



ORIGINAL ARTICLE

Characterization of the professional development process of Comprehensive General Dentists for the early diagnosis of oral manifestations of HIV/AIDS

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ABSTRACT

Introduction: The proper performance of the Comprehensive General Dentist (EGI) specialist is essential to ensure early detection of oral manifestations of the human immunodeficiency virus (HIV).

Objective: To design a professional development strategy to improve the performance of Comprehensive General Dentists in the early diagnosis of oral manifestations of HIV.

Methods: An observational, descriptive, cross-sectional study was conducted on an intentional sample of 53 Comprehensive General Dentists and 11 managers from dental clinics in the municipality of Pinar del Río. Document analysis, surveys, interviews, and scientific observation were applied to collect data on the variables under study. Information was processed using descriptive statistics and methodological triangulation.

Results: Insufficiencies were identified in training and updating on oral HIV manifestations, with poor alignment between real needs and professional development activities, as well as limited use of technologies and active teaching methods. A predominantly inadequate level was observed in methodological and developmental indicators. However, strengths were noted in willingness to learn and recognition of training needs. Triangulation confirmed gaps in planning, implementation, and relevance of the professional development process, as well as deficiencies in health promotion, prevention, and systematic updating.

INTRODUCTION

Social transformations driven by human development policies have required higher education to refine its core functions to enhance professional competitiveness. In this context, continuous performance improvement has become essential,^(1,2) particularly in human resource training, where teaching, clinical care, social interaction, and research converge. Pedagogy, as the science of education, is fundamental to any training intervention, especially in health fields such as Comprehensive General Dentistry (EGI), whose specialists work closely with primary care health teams.^(3,4)

The theory of Advanced Education provides methodological foundations for understanding professional performance as both process and outcome,⁽¹⁰⁾ relying on approaches that reinforce the humanistic character of teaching-learning and collective knowledge construction. From this perspective, performance reflects levels of professionalism and the need for development alternatives—such as strategies, programs, and technologies—oriented toward professionalization. Professional development, a core component of lifelong learning, was institutionalized in Cuba in 1976 to update, complement, or redirect knowledge and skills, becoming indispensable given rapid scientific-technical advances and observed gaps in professional practice.^(5,6,7)

The literature reveals diverse professional development needs among dentists: continuous updating due to knowledge obsolescence, training in topics not covered in undergraduate or postgraduate programs, and limitations in modes of action that affect social performance. This reality underscores the urgency of strengthening EGI professional performance through multidimensional analysis and a clear conceptual framework of effective practice. Accordingly, professional development focused on human and professional growth is critical to fulfilling the broad action profiles defined for the EGI specialty since its creation and subsequent revisions, responding to society's growing demands.^(8,9,10)

Oral manifestations associated with HIV remain frequent and clinically relevant problems, including candidiasis, necrotizing periodontitis, and pigmented lesions. Their presence may indicate immunosuppression and facilitate early diagnosis. Despite therapeutic advances, these manifestations are often underestimated and require greater professional preparation for timely identification and appropriate management.^(11,12)

In the specific context of HIV/AIDS, although the disease is addressed in undergraduate training and is part of the dentist's professional profile regarding oral manifestation detection, no studies have examined EGI professional development for this purpose. Thus, identifying learning needs is essential to ensure the quality of training programs, as educational deficiencies directly translate into irregular EGI performance in managing these conditions.⁽¹³⁾

These conditions reveal a contradiction between the therapeutic outcomes achieved in HIV/AIDS patient care and the lack of a systematic approach to professional development aimed at improving EGI performance. Given this, the present study was conducted to characterize the state of the professional development process of EGIs for the early diagnosis of oral HIV/AIDS manifestations in the municipality of Pinar del Río.

METHODS

An observational, descriptive, cross-sectional study was carried out from 2024 to 2025, involving an intentional sample of 53 Comprehensive General Dentists from dental clinics in Pinar del Río municipality.

The research adopted a mixed qualitative–quantitative descriptive approach, grounded in the historical-dialectical-materialist scientific method. Theoretical methods included analysis–synthesis, historical–logical analysis, modeling, document analysis, and systemic–structural approach. Empirical methods included surveys, interviews, and scientific observation.

