

## Indicators to evaluate the impact of the specialty of Comprehensive General Stomatology

### Indicadores para evaluar el impacto de la especialidad de Estomatología General Integral

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#### Abstract

**Introduction:** The evaluation of the impact in the medical and stomatological specialties through indicators, is a necessity to be more concrete and precise in the analysis of training quality.

**Objective:** To design a set of indicators to evaluate the impact of the comprehensive general stomatology specialty.

**Method:** An innovation study of educational technology was carried out. It was used as universal method of the materialistic dialectical investigation and in a particular way empiric methods as: (documental checking to analyze the bibliographical sources about the object and the normative documents as Study Plan of the specialty, System of the Evaluation Regulation and Accreditation of the Higher Education (Resolution 160/2023) and theoretical (analytic – synthetic) during the whole investigation process in the Stomatology Faculty of Santiago de



Cuba, from September, 2024 to March, 2025. Artificial intelligence DeepSeek was also used as auxiliary tool.

**Results:** A set of indicators was designed to evaluate the impact of the comprehensive general stomatology specialty, with five indicators, their definitions, and measurement criteria. The impact of the specialty was assessed as: high impact: when all five indicators evaluated were within the good category; impact when three of the five indicators evaluated were within the good category; and no impact when two or fewer of the five indicators evaluated were within the good category.

**Conclusions:** It was feasible to design a set of indicators for the assessment impact of the comprehensive general stomatology specialty.

**Keywords:** indicators; evaluation; specialty; stomatology.

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## Introduction

In the educational field, evaluation is currently a top priority issue, and all actors involved in this process—educators, parents, students, and administrators—must be aware of the importance of evaluating and being evaluated.<sup>(1)</sup>

The evaluation in Cuban Higher Education can be appreciated as an ethical dynamic, enduring, and systematic process that allows for the comparison of achievements, the adoption of new behaviors, decisions, and strategies to acquire the proposed goals, and the verification of the effectiveness and quality of the teaching process.<sup>(2)</sup>

From the above, it follows that the evaluation process allows for clarifying, changing, and optimizing the teaching-learning process, since the important thing is not the result obtained, but rather the implicit decision-making process. In other words, evaluation, in addition to being a process of accountability to society regarding the progress of the educational process,



should also be seen as an instrument for educational innovation, the clarity and transparency of the institution, and the quality of its graduates.<sup>(3)</sup>

There are multiple factors such as: the purpose pursued, the operators involved, the context in which it develops, the available resources, and the recipients of the evaluation report that allow us to distinguish different types, such as:

- ✓ According to its purpose and function:
- ✓ According to its extension:
- ✓ According to the time of application:
- ✓ According to the evaluating agents, which can be:
  - ✓ Internal evaluation: This is carried out by the members of an institution, an educational program, etc. It can be: self-evaluation, hetero-evaluation and co-evaluation.
  - ✓ External evaluation: This is carried out by agents who are not part of an institution or program, who assess its functioning. It can be carried out by "expert evaluation," which may include evaluation auditors, members of the administration, researchers, or school support teams, etc. <sup>(4)</sup>

The National Accreditation Board (JAN) is the institution designated by the state in Cuba to implement the evaluation policy in Cuban Higher Education and to accredit the quality of university degree programs and postgraduate academic training, as well as Higher Education Institutions, through the Higher Education Evaluation and Accreditation System. <sup>(5)</sup>

Specifically for postgraduate training and to distinguish the specialty of the same, the JAN, defines a quality standard and an evaluation guide, in addition, has an implementation manual and refers as starting points, definitions and operational, inside of which it is necessary to have the indicators defined for each specialty to measure the impact of its training. <sup>(6)</sup>

The specialty of Comprehensive General Stomatology is one of the specialties of stomatological sciences, approved in 1998, to provide solutions to the health problems of the individual, the family and the community, in primary care as an integral part of the basic health team. <sup>(7)</sup>



Based on the authors' experience as members of the academic committee of the aforementioned specialty, the following problematic situation has been identified:

Lack of indicators to evaluate the impact of the specialty of Comprehensive General Stomatology

Therefore, the following scientific problem is posed: What would be the indicators to evaluate the impact of the specialty of Comprehensive General Stomatology? The objective of this work is to design indicators to evaluate the impact of this specialty.

## Method

A study of educational technology innovation was carried out with the objective of designing indicators to evaluate the impact of the Comprehensive General Stomatology specialty at the Faculty of Stomatology of the University of Medical Sciences of Santiago de Cuba, during the period from September, 2024 to March, 2025. The dialectical materialist method was used as the universal research method, and in particular, empirical methods such as: (documentary review to analyze the bibliographic sources on the object and the normative documents such as the Study Plan of the specialty, Regulations of the System of Evaluation and Accreditation of Higher Education (Resolution 160/2023) and theoretical methods (analytical-synthetic throughout the research process, to distinguish the background of the object, characterize the context in which the research is developed; likewise, to establish the relationships between the different indicators), systemic: allowed visualizing links and relationships that are established between the elements contained in the proposal, The inductive-deductive method allowed for the establishment of generalizations based on understanding the object of study, identifying its particularities, and arriving at conclusions. The DeepSeek artificial intelligence tool was also used as an auxiliary instrument.

