

Curricular diagnosis and perspectives for improvement in historical-ophthalmological training in initial medical education

Diagnóstico curricular y perspectivas de mejora en la formación histórico-oftalmológica en la educación médica inicial

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ABSTRACT

Background: Contemporary medical education demands comprehensive training that articulates scientific knowledge and humanistic values. The history of medicine is a component that fosters a critical and contextualized understanding of disciplinary development. However, its treatment in initial medical education presents limitations that affect its systematization.

Objective: To characterize the current state of historical-ophthalmological training in initial medical education in order to provide a basis for curricular improvement proposals.

Methods: Applied, non-experimental, cross-sectional research conducted at the Arnaldo Milián Castro University Clinical Surgical Hospital in Villa Clara, 2024–2025. Theoretical methods (analytical-synthetic, inductive-deductive, and historical-logical) and empirical methods (documentary review, student survey, and semi-structured interview with teachers) were employed. The survey was processed using descriptive statistics with SPSS version 22.0. Qualitative information was analyzed using categorical content analysis.

Results: The history of Ophthalmology has a declared presence in the E Study Plan, although without specific objectives or methodological guidelines. Students recognized its humanizing value but reported limitations in historical knowledge and in historical-clinical integration. Teachers expressed a positive assessment and institutional feasibility for its strengthening.

Conclusions: The insufficient systematization of the historical-ophthalmological component, despite its high educational value, confirms the need and feasibility of a curricular proposal that intentionally integrates the historical-humanistic dimension into initial medical training.

MeSH: Ophthalmology; history of Medicine; internship and residency; programs; medical education

RESUMEN

Introducción: la formación médica contemporánea demanda una preparación integral que articule saberes científicos y valores humanistas. La historia de la medicina constituye un componente para favorecer una comprensión crítica y contextualizada del desarrollo disciplinar. No obstante, su tratamiento en la educación médica inicial presenta limitaciones que afectan su sistematicidad.

Objetivo: caracterizar el estado actual de la formación histórico-oftalmológica en la educación médica inicial a fin de fundamentar propuestas de mejora curricular.

Métodos: investigación aplicada, no experimental y transversal, en el Hospital Universitario Clínico Quirúrgico Arnaldo Milián Castro de Villa Clara, 2024–2025. Se emplearon métodos teóricos (analítico-sintético, inductivo-deductivo e histórico-lógico) y empíricos (revisión documental, encuesta a estudiantes y entrevista semiestructurada a docentes). La encuesta se procesó mediante estadística descriptiva utilizando SPSS versión 22.0. La información cualitativa mediante análisis de contenido categorial.

Resultados: existe presencia declarada de la historia de la Oftalmología en el Plan de Estudio E, aunque sin objetivos ni orientaciones metodológicas específicas. Los estudiantes reconocieron su valor humanizador, pero manifestaron limitaciones en el dominio histórico y en la articulación histórico-clínica. Los docentes expresaron valoración positiva y factibilidad institucional para su fortalecimiento.

Conclusiones: la insuficiente sistematización del componente histórico-oftalmológico, pese a su alto valor formativo, confirma la necesidad y viabilidad de una propuesta curricular que integre de manera intencionada la dimensión histórico-humanística en la formación inicial del médico.

DeCS: Oftalmología; historia de la Medicina; internado y residencia; programas; educación médica

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INTRODUCTION

Contemporary medical education demands comprehensive training that articulates scientific knowledge, professional skills, and humanistic values. Consequently, the teaching-learning process in higher education is conceived as a dynamic and systematic interaction between

teachers and students, oriented toward the full development of personality and competent professional performance.⁽¹⁾ This conception overcomes traditional models centered on information transmission and assumes the student as an active subject in knowledge construction, which fosters critical reflection and autonomy.^(2,3)

In initial medical education, these demands acquire a particular dimension due to the social responsibility inherent to professional practice. Medical training must coherently integrate updated scientific knowledge, clinical skills, and ethical values to ensure patient-centered practice committed to society.^(4,5) Thus, meaningful learning constitutes an essential axis by allowing students to relate theoretical content to clinical practice and develop a deep understanding of the health-disease process.⁽⁶⁾

