

Clinical-basic integration of residents in the specialty of Family Medicine**Integración clínico-básica de residentes en la especialidad de Medicina Familiar****Integração clínico-básica dos residentes na especialidade de Medicina de Família**Ricardo Lorenzo Mora Betancourt^{I*} , Nuris Nilda Almaguer Cruz^{II} ^IDirección General de Salud Cacocum. Holguín, Cuba.^{II}Policlínico Docente "Rubén Batista Rubio". Holguín, Cuba.*Corresponding author: rlmora@infomed.sld.cu

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ABSTRACT

Introduction: Family Medicine constitutes a clinical specialty that must integrate its clinical contents with the basic contents acquired during the undergraduate program, in order to develop the reasoning to identify, pose, and understand clinical problems; develop clinical reasoning, clinical skills, and apply the principles and general rules for the comprehensive management of the patient.

Objective: to determine the knowledge level of the preceding contents of the biological foundations of Medicine and the capacity for their integration. **Method:** a descriptive pedagogical research was carried out in the Cacocum municipality, Holguín province, Cuba, from June 1, 2023 to November 30, 2023. The universe consisted of 36 residents in the Family Medicine specialty from the three academic years, and 28 professors of the same specialty, belonging to three health institutions. Intentional non-probability sampling was carried out, consisting of 33 residents and 10

professors. An examination form, pilot test, point biserial discrimination coefficient, Likert scale and Cronbach's alpha were applied.

Results: 90.90% of the sample reported a low level of clinical-basic integration, due to the superficial approach to these contents during the clinical cycle in undergraduate training (39.39%) and during residency (36.63%). 78.78% considered the systematization of the integration of clinical and basic contents in residency to be essential and extremely necessary. **Conclusions:** Family Medicine residents have a low level of clinical-basic integration.

Keywords: basic clinical integration; medical residency; family and community medicine; level of knowledge



RESUMEN

Introducción: la Medicina Familiar constituye una especialidad clínica que debe integrar sus contenidos clínicos con los contenidos básicos adquiridos durante el pregrado, con el fin de desarrollar el razonamiento para identificar, plantear y comprender problemas clínicos; desarrollar el razonamiento clínico, destrezas clínicas y aplicar los principios y las reglas generales para el manejo integral del paciente. **Objetivo:** determinar el nivel de conocimientos de los contenidos precedentes de las bases biológicas de la Medicina y la capacidad de integración de los mismos. **Método:** se desarrolló una investigación pedagógica descriptiva en el municipio Cacocum, provincia Holguín, Cuba, en el período comprendido del 1 de junio de 2023 al 30 de noviembre de 2023. El universo estuvo conformado por 36 residentes en la especialidad de Medicina Familiar de los tres años académicos, y 28 profesores de la misma especialidad, pertenecientes a tres instituciones de salud. Se realizó muestreo no probabilístico intencional, quedando constituida por 33 residentes y 10 profesores. Fue aplicado un formulario de examen, ensayo piloto, coeficiente de discriminación biserial puntual, escala de Likert y alfa de Cronbach. **Resultados:** el 90,90 % de la muestra denotó un nivel bajo de integración clínico-básica, condicionado por la superficialidad con que fueron abordados estos contenidos durante el ciclo clínico en la formación de pregrado (39,39 %) y durante la residencia (36,63 %). El 78,78 % calificó de imprescindible y consideró extremadamente necesaria la sistematización de la integración de los contenidos clínicos y básicos en la residencia. **Conclusiones:** los residentes de Medicina Familiar presentan un nivel bajo de integración clínico-básica.

Palabras clave: integración clínico básica; residencia médica; medicina familiar y comunitaria; nivel de conocimientos