Literature review identified the central variable of this phase: *the professional development process of EGI specialists for early diagnosis of oral HIV manifestations*. This variable was operationally broken down into three dimensions—methodological, cognitive, and developmental—each with specific indicators to assess the process state:

- Methodological dimension: Assesses planning, execution, and coherence of professional development activities.
- Cognitive dimension: Focuses on systematic content updating and use of information and communication technologies (ICT).
- Developmental dimension: Evaluates the EGI's ability to identify, diagnose, and manage oral HIV manifestations across clinical settings.

Empirical methods:

- Surveys and interviews: Administered to specialists and managers to explore perceptions of training needs, relevance of activities, and satisfaction with updating processes.
- Scientific observation: Conducted in teaching and clinical settings to assess clinical method application and integration of training into practice.

Table 1. Operationalization of the variable "professional development process of GCD specialists for the early diagnosis of oral manifestations of HIV/AIDS."

Dimension (Definition)	Indicators
Methodological (systematic and continuous transformation in which several formative processes converge; adapted to the historical context for the professional development of GCD specialists for the early diagnosis of oral manifestations of HIV/AIDS)	<ol style="list-style-type: none"> 1. Frequency of conducting needs and interests assessments for GCD professional development regarding the identification of oral manifestations of HIV/AIDS and their early signs 2. Level of correspondence between professional development plans and GCD professional development needs related to oral manifestations of HIV/AIDS 3. Level of planning of different organizational forms of professional development 4. Level of execution of planned professional development activities 5. Level of relationship among methods, means, and forms that favor professional development in different organizational formats 6. Frequency of using group work in professional development activities to achieve early diagnosis of oral manifestations of HIV/AIDS 7. Level of satisfaction with developed professional development activities
Cognitive (permanent renewal of content related to oral manifestations of HIV/AIDS and their early signs, with a collaborative approach and dynamized by information and communication technologies [ICT])	<ol style="list-style-type: none"> 1. Frequency of inclusion of new knowledge and skills in GCD professional development programs regarding oral manifestations of HIV/AIDS and early HIV diagnosis through initial oral signs 2. Level of satisfaction with the renewal of knowledge, skills, and values related to oral manifestations of HIV/AIDS 3. Level of satisfaction achieved regarding the systematization and mastery of new content using technology as a resource to provide GCD specialists with all necessary information for professional performance in early diagnosis of oral manifestations of HIV/AIDS
Developmental (expression of the capacity to identify oral manifestations of HIV/AIDS at any stage of the disease, in any practice setting)	<ol style="list-style-type: none"> 1. Level of use of the clinical method in dental consultation for early detection and timely treatment of oral manifestations of HIV/AIDS 2. Level of correct execution of procedures related to early diagnosis of oral manifestations of HIV/AIDS 3. State of creation of a favorable affective climate in the physician-patient relationship that facilitates early diagnosis and timely treatment 4. Level of mastery of bioethical principles in communicating diagnostic results 5. Capacity to diagnose oral manifestations of HIV/AIDS and guide patient management 6. Level of scientific production by dentists related to knowledge of oral manifestations of HIV/AIDS and medical conduct in this disease

Each dimension was operationalized through specific indicators, aimed at measuring—from the frequency and relevance of training needs assessments to satisfaction with updating processes, acquisition of new knowledge, and application of the clinical method in dental practice. Additionally, elements related to professional ethics, physician-patient relationships, and scientific production on the topic were considered. A five-category scale (Very Adequate, Quite Adequate, Adequate, Poorly Adequate, Inadequate) was used to evaluate the behavior of these indicators.

Information processing:

Data were analyzed using descriptive statistics (frequencies, means) and pedagogical methodological triangulation, contrasting theoretical, documentary, and empirical findings to ensure diagnostic validity and reliability.

Ethical considerations

Confidentiality and academic integrity were maintained; no personal data were collected from participants.

RESULTS

Document review included the 2023 EGI Specialty Study Plan and Program, core Cuban EGI literature, dental clinic manuals, and professional development plans from the University of Medical Sciences of Pinar del Río and polyclinics over the past five years. The study plan—organized into 11 modules and 5 courses—emphasizes oral health promotion, prevention, treatment, rehabilitation, health education, oral health situation analysis, interdisciplinary teamwork, advanced technologies, and natural medicine. However, limitations were noted: overly general objectives, focus on already-diagnosed HIV patients rather than early detection, and biosecurity guidelines targeting only confirmed cases—contrary to universal precautions recommended in practice.

