



Original article

## El proceso de formación de la habilidad diagnóstica en residentes de anatomía patológica

The process of formation of diagnostic skills in residents of pathological anatomy

O processo de formação da capacidade diagnóstica em residentes de anatomia patológica

Carlos Pérez Díaz <sup>1</sup>



<https://orcid.org/0000-0001-8002-3605>

Martha Odalys Santaya Domínguez <sup>2</sup>



<https://orcid.org/0000-0002-1629-2699>

Juan Lázaro Márquez Marrero <sup>2</sup>



<https://orcid.org/0000-0001-9632-9350>

<sup>1</sup> University of Medical Sciences of Pinar del Río. Cuba



[carlosperez70@gmail.com.cu](mailto:carlosperez70@gmail.com.cu)

<sup>2</sup> University of Pinar del Río "Hermanos Saíz Montes de Oca". Cuba



[martha.santaya@upr.edu.cu](mailto:martha.santaya@upr.edu.cu),  
[mqmarrero@upr.edu.cu](mailto:mqmarrero@upr.edu.cu)

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### ABSTRACT

The training process of the specialist in Pathological Anatomy in Cuba plays a significant role in contributing to the prevention, diagnosis and treatment of the main morbidity and mortality problems with the interest of raising living standards. This article is aimed at characterizing the process of formation of diagnostic ability in residents of the Pathological Anatomy specialty. An investigation was carried out in which a total of 27 residents of the Pathological Anatomy Specialty of the University of Medical Sciences of Pinar del Río were used in the months of October to December 2021. Theoretical methods were used: analysis-synthesis, modeling and systemic-structural and empirical: document analysis, observation, survey and interview. The results obtained reveal that 100% of the residents surveyed did not have mastery of the fundamental aspects of the specialty study plan, 80% showed poor definition of the diagnostic ability to be trained during the specialty and the remaining 20% do not have it. defined. All teachers are unaware of the more general skills of the module they teach, 98% are unaware of the relationship between skills and other components of the process, 70.2 evaluate to regulate the process of training diagnostic skills in residents. The study concludes that the training of diagnostic skills in the specialty of Pathological Anatomy is carried out spontaneously and not sequenced; it does not allow the resident to systematize the actions necessary for his domain and it is not properly structured.

**Keywords:** process evaluation; resident training; ability/diagnosis; pathological anatomy.

## RESUMEN

El proceso de formación del especialista en Anatomía Patológica en Cuba, juega un rol significativo en contribuir con la prevención, diagnóstico y tratamiento de los principales problemas de morbimortalidad con el interés de elevar los estándares de vida. El presente artículo está dirigido a caracterizar el proceso de formación de la habilidad diagnóstica en los residentes de la especialidad Anatomía Patológica. Se realizó una investigación en la que se utilizó un total de 27 residentes de la Especialidad de anatomía patológica de la Universidad de Ciencias Médicas de Pinar del Río en los meses de octubre a diciembre del 2021. Se emplearon métodos teóricos: análisis-síntesis, modelación y sistémico-estructural y empíricos: análisis de documentos, observación, encuesta y entrevista. Los resultados obtenidos revelan que el 100 % de los residentes encuestados, no tenían dominio de los aspectos fundamentales del plan de estudio de la especialidad, 80 % mostraron escasa definición de la habilidad diagnóstica a formar durante la especialidad y el restante 20 % no la tiene definida. Todos los docentes desconocen las habilidades más generales del módulo que imparten, 98 % desconocen la relación entre habilidades y demás componentes del proceso, 70,2 evalúan de regular el proceso de formación de la habilidad diagnóstica en los residentes. En el estudio se concluye que la formación de la habilidad diagnóstica en la especialidad de Anatomía Patológica se realiza de manera espontánea y no secuenciada; no posibilita que el residente sistematice las acciones necesarias para su dominio y no se encuentra debidamente estructurado.