RESUMO

Introdução: a Medicina de Família constitui uma especialidade clínica que deve integrar seus conteúdos clínicos com os conteúdos básicos adquiridos durante a graduação, a fim de desenvolver o raciocínio para identificar, propor e compreender problemas clínicos; desenvolver raciocínio clínico, habilidades clínicas e aplicar princípios e regras gerais para o gerenciamento abrangente do paciente. **Objetivo:** determinar o nível de conhecimento dos conteúdos precedentes das bases biológicas da Medicina e a capacidade de integrá-los. **Método:** foi realizada uma pesquisa pedagógica descritiva no município de Cacocum, província de Holguín, Cuba, de 1º de junho de 2023 a 30 de novembro de 2023. O universo foi composto por 36 residentes da especialidade de Medicina de Família dos três anos acadêmicos e 28 docentes da mesma especialidade, pertencentes a três instituições de saúde. Foi realizada amostragem não probabilística intencional, composta por 33 residentes e 10 docentes. Foram aplicados formulário de exame, teste piloto, coeficiente de discriminação biserial pontual, escala Likert e alfa de Cronbach. **Resultados:** 90,90% da amostra apresentou baixo nível de integração clínico-básica, condicionado pela superficialidade com que esses conteúdos foram abordados durante o ciclo clínico na graduação (39,39%) e na residência (36,63%). 78,78% consideraram essencial e extremamente necessária a sistematização da integração de conteúdos clínicos e básicos na residência. **Conclusões:** os residentes de Medicina de Família apresentam baixo nível de integração clínico-básica.

Palavras-chave: integração clínica básica; residência médica; medicina de família e comunidade; nível de conhecimento

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INTRODUCTION

The term integration implies the union or subsection of two or more elements (subsystems) that establish systemic relationships between them. i.e. integration gives such a vision of the phenomenon that it is presented as a unity between its component subsystems and, at the same time, a rigorous differentiation between them, which is defined by the place and function they fulfil in the whole.⁽¹⁾

Integration represents a means to develop systems of knowledge, skills and attitudes, which allows the management of increasingly complex professional situations. In addition, it makes it possible to create a situation similar to that which the student may encounter in professional life.⁽²⁾

Morales López et al.⁽³⁾ state that the objectives of basic-clinical integration (BCI) are to integrate basic and clinical knowledge in order to develop reasoning to identify; pose and understand clinical problems. To develop clinical reasoning through independent, self-regulated and collaborative learning, to develop clinical skills in standardized scenarios and to apply the principles and general rules for comprehensive patient management in simulators. These authors also call it the “Achilles tendon” in the teaching of medicine; a concept assumed by the present authors because of its scope and relevance.

Guinzberg created a unique space for discussion that established the need for integration of basic knowledge during the clinical stage as a fundamental element for the performance of 21st century physicians. The shared assumption that the biomedical principles and concepts taught in the first years of the career should be available in the cognitive structure of the students to be applied to problems that require them for their solution; constituted the basic support to defend such consideration.⁽⁴⁾

Díaz-Velis Martínez et al.,⁽⁵⁾ provide guiding reflections on Special Didactics in clinical subjects. They state that these subjects should retake the scientific and technological essences contributed by the basic subjects, and establish interconnection links with the other subjects of the cycle itself. Also, suggest that it would be convenient to organize sporadically the interdisciplinary groups of clinical subjects or of them with the basic biomedical subjects, in order to achieve a more functional and integrating curricular dynamics. The critical thinking of this author illustrates the need for an integrative approach from the clinical to the basic.

In light of the above, it is considered that during medical residency in continuing education, integration should remain, but in this area of knowledge, there are insufficient research results available to demonstrate the current state of the problem.

Family Medicine is a clinical specialty that should integrate its clinical contents with the basic contents acquired during undergraduate studies; however, studies that show a compromise in the quality of care of family physicians^(6,7) suggest that their learning was not significant. As far as the authors investigated, the lack of research on the subject and the need to know the current state of the problem for its subsequent intervention was what motivated the present research.



For these reasons, the objective was to determine the level of knowledge of the previous contents of the biological bases of Medicine and its integration capacity.

METHOD

A descriptive pedagogical research was carried out in Cacocum municipality, Holguin province, Cuba, from June 1, 2023 to November 30, 2023.

Thirty-six residents formed the universe in the Family Medicine specialty, of the 3 academic years and 28 teachers of the same specialty, belonging to the Polyclinics: Rubén Batista Rubio, Cristino Naranjo Vázquez and Antonio Maceo Grajales. For the selection of the sample, a non-probabilistic intentional sampling was carried out, being constituted by 33 residents and 10 professors.

Inclusion criteria: voluntary participation in the study

Exclusion criteria: residents on temporary leave, residents on teaching leave.

Operational design of the variables: level of knowledge of the preceding contents about the biological basis of Medicine and ability to integrate these contents: dependent variable, qualitative ordinal, evaluated according to the assessment obtained in the diagnostic examination.

Theoretical methods were used, among them: analysis-synthesis, induction-deduction and functional structural systemic, these allowed knowing the theoretical referents of the subject and the level of updating of its bibliography, besides the design of the instruments used in the research.