Among the components that strengthen this comprehensive training, the history of medicine occupies a relevant place. Its study enables understanding of the evolution of medical knowledge, the social contexts in which certain advances emerged, and the ethical dilemmas that have accompanied the development of the profession.⁽⁴⁾ The historical approach fosters a critical attitude toward scientific knowledge, evidencing that it is constructed progressively and contextually.⁽⁷⁾ Likewise, it allows articulating humanistic thinking with scientific thinking by recognizing medicine as a socially situated practice.⁽⁸⁾

The history of medical specialties acquires additional formative value by offering a deeper understanding of disciplinary development. The history of Ophthalmology, in particular, allows analyzing the evolution of diagnostic and therapeutic methods related to visual health, as well as the consolidation of the specialty in different historical contexts.⁽⁹⁾ Knowledge of major milestones, innovations, and relevant figures helps the student value the construction process of ophthalmological knowledge and assume a reflective attitude toward contemporary advances.^(8,10)

However, despite the theoretical recognition of the importance of history in medical training, its curricular treatment presents limitations. Study Plan E of the Medicine degree in Cuba contemplates references to the history of medicine, and specifically to the history of Ophthalmology within the corresponding subject;⁽¹¹⁾ nevertheless, it lacks a dedicated

subject and does not provide methodological guidelines for its systematic integration. This situation creates a contradiction between the educational value attributed to history and the actual space granted to it in the curriculum.

At the Villa Clara University of Medical Sciences, this problem manifests in the insufficient systematization of the historical component within Ophthalmology teaching, as well as in the absence of specific didactic strategies that favor its approach from an active and investigative perspective.

Several authors have pointed out the relevance of incorporating methodologies that promote the student's leading role and the integration of knowledge, including project-based learning, which facilitates content contextualization and the development of critical thinking.^(12,13)

Based on these considerations, the research objective is proposed: to characterize the current state of historical-ophthalmological training in initial medical education in order to provide a basis for curricular improvement proposals.

The diagnostic analysis constitutes the starting point for designing alternatives that integrate the historical-humanistic component with clinical practice in the Ophthalmology subject to achieve a more critical, contextualized, and humanistic medical training.

METHODS

The research falls under the category of applied research, aimed at identifying and characterizing a specific problem in educational practice: the insufficient systematization of teaching the history of Ophthalmology in the initial training of medical doctors.

For the design, a non-experimental approach was assumed, as the educational phenomenon was studied in its natural context without deliberate manipulation of variables. It also has a

cross-sectional nature, since the diagnosis of the current state was carried out at a specific point in the training process.

The study was conducted at the Arnaldo Milián Castro University Clinical Surgical Hospital in Villa Clara, a teaching-care institution where sixth-year medical students completed their rotation in the Ophthalmology specialty during the previous academic year.

The universe consisted of all sixth-year medical students during the 2024-2025 academic year, as well as the ophthalmology specialists with teaching duties at said institution, from which an intentional sample of 58 students and 12 ophthalmology specialists who served as professors was selected.

Inclusion criteria:

For students: being in the sixth year of the degree and expressing voluntary willingness to participate in the research.

For professors: being an ophthalmology specialist, working as a teacher in initial medical training, and having experience teaching the subject.

Ethical considerations: Given that this is pedagogical research, without clinical intervention or collection of sensitive data, formal informed consent was not required. Nevertheless, voluntary participation, participant anonymity, and information confidentiality were guaranteed, in accordance with the ethical principles governing educational research in higher medical education.

Theoretical methods used in the diagnosis:

- Analytical-synthetic: it was used to examine Study Plan E and the curricular documentation related to the Ophthalmology subject. It allowed analyzing its components (objectives, content, methodological guidelines) and subsequently integrating them to assess the systematicity of the historical treatment.

- Inductive-deductive: it facilitated moving from the particular analysis of the Ophthalmology subject toward general inferences about historical-ophthalmological training in the studied context, as well as interpreting the results obtained from the empirical investigations.
- Historical-logical: it allowed analyzing the evolution of the treatment of the history of medicine and ophthalmology in the medical degree study plans, understanding the relationship between their historical development and their current curricular expression.