**Palabras clave:** evaluación de proceso; formación de residentes; habilidad/diagnóstico; anatomía patológica.

## RESUMO

O processo de formação do especialista em Anatomia Patológica em Cuba desempenha um papel significativo ao contribuir para a prevenção, diagnóstico e tratamento dos principais problemas de morbidade e mortalidade com o interesse de elevar os padrões de vida. Este artigo tem como objetivo caracterizar o processo de formação da habilidade diagnóstica em residentes da especialidade de Anatomia Patológica. Foi realizada uma investigação na qual foram utilizados um total de 27 residentes da Especialidade de Anatomia Patológica da Universidade de Ciências Médicas de Pinar del Río nos meses de outubro a dezembro de 2021. Foram utilizados métodos teóricos: análise-síntese, modelagem e sistémico-estrutural e empírica: análise documental, observação, inquérito e entrevista. Os resultados obtidos revelam que 100% dos residentes pesquisados não possuíam domínio dos aspectos fundamentais do plano de estudos da especialidade, 80% apresentavam pouca definição da capacidade diagnóstica a ser treinada durante a especialidade e os restantes 20% não possuem isto definido. Todos os professores desconhecem as competências mais gerais do módulo que lecionam, 98% desconhecem a relação entre as competências e outras componentes do processo, 70,2 avaliam para regular o processo de formação de competências diagnósticas nos residentes. O estudo conclui que o treino de competências diagnósticas na especialidade de Anatomia Patológica é realizado de forma espontânea e não sequenciada; não permite ao morador sistematizar as ações necessárias ao seu domínio e não está debidamente estruturado.

**Palavras-chave:** avaliação de processos; treinamento de residentes; habilidade/diagnóstico; anatomia Patológica.

## INTRODUCTION

The professional training context of the specialty of Pathological Anatomy requires the training of a highly trained professional; so that they have innovative behavior and constantly aspire to their own growth and personal improvement. Hernández, Márquez, Pereda (2022). Pathological Anatomy becomes a specialty whose object of study is to identify macro and micro morphological alterations in cells, tissues and organs, which allow the diagnosis of diseases (morphological diagnosis). (Patiño, 2017)

Through the study of cells or tissues, it is possible to define with high resolution, in some cases, those alterations with the potential for malignant transformation, which expands the resolution profile of the specialty by contributing with its science to prevention, which is why included in population screening programs. Vega (2017)

Pathologists provide reports that are decisive for decision-making not only at the local or country level, but also at the international level, contributing to the development of global health programs in relation to diagnoses defined by morphological evidence. Sanz (2018)

The training process of the specialist in Pathological Anatomy in Cuba plays a significant role in contributing to the prevention, diagnosis and treatment of the main morbidity and mortality problems with the interest of raising living standards. War (2019).

With the cervical cancer prevention program, for example, mortality from this cause in women has been significantly reduced, where the pathologist plays a fundamental role in the analysis of cytological-histological biopsies, both in the initial diagnosis, as in the follow-up consultation for cervical pathology. Marañón (2017)

The curriculum of the Pathological Anatomy specialty has gone through different stages, remaining as invariants of knowledge, the mastery of diagnostic means segregated into: routine and special ones. Sanz (2018), Vela (2016).

The professional mode of action is a category of the Didactics of Cuban higher education implemented with the design of the C study plans for the training of university professionals; Since then, several researchers in the medical sciences have carried out studies related to the mode of action, essentially aimed at raising the quality of the training of health professionals. Sixto, Márquez, Sánchez, Sánchez (2021).

The pathologist's professional mode of action translates into making nosological diagnoses through morphological study, including macroscopic and microscopic examination in surgical, autopsy or cytological specimens, making appropriate use of resources, technology and with full respect for ethical values. morals in correspondence with our revolutionary medicine, which contributes to the profile of the graduate that we intend to train, responding competently with the social responsibility. Sanz (2018), Fuentes (2018), Ferres (2019).

In this training process, shortcomings have been identified on the basis of the number of activities by systems and all the skills that, in a coherent manner and by academic years, must give rise to the mode of action that must be implemented from the second year of residency onwards. overcoming the resident, also lacking systemic nature and didactics of how to develop a process of training diagnostic skill with a view to improving training and reorienting the process in order to establish a dynamic that involves the entire Teaching Process. Learning to enhance the formation of diagnostic skills in students.

The purpose of this work is to characterize the process of training diagnostic skills in

residents of the Pathological Anatomy specialty.