Manuals of organization and procedures did not establish clinical suspicion of immunosuppression in patients with recurrent septic processes as a professional competency, nor did they specify referral pathways for suspected HIV cases. Actions were limited to managing diagnosed patients, with no provision for multidisciplinary consultation.

Professional development plans revealed only one activity in the past five years focused on early HIV diagnosis—lacking systematicity, relevance to EGI needs, and integration of ICT or workplace learning—significantly restricting performance improvement in early detection.

Participant characterization (Table 2) showed that 56,6 % had ten or more years of experience. Regarding academic qualifications, 84,9 % held the highest auxiliary teaching rank, 98,1 % held a Master's in Sciences, and 20,8 % were Associate Researchers.

Table 2. Sample characteristics.

Variable	No.	%
Years of EGI experience	0-5	26,4
	6-9	9
	≥ 10	30
Teaching rank	Auxiliary	45
	Assistant	16
	Instructor	3
Associate Researcher	11	20,8
Master's in Sciences	52	98,1

Analysis of the professional development process (Table 3) revealed significant limitations in the methodological dimension: most indicators were rated as Poorly Adequate or Inadequate, reflecting deficiencies in planning, execution, and alignment with professional needs. In contrast, the cognitive dimension showed mostly Adequate ratings, with good incorporation of new knowledge and ICT use—though room for improvement remains in content renewal satisfaction. The developmental dimension demonstrated stronger performance in clinical and ethical aspects (clinical method application, patient rapport, bioethics), while scientific production on oral HIV manifestations remained limited.

Table 2. Evaluation of indicators of the professional development process of Comprehensive General Dentists for the early diagnosis of oral manifestations of HIV/AIDS.

Dimension	Indicator	Very Adequate				Quite Adequate				Adequate	
		No.	%	No.	%	No.	%	No.	%	No.	%
Methodological	1	0	0	0	0	0	0	48	90,6	5	9,4
	2	0	0	0	0	0	0	47	88,7	6	11,3
	3	0	0	0	0	0	0	49	92,5	4	7,5
	4	0	0	0	0	0	0	47	88,7	6	11,3
	5	0	0	0	0	0	0	47	88,7	6	11,3
	6	0	0	0	0	0	0	48	90,6	5	9,4
	7	0	0	0	0	0	0	49	92,5	4	7,5
Cognitive	1	0	0	0	0	47	88,7	5	9,4	1	1,9
	2	0	0	0	0	48	90,6	5	9,4	0	0
	3	0	0	0	0	48	90,6	5	9,4	0	0
Developmental	1	0	0	0	0	47	88,7	6	11,3	0	0
	2	0	0	0	0	48	90,6	5	9,4	0	0
	3	48	90,6	5	9,4	0	0	0	0	0	0
	4	47	88,7	6	11,3	0	0	0	0	0	0
	5	0	0	0	0	0	0	47	88,7	6	11,3
	6	0	0	0	0	0	0	47	88,7	6	11,3

DISCUSSION

Our findings align with literature recognizing oral manifestations as valuable early indicators of HIV infection. Lesions such as oral candidiasis and hairy leukoplakia can appear before systemic symptoms or serological confirmation.^(14,15) Thus, EGI training should explicitly include recognition of oral signs suggestive of immunosuppression.

However, the reviewed curriculum shows deficiencies: objectives are too general, and focus is placed on managing diagnosed patients rather than early detection—contrary to international recommendations that dental professionals identify oral signs in undiagnosed individuals.^(16,17)

By failing to develop competencies for clinical suspicion and timely referral, the opportunity for dentists to serve as gateways to early diagnosis is lost. Institutional manuals further lack protocols for suspecting immunosuppression in recurrent infections or clear referral pathways for suspected HIV cases. In contrast, best-practice settings recommend active dentist involvement in serological testing referrals upon identifying suggestive oral lesions.⁽¹⁸⁾

While the cognitive dimension shows adequate knowledge updating and ICT use, the methodological dimension—encompassing needs assessment, systematic planning, organized execution, and follow-up—is markedly insufficient. This undermines the sustainability and clinical relevance of training efforts.