Empirical methods:

Documentary review: a documentary review guide was applied to Study Plan E – Analytical Plan of the Medicine degree, with the aim of identifying:

- Explicit presence of the history of Ophthalmology
- Curricular location
- Inclusion in objectives and content
- Methodological guidelines for its treatment

The degree of systematicity, coherence, and sufficiency of the historical treatment within the study plan was assessed.

Definition and operationalization of variables in the student survey:

- I. Perception of the student's initial historical-ophthalmological training
- II. Acceptance of project-based learning as a methodology for studying the history of Ophthalmology

The first variable was operationalized into three dimensions:

- I a) Historical knowledge: level of familiarity with facts, personalities, and historical advances in Ophthalmology

I b) Historical-clinical analysis skill: perceived ability to establish relationships between historical milestones and current medical practice

I c) Value/motivation toward history: recognition of the importance of the historical-humanistic component in medical training

The second variable was operationalized into two dimensions:

II a) Ability to work with project-based learning: self-perception of competencies for research, collaborative work, and knowledge integration

II b) Motivation to participate in project-based learning: interest and willingness to join an elective subject based on historical-clinical projects

Each dimension was measured through a specific survey item, ensuring correspondence between variable, dimension, indicator, and item.

Measurement method: The survey used a five-category Likert-type scale, ranging from Strongly disagree to Strongly agree, which allowed quantifying student perceptions with defined levels of intensity. The five items were distributed as follows:

Item 1. Assesses the student's perception of their historical knowledge of Ophthalmology

Item 2. Assesses the student's perception of their ability to critically analyze the historical evolution and its clinical impact in Ophthalmology

Item 3. Assesses the student's valuation of the importance of the history of Ophthalmology in their professional training

Item 4. Investigates self-perceived skills for working through project-based learning

Item 5. Assesses motivation to enroll in an elective subject that integrates the history of Ophthalmology and project-based learning

Data processing: data were organized into a matrix and processed using the statistical package SPSS, version 22.0 for Windows. Descriptive statistics were used, calculating absolute and relative frequencies to determine the predominant levels of agreement for each

item. Results were presented in frequency distribution tables to identify trends in student perceptions regarding the studied variables.

The analysis allowed determining the distribution of student perceptions in each dimension and inferring trends regarding training needs, potentialities, and acceptance of the proposed elective subject.

Semi-structured interview with teachers: The semi-structured interview applied to teachers aimed to delve deeper into the current treatment of the history of Ophthalmology within the subject. The guide included open-ended questions oriented toward exploring perceptions of the formative importance of the historical component, the ways it is or is not integrated into teaching activities, the main limitations for its systematic treatment, and the potential of the institutional context to strengthen it. This instrument allowed collecting qualitative assessments, critical reflections, and proposals from pedagogical practice, providing a deeper and more contextualized understanding of the diagnosed problem.

The information obtained was processed using the categorical content analysis method, suitable for the systematic study of discourse in educational research. The procedure included repeated, comprehensive reading of the interviews, with the purpose of identifying relevant units of meaning linked to the treatment of the history of Ophthalmology in initial medical training. Subsequently, these units were coded and grouped into emergent categories derived from the teachers' own discourse, considering regularities, convergences, and nuances in the expressed assessments.

This process allowed organizing the information into analytical dimensions that facilitated the interpretation of results, as well as the identification of predominant trends, shared perceptions, and divergent aspects related to the academic relevance, humanistic value, and institutional feasibility of the training proposal. The systematization carried out ensured coherence between the declared method and the subsequent structuring of qualitative findings.

Methodological triangulation: to strengthen the internal validity of the diagnosis and obtain a more comprehensive understanding of the studied phenomenon, methodological triangulation was performed among the results of the documentary review, the survey applied to students, and the semi-structured interview with professors.

This triangulation allowed contrasting and complementing the information using quantitative and qualitative methods, identifying convergences and divergences regarding the treatment of the history of Ophthalmology in initial medical training. The procedure consisted of a comparative analysis of the findings derived from each source, integrating them into common categories that facilitated a global interpretation of the current state of the researched problem.