## MATERIALS AND METHODS

Developmental research was carried out on 27 residents of the Pathological Anatomy specialty of the University of Medical Sciences of Pinar del Río where the results of the diagnostic study on the initial state of the process of formation of diagnostic skill in the Anatomy specialty are presented. Pathological, developed in the months of October to December 2018. The basic methodology of the research was dialectical-materialist.

Theoretical methods, such as historical-logical methods, were used to understand the different stages through which the process of training diagnostic skill in residents of the specialty in Cuba and in the international context has gone, their specific conditions and forms of development, modeling for the abstraction of the essential elements of the process of formation of diagnostic skill in the specialty and structural systemic to establish hierarchical relationships between the elements of the process of formation of diagnostic skill in residents of the specialty.

Empirical methods such as document analysis were used in the training process of morphological diagnostic skill from the modules and study plans of the specialty; observation of the process of training the morphological diagnostic skill of the specialty in the monthly methodological groups and in work education; Residents were interviewed about the development of the diagnostic skill training process in the specialty and teachers were surveyed about the diagnostic skill training process in the specialty.

Descriptive statistics were used for the treatment (interpretation, summary and presentation) of the data obtained in the instruments.

## RESULTS

The process of training diagnostic skill is defined by the author as the systematic transformation that the Pathological Anatomy resident experiences under the direction of the teacher, when he or she appropriates a system of actions and operations to solve the professional problems of morphological diagnosis. in favor of the pathologist's professional mode of action.

In accordance with our research, regarding a study carried out in Havana, Cuba, Arzuaga, Rodríguez, Ferrer (2020), affirm that, under current conditions, despite the experience accumulated in the teaching of this science, there is no have achieved the expected results in the field of diagnosis of many diseases in the specialty of Pathological Anatomy, as new pathologies and advanced techniques appear; Therefore, an analysis and modification of the didactics of teaching in this specialty and the comprehensive preparation of specialists in this regard are required.

The results of the diagnostic study developed on the initial state of the diagnostic skill formation process in the Pathological Anatomy residents of the University of Medical Sciences of Pinar del Río are presented.

To this end, two fundamental dimensions and their indicators were established for the in-depth study of the existing situation in relation to the process being studied:

**Dimension 1:** the formation of diagnostic skill in residents of the Pathological Anatomy specialty as a process. The indicators that allow this dimension to be evaluated are the following:

- adequate derivation of objectives in relation to the professional's model.
- systematization in the training of diagnostic skills in the study plan and in the module programs.

- methods-means-forms relationships that favor the formation of diagnostic skill.
- planning activities for the formation of diagnostic skill.
- orientation of evaluations that enhance the formation of diagnostic skills.
- level of didactic updating of teachers for the direction of this training process.

Similar results were found in the Training Itinerary of the Pathological Anatomy resident carried out in Barcelona, Spain and presented by Juanpere, Naranjo, Vázquez, Barranco (2020), where the planned training objective reflects that these professionals must acquire theoretical-practical training based on the progressive knowledge of diagnostic means, on the assumption of decision-making and on participation in pathology programs of all branches of the specialty, beginning with autopsy and biopsy studies and progressing throughout the residency until being able to undertake any type of biopsy, surgical specimen, cytology or autopsy study, as the responsible pathologist. Therefore, active learning with progressive responsibility in the tasks of the Department or Service is the general learning method during the residency period.

**Dimension 2:** The formation of diagnostic skill in residents of the Pathological Anatomy specialty as a result, whose indicators are:

- proper handling of the instruments and equipment necessary for macroscopic and microscopic, subjective and objective examination (skill, speed in using instruments for dissection, taking fragments and using the microscope).
- successful completion of the sub-skills (observe, describe, identify, integrate) in each module (speed, fluency, without the presence of unnecessary actions).

- correct interpretation of the results of subhabilities.
- Successful conduct of morphological examinations of biopsies and necropsies.
- correct diagnosis of the nosological entities with scientific foundation of the differential diagnoses in progressive order of depth according to the year of residence.
- quality and quantity of biopsies and necropsies performed per year of residence (frequency, flexibility, complexity, periodicity).
- modes of action that reveal the formation of diagnostic skill.