In contexts with limited systematic training and institutional protocols, the diagnostic potential of dentists remains underutilized. Literature from resource-constrained settings warns that this may perpetuate late diagnoses and increase HIV's clinical and social burden.⁽¹⁹⁾ Therefore, strengthening the methodological framework of professional development and formalizing referral protocols is essential.

Based on findings and external evidence, we recommend that EGI training programs:

- Integrate specific competencies for early HIV detection via oral examination
- Develop institutional referral guidelines
- Utilize ICT for continuous updating
- Promote research training in oral HIV health
- Implement periodic evaluation of professional development impact—not just on knowledge, but on clinical outcomes and effective referrals

Only through such a systematic methodological approach can the dentist's role as a key actor in HIV diagnosis and control be optimized.

CONCLUSIONS

Substantive deficiencies were identified in the professional development process of Comprehensive General Dentists—particularly regarding scientific updating, methodological competence, and systematic training for early detection of oral HIV manifestations. These gaps limit professionals' ability to respond to early clinical signs, reduce opportunities for timely intervention, and compromise diagnostic quality at the primary care level. Consequently, there is an urgent need to design and implement a comprehensive training strategy grounded in pedagogical principles and modern workplace education approaches. Such a strategy would not only enhance professional readiness for early recognition of oral HIV manifestations but also significantly improve the quality of dental care and timely detection of community health issues.

BIBLIOGRAPHIC REFERENCES

1. Salas Perea R Syr, Díaz Hernández L, Pérez Hoz G. Las competencias y el desempeño laboral en el Sistema Nacional de Salud. Educ Med Super [Internet]. 2012 Dic [citado 15/08/2025]; 26(4): 604-617. Disponible en: <https://www.medigraphic.com/pdfs/educacion/cem-2012/cem124m.pdf>
2. Herrera Miranda GL, Horta Muñoz DM. La superación pedagógica y didáctica, necesidad impostergable para los profesores y tutores del proceso de especialización. Educación Médica Superior [Internet]. 2015 [citado 15/08/2025]; 30(3): [aprox. 0 p.]. Disponible en: http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S0864-21412016000300002
3. Vela-Valdés J, Salas-Perea RS, Quintana-Galende ML, Pujals-Victoria N, González Pérez J, Díaz Hernández L, et al. Formación del capital humano para la salud en Cuba. Rev Panam Salud Publica [Internet]. Disponible en: <https://www.scielosp.org/article/rpsp/2018.v42/e33>
4. Asanza Díaz DM. Educación en el trabajo en la carrera de Estomatología dentro del plan de estudios D. Rev Neuronum [Internet]. 2017 [citado 15/08/2025]; 3(2). Disponible en: <https://eduneuro.com/revista/index.php/revistaneuronum/article/view/99/89>
5. Añorga Morales J. La profesionalización como escenario del proceso de mejoramiento profesional y humano. Tomo II. La Habana, Cuba: Universidad de las Ciencias Pedagógicas "Enrique José Varona"; 2014.
6. Añorga Morales J., et al. Producción Intelectual: proceso organizado y pedagógico. Editorial Universidad de La Habana. La Habana; 2003.
7. Santana Martínez L, Toledo Fernández A M, Coello Santana S, Morales Maya MJ. Algunas consideraciones sobre la superación permanente de los profesionales de salud en Cuba. REMS [Internet]. 2024 [citado 15/08/2025]; 38. Disponible en: http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S0864-21412024000100016&lng=es
8. Martín Zurro A. Compendio de Atención Primaria. Conceptos, organización y práctica clínica en Medicina de Familia [Internet]. 5 ed. España: Elsevier; 2021 [citado 15/08/2025]. Disponible en: <https://tienda.elsevier.es/compendio-de-atencion-primaria-9788491134947.html>
9. Galli A, Mastandueno R, Enríquez D, Flichtentrei D. Estrategias de educación médica continua. FEM [Internet]. 2015 [citado 15/08/2025]; 18 (4): 247-251. Disponible en: <https://scielo.isciii.es/pdf/fem/v18n4/original2.pdf>
10. Betancourt Valladares M, Bermejo Correa Rolando M, García González M C, Betancourt Gamboa K. Análisis histórico de la enseñanza- aprendizaje de las ciencias básicas biomédicas y su integración en Estomatología. Rev Hum Med [Internet]. 2022 [citado 15/08/2025]; 22(1): 103-125. Disponible en: http://scielo.sld.cu/scielo.php?script=sci_arttext&pid=S1727-81202022000100103&lng=es
11. Cáceres González I, Pérez Hernández LY, Pérez Ayala D, Labrador Falero DM, Wong Silva J. Periodontal status in people with HIV in the municipality of Pinar del Río. Odontología (Montevideo) [Internet]. 2024 [citado 15/08/2025]; 2:121. Disponible en: <https://odonto.ageditor.uy/index.php/odonto/article/view/121>

