conceptualization, data curation, investigation, methodology, and writing, review, and editing of the manuscript. Luciane Zanin contributed to formal data analysis, methodology, and writing, review, and editing of the manuscript. Cibelly Neves Fonseca and José Grácio Gomes Soares Júnior contributed to formal data analysis and writing, review, and editing of the manuscript. Flávia Martão Flório contributed to project administration, formal analysis, data curation, methodology, supervision, and writing, review, and editing of the manuscript.

CONFLICTS OF INTEREST

The authors declare no conflicts of interest.

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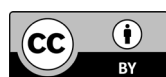
DATA AVAILABILITY STATEMENT

The research data are available upon request.

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