RESULTS AND DISCUSSION

The analysis of Study Plan E – Analytical Plan of the Medicine degree showed that the history of Ophthalmology appears explicitly declared within the content system of the Ophthalmology subject, which includes the History of Ophthalmology as a specialty, both worldwide and in Cuba.

Regarding its curricular location, it was found that the subject belongs to the surgical cycle and is taught in the fifth year of the degree during the ninth and tenth semesters, lasting three weeks with a total of 102 class hours, of which 26 are theoretical and the remainder correspond to practical activities.

The analysis showed that although the history of the specialty is declared as content, it is not explicitly formulated in the general or specific objectives of the subject, which are fundamentally oriented toward the development of clinical, diagnostic, and ethical competencies related to ophthalmological care.

Concerning methodological guidelines, the document indicates that during teaching activities, aspects related to the history of the specialty should be considered whenever

possible. However, no specific organizational forms, dedicated time, or concrete didactic strategies are provided for its systematic treatment.

The documentary analysis demonstrated that although the history of Ophthalmology appears explicitly declared in Study Plan E, its curricular treatment lacks specific objectives and precise methodological guidelines to guarantee its systematic approach.⁽¹¹⁾ This situation reveals a limited integration of the historical component within the subject, which is contradictory to the conception of the curriculum as a comprehensive educational project that articulates content, methods, and formative purposes for the development of professional personality.⁽¹⁾ The absence of intentional structuring tends to relegate historical content to a complementary plane, subordinated to the predominant clinical logic.

Specialized literature recognizes that the history of medicine constitutes an essential educational resource for understanding medical knowledge as a social, scientific, and cultural construction.^(4,7,8,9) Its fragmented treatment limits the possibility for the student to recognize the specialty as the result of a dynamic evolutionary process rather than as an isolated set of technical knowledge.⁽⁹⁾ Likewise, the integration of scientific thinking with the ethical and humanistic dimension of medical practice has been identified as a necessary condition for truly comprehensive training.^(6,7,8,10) The results of the student survey are shown in Table 1.

Item 1. Historical knowledge of Ophthalmology: 12.1% of students stated they Agree or Strongly Agree with possessing solid knowledge about the fundamental historical milestones of the specialty. In contrast, 55.2% were in the Disagree and Strongly Disagree categories. 32.7% selected the Neutral option.

Item 2. Student's perception of their ability to critically analyze the historical evolution and its clinical impact in Ophthalmology: 27.5% expressed feeling capable of establishing links between the history of Ophthalmology and current clinical practice. 41.3% expressed Disagreement or Strong Disagreement regarding this ability, while 31.2% adopted a Neutral position.

Item 3. Valuation of the importance of the history of Ophthalmology in their professional training: 74.1% considered that the history of the specialty has formative value for the development of a more humane, critical, and reflective medical practice. 8.6% expressed disagreement, and 17.3% maintained a Neutral position.

Item 4. Self-perception of skills for working through project-based learning: 48.2% indicated feeling capable of actively participating in collaborative projects that integrate history and clinical practice. 25.8% expressed Disagreement, while 26.0% were Neutral.

Item 5. Motivation to enroll in an elective subject that integrates the history of Ophthalmology and project-based learning: 62.0% stated they were motivated or very motivated to enroll in a subject with these characteristics. 15.5% expressed little or no interest, and 22.5% remained Neutral.

Table 1. Relative frequency distribution of the survey applied to students (n=58). Arnaldo Milián Castro University Clinical Surgical Hospital. Villa Clara. 2024-2025 academic year

Items evaluated	Disagree / Strongly disagree (%)	Neutral (%)	Agree / Strongly agree (%)
1	55.2	32.7	12.1
2	41.3	31.2	27.5
3	8.6	17.3	74.1
4	25.8	26.0	48.2
5	15.5	22.5	62.0

Source: Student survey

The survey results indicate this training gap. Although the majority recognize the humanizing value of the history of Ophthalmology, a significant proportion report having limited knowledge about the fundamental historical milestones and little confidence in establishing links between the evolution of the specialty and current clinical practice. This contradiction suggests that the historical component has not been integrated in a way that

fosters meaningful learning, understood as an articulation between theory and practice, critical reflection, and contextualization of knowledge.^(5,6)

Regarding teaching methodologies, students expressed willingness toward project-based learning, although they expressed insecurities about their abilities to work collaboratively and autonomously. Consistently, teachers showed openness to this methodology but recognized limitations in their didactic preparation and time availability. The literature indicates that project-based learning favors knowledge integration and active participation, provided there is conscious teacher mediation and structured planning.^(12,13) Its implementation requires progressive support and methodological clarity.