Reinforcing the above, Juanpere, Naranjo, Vázquez, Barranco (2020) in Barcelona, Spain, formulate a series of objectives and skills that residents must acquire progressively, always under the supervision of residents of higher years and the responsible pathologist, such as:

Strengthen the learning of macroscopic processing of biopsy samples, surgical specimens, cytology and autopsies; perform histological frozen sections in intraoperative consultation; perform correct microscopic studies of samples; delve into the diagnosis and integrated microscopic description; diagnostic orientation and possible differential diagnoses in each case; prepare diagnostic reports and reports from the different sections and laboratories of the Pathological Anatomy Service.

Likewise, the resident must be able to carry out a correct diagnostic orientation of the most common surgical pathology and consult expert pathologists or bibliographic resources in complex or rare cases (Table 1).

**Table 1-** Analysis of the study plans and study programs of the modules of the Pathological Anatomy specialty. University of Medical Sciences. Pinewood of the river.

Document analysis results to:	
Specialty study plan	Module study programs
<ul style="list-style-type: none"> <li>The goal system is not designed from a developer perspective.</li> <li>The mode of action, the spheres of action and the fields of action are not explicitly defined.</li> <li>The most general system of skills for the exercise of the profession is not defined.</li> <li>Insufficiencies in the integration of skills with the rest of the components of the Teaching-Learning Process of the specialty.</li> <li>Insufficient intra- and inter-modular relationships established in terms of the systematization of skills, with a view to mastering the professional's mode of action.</li> </ul>	<ul style="list-style-type: none"> <li>Insufficiencies in the theoretical foundations from the pedagogical and didactic perspectives.</li> <li>The objective system is not determined based on the maximum ability to be achieved by students in each module.</li> <li>The skills system is not defined, losing the relationship between the knowledge system and the skills system of each module, fundamental for the development of the process.</li> <li>Problem, object, objective, knowledge, actions, values, methods, means, form and evaluation are not defined in the design of the didactic units.</li> </ul>

The previous table presents the results of the documentary analysis carried out on the study plans and programs of the modules of the Pathological Anatomy specialty.

In the design of the study plans, insufficiencies are manifested in the conception of the teaching process in the specialty that must be trained from the first year of residency, common to all modules and must be deepened in relation to the degree of complexity of the topics. contained in these modules according to the year, which respond to nosological entities of the extensive universal clinical spectrum (Table 2).

**Table 2-** Results of observation of methodological groups and Workplace Education activities of the Pathological Anatomy specialty.

Observation results in:	
Methodological groups	Education at Work
<p>The formation of diagnostic skills, through cognitive, practical and evaluative activities, is not part of the lines of work of the methodological group.</p> <p>The process of formation of diagnostic skill is not conceived from the tribute of the different areas, which limits the comprehensiveness of its mode of action.</p> <p>The organizational forms of methodological work do not adjust to the objectives pursued to provide solutions to methodological problems.</p>	<p>The formation of diagnostic skill does not have an initial diagnosis as its starting point. The teaching-learning process does not respond to the appropriation by students of the internal structure of the skill. The stages for the formation of this diagnostic skill are not recognized (neither by teachers nor by residents). Interarea and intermodular relationships are not intentionally established with a view to achieving the formation of this skill with a high level of systematization, which allows its constant improvement.</p> <p>Professional skills are not intentionally taught or learned from the operations that comprise them.</p> <p>There are no properly established parameters that allow determining when mastery of skills by residents is achieved.</p>

The results of the observation of the methodological activity and activities of Education at Work showed that in the

methodological groups the process of training the diagnostic skill is not contemplated intentionally, it is only carried out occasionally and without support. didactic.

The observation of Education at Work activities was carried out in fine needle aspiration biopsy consultations, biopsy passes, fresh specimens, morphological clinical workshops and it was found that the formation of diagnostic skill is not conceived as a process that must take place in stages, planned, organized, executed and controlled by teachers, with the active and conscious participation of residents.