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## Results

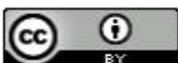


Table 1 reflects five indicators with their definitions and measurement criteria, from which the impact of the specialty is determined.

**Table 1.** Indicators and their definition

Indicators	Definition
<b>formative</b>	It includes the evaluation of the processes that are generally developed during the resident's training with its measurement criteria.
<b>investigative</b>	Understands the processes that are developed in an integral way related to research as a key element both for the success of their specialty completion work, as well as for achieving their transformation as a professional and their level of updating.
<b>satisfaction</b>	Analyzes the level of expression of residents, employers and tutors with the training received.
<b>Social</b>	It reflects the successful fulfillment of the competencies acquired by the residents to perform that contributes to changing the health status of the population and the health indicators in Cuba and the world.
<b>managerial</b>	It includes the capacity and skill acquired to perform as a manager of institutions providing stomatological services and/or direct priority programs in Stomatology.

Table 2 sets out the measurement criteria for evaluating the indicators mentioned above.

**Table 2.** Measurement and evaluation criteria by indicators

indicator	Measurement criteria	Evaluation		
		Well	Regular	Wrong
<b>formative</b>	80 % of residents complete their residency with scores between 90 and 100 points, within the established program and credit system. They maintain their Time-to-Field (TTF) and Time-to-Term (TTE) programs with differentiated, systematic, and personalized attention. 20% of residents complete their residency with scores between 80 and 89 points, within the established program and credit system. They maintain their Time-to-Field (TTF) and Time-to-Term (TTE) programs without differentiated, systematic, and personalized attention. 10% of residents complete with scores of 70 or less and do not complete the established program or credit system. They do not maintain TTF and TTE.	x		
			x	
				x



<b>investigative</b>	80 % of residents carry out their TTE in accordance with the problem bank, lines of research giving solution to the health problems of the territory, adequate mastery of the use of ICT, expressed with the level of updating to solve health problems.	x	
	20 % of residents carry out their TTE in accordance with the problem bank, lines of research providing solutions to the health problems of the territory, lack adequate mastery of the use of ICT, with an obsolete level of updating to solve health problems.		x
	10 % of residents do not carry out their TTE in accordance with the problem bank, lines of research without solving the health problems of the territory, not adequate mastery of the use of ICT, with the level of updating obsolete to solve health problems.		x
<b>satisfaction</b>	80 % of tutors, teachers and employers are satisfied with the graduates, expressed by the fulfillment of their social mandate, which solves health problems and can be introduced into practice.	x	
	20 % of tutors, teachers and employers are satisfied with the graduates, expressed by the fulfillment of their social mandate, which solves health problems and can be introduced into practice.		x
	10 % of tutors, teachers and employers are satisfied with the graduates, expressed by the fulfillment of their social mandate, which solves health problems and can be introduced into practice.		x
<b>Social</b>	80 % of graduates fulfill their social responsibility to solve health problems.	x	
	20 % of graduates fulfill their social assignment, which solves health problems.		x
	10 % of graduates, fulfills with their social responsibility, what solves health problems		x
<b>managerial</b>	10 % of graduates, fulfills managerial, administrative functions or they direct prioritized programs	x	
	5 % of graduates, fulfills managerial, administrative functions or they direct prioritized programs		x
	Less than 5 % of graduates, fulfills managerial, administrative functions or they direct prioritized programs		x



## Evaluation of Impact of the specialty of Comprehensive General Stomatology

It is considered as the result of each one of indicators being evaluated in:

- High impact: when the five evaluated indicators were in the category of well.  
Impact: When of the five evaluated indicators three were in the category of well.
- Without impact: When of the five evaluated indicators two or fewer were in the category of well.

## Discussion

An indicator is a quantitative or qualitative measure that allows for the evaluation, monitoring, and comparison of the status, progress, or impact of a process, program, project, or policy. Its main function is to simplify complex information to facilitate decision-making, continuous improvement, and accountability.<sup>(8)</sup>

According to Añorga, “an indicator is a clue, sign, or unit of measurement that allows us to study or quantify an object or phenomenon.” It is something more specific and concrete that represents something more abstract, based on a probability that represents the phenomenon.<sup>(9)</sup>

This same author offers characteristics that a good indicator should have, such as:

- ✓ Measurable: it must be able to be quantified or objectively verified
- ✓ Relevant: it must be directly related to the objective being evaluated
- ✓ Clear and specific: its definition should avoid ambiguities
- ✓ Sensitive to change: it must reflect variations when there are modifications in the process
- ✓ Feasible: the data needed to calculate it must be accessible