12. Guamán-Veloz AS, Tonguino-Montenegro JR, Ochoa-Caicedo LA, Menéndez-Oña LE. Manifestaciones orales en pacientes con VIH-SIDA: un análisis de los signos, síntomas y abordajes terapéuticos. Vida y Salud [Internet]. 2024 [citado 15/08/2025]; 8(2):485-9. Disponible en: <https://ojs.fundacionkoinonia.com.ve/index.php/saludyvida/article/view/4230>
13. Ahmed MM. Dentists and dental hygienists' comprehension of HIV infection associated periodontal implications and management. Front Public Health [Internet]. 2024 [citado 15/08/2025]; 12:1370112. Disponible en: <https://doi.org/10.3389/fpubh.2024.1370112>
14. Aškinytė D, Matulionytė R, Rimkevičius A. Oral manifestations of HIV disease: A review. Stomatologija [Internet]. 2015 [citado 15/08/2025]; 17(1):21-8. Disponible en: <https://pubmed.ncbi.nlm.nih.gov/26183854/>
15. Lomelí-Martínez SM, González-Hernández LA, Ruiz-Anaya AJ, Lomelí-Martínez MA, Martínez-Salazar SY, Mercado González AE, et al. Oral Manifestations Associated with HIV/AIDS Patients. Medicina (Kaunas) [Internet]. 2022 [citado 15/08/2025]; 58(9):1214. Disponible en: <https://doi.org/10.3390/medicina58091214>
16. Campo J, Cano J, del Romero J, Hernando V, del Amo J, Moreno S. Role of the dental surgeon in the early detection of adults with underlying HIV infection/AIDS. Med Oral Patol Oral Cir Bucal [Internet]. 2012 [citado 15/08/2025]; 17(3):e401-8. Disponible en: <https://doi.org/10.4317/medoral.17527>
17. Sufiawati I, Munthe EK. Critical role of medical education among dentists and dental students on HIV/AIDS: a systematic review. HIV & AIDS Review [Internet]. 2020 [citado 15/08/2025]; 19(1):1-7. Disponible en: <https://doi.org/10.5114/hivar.2020.93236>
18. Caja Costarricense de Seguro Social. Guía de atención de personas con VIH/SIDA en la práctica de la odontología en la Caja Costarricense de Seguro Social [Internet]. San José: OPS; 2009. Disponible en: https://www3.paho.org/hq/dmdocuments/2009/OH_COR_AtencVIHPractOdontSegSoc.pdf
19. Premadasa G, Sadek M, Ellepola A, Sreedharan J, Muttappallymyalil J. Knowledge of and attitudes towards HIV/AIDS: a survey among dental students in Ajman, UAE. J Investig Clin Dent [Internet]. 2015 [citado 15/08/2025]; 6(2):147-55. Disponible en: <https://doi.org/10.1111/jicd.12080>
20. Estrada Montoya JH, Ramírez Rojas DA. Manifestaciones orales asociadas a la infección por el VIH/sida en la etapa de expansión de la terapéutica antirretroviral: una década en revisión (2000-2010). Univ Odontol [Internet]. 2015 [citado 15/08/2025]; 33(71):175-89. Disponible en: <https://revistas.javeriana.edu.co/index.php/revUnivOdontologica/article/view/14253>
21. Saltos Velasquez C, Calva Valverde SV, Rodríguez Largo AA, Cabrera Castillo JL, Lara Tayo AE. Lesiones en la Mucosa oral en Personas Viviendo con VIH/SIDA. Revisión de Literatura. Ciencia Latina [Internet]. 2024 [citado 15/08/2025]; 8(1):8182-96. Disponible en: <https://ciencialatina.org/index.php/cienciala/article/view/10142>