**Table 3-** Results of the survey of professors of the specialty of Pathological Anatomy.

Teacher survey		
Answers	Indicator	%
They know	actions of the professional's mode of action (diagnose)	25.3
	diagnostic skills defined in the conception of the programs	50.5
They don't know	more general skills of the module taught	100
	relationships between skills and other components of the process	98.5
They confuse	the methods with the forms of organization of teaching	100
They consider	resident self-regulation as a form of activity to achieve mastery of diagnostic skill	90.2
	unnecessary to master the concepts and principles for the formation of diagnostic skill	51.2
	unnecessary activities aimed at promoting the mastery of learning and reasoning strategies and techniques	70.3
	In the methodological groups, strategies aimed at the formation of diagnostic skills are not outlined.	74.5
	that the module programs are not well designed	59.7

They participate	in didactic update courses, generally in order to change teaching category	55.6
	in the realization of some curricular design	3.7
They evaluate	to regulate the process of training diagnostic skills in residents	70.2

From the survey applied to the teachers of the Pathological Anatomy specialty at the University of Medical Sciences of Pinar del Río (Table 3), it can be inferred that the didactic preparation of the teachers is insufficient to conduct an efficient teaching-learning process, oriented to the achievement of the formation of professional skills in a systemic, sequenced and contextualized way.

**Table 4-** Results of the interview with residents of the Pathological Anatomy specialty.

Interview with residents		
Answers	Indicator	%
They know	fundamental aspects contemplated in the specialty study plan	100
They identify	diagnostic skill as "techniques"	55
	diagnostic skill as "diagnostic capabilities"	Four. Five
They don't know	They do not have defined the most general morphological diagnostic skill to be trained during the specialty	twenty
They consider	Diagnostic skill is essential for acting as a good specialist.	100
	The most general morphological diagnostic skills to be trained during the specialty can be clinical or surgical, but they expose dispersed actions or operations thereof, without defining the most essential or general ones.	80
	practice: consultation, biopsy, macroscopy, as fundamental activities for the acquisition of diagnostic skill	60
	academic activities (seminars, theoretical exams), as important for the acquisition of diagnostic skill	40

	The diagnostic skill is "shown" by the teacher with his actions, or by images from literature that show the most representative patterns and that later, through repetition, they can perform the actions in the same way, without taking into account the diversity and infinite richness of reality	100
	The diagnostic skill is acquired spontaneously and not in an organized manner by each module, without establishing intermodular relationships in most cases.	100
	The main difficulties for the formation of diagnostic skill are given by the organization of the process and control	100
They suggest	allocate more time to practical activities, mainly microscopic ones	100
They refer	limitations to resolve diagnostic problems in the different types of specimens examined, from biopsies or necropsies, depending on their year of study	100

From the results obtained in interviews with the residents of the Pathological Anatomy specialty of the University of Medical Sciences of Pinar del Río summarized in table 4, difficulties are perceived in the process of training the diagnostic skill, which start from its definition and affect the fulfillment of the objectives per year of the specialty.

## DISCUSSION

Coinciding with Juanpere, Naranjo, Vázquez, Barranco (2020) in Barcelona, Spain, who formulate a series of objectives and skills that residents must acquire progressively, always under the supervision of residents of higher years and the responsible pathologist; It is appropriate to add that the degree of complexity of the topics contained in these modules according to the year, which

respond to nosological entities of the extensive universal clinical spectrum, must be deepened.

Assuming the potential offered by the methodological groups and activities of Education at Work of the Pathological Anatomy specialty, the need to progress in the conception of the formation of diagnostic skill as a process that must occur in stages, planned, organized is reasoned, executed and controlled by teachers, with the active and conscious participation of residents.

Considering the strengths that the teachers of the Pathological Anatomy specialty of the University of Medical Sciences of Pinar del Río have, in terms of experience as specialists, the priority achieved is the improvement of the didactic preparation of teachers in order to train themselves. to conduct an efficient teaching-learning process, aimed at achieving the formation of professional skills in a systemic, sequenced and contextualized manner.

It can be concluded that the process of training diagnostic skill in the specialty of Pathological Anatomy at the University of Medical Sciences of Pinar del Río is carried out spontaneously and not sequentially; It does not allow the resident to systematize the actions necessary for their mastery and is not properly structured, which makes the methodological development to follow from an innovative and creative perspective difficult.

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The authors declare not to have any interest conflicts.

**Authors' contribution:**

The authors participated in the design, analysis of the documents and writing of the work.

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