The analysis of the interviews conducted with the 12 teachers allowed the identification of regularities in three main dimensions: academic-scientific, social-humanistic, and institutional feasibility:

Academic-scientific: The majority pointed out that including the history of medical specialties adds value to the comprehensive training of medical students by allowing them to contextualize scientific development and understand the foundation of current practices. Regarding the history of Ophthalmology, 11 teachers highlighted its academic relevance and considered that an elective subject would allow systematizing content that is currently addressed in a fragmented manner.

Social-humanistic: The highest percentage expressed a positive evaluation regarding the humanizing potential of historical study; they stated that it fosters understanding of the social, ethical, and cultural challenges associated with the development of the specialty.

Institutional feasibility for implementing this curricular proposal: The majority considered the incorporation of the subject as an elective viable, conditioned on a reasonable workload and a flexible structure. Some teachers mentioned time availability and the lack of specialized teaching materials as limitations. Nevertheless, they identified as potentialities the existence of specialists interested in the topic and the possibility of articulating historical content with research activities.

Regarding the beneficiaries of the suggested elective subject, the teachers mainly pointed to the students, followed by the teaching faculty and the health system, and patients as indirect beneficiaries in the future, since more reflective and comprehensive training could translate into greater efficiency in ophthalmological services by promoting professionals with better clinical judgment, research capacity, and sensitivity toward the rational use of resources. The majority agreed that its study strengthens professional identity, social sensitivity, and critical understanding of the scientific foundations of the specialty.

In additional comments, several teachers expressed willingness to collaborate in the implementation of the program provided that organizational support and methodological coordination are guaranteed.

This assessment aligns with the conception of medical education as a process oriented toward the comprehensive development of the future professional, capable of articulating scientific knowledge, ethical reflection, and social commitment.^(4,5,6,7,8)

The integration of quantitative and qualitative results allowed obtaining a more complete vision of the problem. Both students and teachers agree in pointing out the existence of a gap in the systematization of the historical component, while recognizing its high formative value. This methodological convergence reinforces the validity of the diagnosis and confirms the need to strengthen the historical-humanistic dimension within the curriculum.⁽⁴⁾

Likewise, the triangulation showed that there is student motivation and teacher willingness to incorporate an innovative training proposal that articulates history and clinical practice through project-based learning. However, it also revealed the need to design a flexible structure, with a reasonable workload and methodological support that facilitates the development of research and collaborative skills.

Taken together, the convergence among the different applied methods allowed corroborating findings and substantiating the need, feasibility, and didactic orientation of an elective subject dedicated to the history of Ophthalmology. This integration strengthens the

coherence of the diagnosis and guides strategic decisions for the design of a curricular proposal that contributes to a more critical, contextualized, and humanistic medical training.^(13,14)

Scientific contribution

The relevance of this study lies in the fact that it provides a systematized diagnostic characterization of the historical-ophthalmological component in initial medical training, integrating documentary evidence, student perceptions, and teacher evaluations. The research contributes to substantiating academic decisions aimed at strengthening the historical-humanistic dimension in Ophthalmology teaching. Likewise, it offers empirical bases for the development of contextualized curricular proposals, in coherence with the contemporary demands of a critical, reflective, and socially committed medical education.

CONCLUSIONS

The current state of historical-ophthalmological training in initial medical education was characterized. The convergence of findings confirms the need and feasibility of a curricular proposal that intentionally integrates the historical-humanistic dimension into initial medical training, in coherence with the demands of a critical, contextualized, and humanistic medical education.

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Conflict of interest statement

The authors declare no conflict of interest.

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