Medical and dental specialties represent pillars in the advancement of health and quality of life. Each has a unique impact, not only on the treatment of diseases but also on prevention,



research, and the transformation of specialized systems. Their influence extends beyond doctors' offices, clinics, and hospitals, affecting social, economic, and technological aspects.<sup>(10)</sup> The term "impact" is considered the expression of the result of a given action and the changes or innovations generated in organizations, people, processes, or products. The International Association for Impact Assessment defines it as "the process of analyzing, monitoring, and managing the social consequences, both voluntary and involuntary, positive or negative, of planned interventions (policies, plans, programs, projects) capable of bringing about social change."<sup>(11)</sup>

We agree with Rodríguez,<sup>(12)</sup> in stating that the evaluation of the impact of postgraduate academic programs (specialty, master's and doctorate), should be a task of first order and represents a space for feedback to make the relevant adjustments.

Then, to evaluate the impact of a specialty requires a multidisciplinary approach that addresses clinical, economic, epidemiological, and social aspects; a well-structured system of indicators allows measuring results, efficiency, and quality of the process, as well as its contribution to the health of the population.<sup>(13)</sup>

Therefore, evaluating the impact of a specialty requires a multidisciplinary approach that addresses clinical, economic, epidemiological, and social aspects; a well-structured system of indicators allows measuring results, efficiency, and quality of the process, as well as its contribution to the health of the population.

Naples and collaborators in their work cite several authors who have delved into impact assessment, and it is observed as a regularity that "impact assessment makes it possible to establish the degree of consequence that the implementation of the evaluable object has in the determined socio-economic environment, with the result of appreciating its effect on the applied objects and certifying the improved selection of new objects of evaluation."<sup>(14)</sup>

Therefore, when referring to the impact assessment in a specific medical specialty, the training of the resident is evaluated to ensure that they graduate a professional with a solid scientific foundation, capable of carrying out not only disease promotion and prevention activities, but also with a proactive vision that allows them to predict health problems that may affect the individual, the family, and the community.<sup>(15)</sup>



All of the above justifies the need to evaluate the impact of the training of the specialist in comprehensive general dentistry, as they are considered the professional in charge of comprehensive dental care at the primary health care level, with a solid scientific and technical preparation.<sup>(16)</sup>

It is also considered that Resolution 160/2023 in its article 7 establishes the dimensions to be taken into account in the quality evaluation processes, with variable 6 being in the specialties: Economic-social impact of the program, whose indicators reflect the transformations achieved in the graduates.<sup>(11)</sup>

However, despite the progress made in introducing and improving the accreditation system for higher education institutions and programs, a number of limitations remain, including the need for a system of increasingly concrete and precise variables and indicators for quality analysis.

For its part, the Ministry of Higher Education (MES) has among its functions to ensure.

The study plan of the mentioned specialty declares five basic functions that should carry out the future specialist (Comprehensive Stomatology Care, educational, investigative administration and specialty), the same ones are considered the genesis of the designed indicators.

In the formative indicator, compliance with the regulations governing residency programs (R/108-2004) is fundamental. Graduating with an excellent qualification is an additional merit that reflects the quality of the training, producing a well-rounded professional committed to the country's social project. The research component demonstrates the connection between the region's health problems and the research lines achieved through scientific and technological development and the correct and ethical use of ICTs. Therefore, it constitutes the best and most important indicator of the quality of an academic program.

This indicator is reflected in test results and final qualifications.



Measuring the level of satisfaction is an essential indicator in impact assessment, particularly in fields such as health, an element that distinguishes the present study, because it determines the acceptance of the professional by the population and accounts for the fulfillment of its social mandate and the social responsibility of the institution.

The satisfaction of territorial institutions, employers and users, students and teachers, give greater credibility to the training processes developed and a respectable recognition from society.

Providing comprehensive, high-quality, and relevant training, in line with the demands of society, guarantees a professional ready to perform administrative functions, capable of leading a group through their example; in other words, knowing how to be the EGI specialist, the maximum responsible of the oral health of the population.

The rapid development of the knowledge era, coupled with the current economic and social context, demands that training processes be regularly evaluated to achieve quality education that integrates the principles defended at the 2018 Regional Conference on Higher Education, which are clearly aligned with the Sustainable Development objective of the 2030 Agenda.

The limitations of this research were the exclusive use of quantitative aspects.

In conclusion, it was possible to design a set of indicators for the impact assessment of the specialty of comprehensive general stomatology, with its definitions and measurement criteria that act as elements to be valued and allow determining the scope of the impact.

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Los autores declaran que no existen conflictos de intereses para la publicación del artículo.

### **Contributions of the authors.**

Ana Caridad López Vantour: conceptualización, curación de datos, análisis formal, adquisición de fondos, investigación, metodología, administración del proyecto, supervisión, validación, visualización y redacción - revisión y edición. 60 %

Lic. Zenaida Ramón Montoya: conceptualización, curación de datos, investigación, recursos, visualización, redacción y revisión y edición. 40 %

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