Among the empirical ones:

Examination form: applied to the residents with the objective of determining their knowledge of the preceding contents about the biological bases of Medicine and their capacity to integrate these contents. It was designed by the authors according to the methodological guidelines of the Organizational Regulation of the Teaching Process and of the Direction of the Teaching and Methodological Work for university careers⁽⁸⁾ in its Chapter IV.

The exam evaluated the contents related to the most frequent affections in the family and social contexts in the health picture of the population of Holguin province, they were:

- Bronchial asthma: bronchial epithelial cells that are increased in the disease and chemical mediators of inflammation responsible for bronchospasm, vascular congestion and edema.
- Arterial hypertension: endogenous substances capable of developing arterial hypertension and cardiac leaflets more affected by rheumatic fever
- Dysphagia: organs close to the esophagus and its alterations, capable of causing stenosis of the esophagus by external compression



- Chronic renal disease: clinical entity that appears as a result of the increase of nitrogen metabolites in saliva; cause of anemia in the disease; clinical entity that appears as a result of hyperphosphatemia and types of nephrons
- Acute abdominal pain: both clinical and surgical entities whose affected organ is in the upper abdomen
- Icteric syndrome: causes of unconjugated hyperbilirubinemia and causes of conjugated hyperbilirubinemia
- Iron deficiency anemia: causes of iron deficiency leading to the development of anemia.

The qualification was carried out according to Instruction 3 of the Minister of Higher Education and the authors defined the domain and integration capacity in levels, according to the evaluation obtained: Low 2 and 3; Medium 4 and High 5.

Prior to the application to the study sample, a pilot test was carried out which allowed its positive validation. The chosen sample consisted of 20 Family Medicine specialists.

To determine the quality of the evaluation instrument, the methodology proposed by Díaz Rojas and Leyva Sánchez was applied.⁽⁹⁾

The reliability values obtained and their interpretation were evaluated, according to the authors.^(10,11,12)

Results of the application in the pilot test:

As for the difficulty according to the topics evaluated in the test, a predominance of medium difficulty was observed; no topic explored was difficult, which qualified the instrument as comprehensible and easy to answer.

According to the coefficient of punctual biserial discrimination of each subject evaluated in the test, the instrument presented good discriminative power in most of the subjects explored and none of them discriminated negatively; therefore, it allowed discriminating students with greater preparation and demonstrated that the elaboration of the questions was adequate.

The reliability according to theme evaluated in the test if the item has been suppressed, evidenced that it presented an acceptable reliability and the analysis of each theme showed that the theme corresponding to bronchial asthma compromised the reliability.

Question 1 discriminated poorly and compromised the reliability of the test, in correspondence with a predominance of failures in it, so it was decided to reduce the number of responses to the item.

In addition, a Likert-type [questionnaire](#) was applied to the residents in order to determine the criteria for clinical-basic integration. Prior to the application to the study sample, a pilot test was carried out, which allowed its positive validation. The chosen sample consisted of 20 Family Medicine physicians.



After its application in the pilot test, its reliability was analyzed according to Cronbach's alpha, with a value of 0.762 considered acceptable.

An observation guide (open and non-participant observation) was also used, applied to teachers with the aim of describing the way in which the content related to conditions in the family and social contexts is taught. Prior to the application to the study sample, a pilot test was conducted to allow its positive validation. The chosen sample consisted of six teachers of the Family Medicine specialty. After its application in the pilot test, its reliability was analyzed according to Cronbach's alpha, and its value of 0.913 was considered excellent.

The difficulty index and the point biserial discrimination coefficient (rpbis) were calculated in the Microsoft Excel program. Reliability was obtained by calculating Cronbach's alpha in SPSS for Windows version 25.

Each research participant was asked for informed consent and the Scientific Council and the Research Ethics Committee approved the research.

RESULTS

The process was contextually diagnosed by means of pedagogical research methods and techniques, such as: examination, student questionnaire and teacher observation guide.

Regarding the results of the exam applied to the residents, the significant results corresponded to the Low level with 30 for 90.90 %, followed by the Medium level (3; 9.09 %). No examinee obtained a High level.

In order to determine the criteria of the residents regarding the field of study, a questionnaire was applied. The result showed that most of the respondents (20; 60.60 %) reported an average degree of deepening of basic-clinical integration during their basic cycle in their medical training.

Regarding the degree of deepening of clinical-basic integration during the clinical cycle, 13, 39.39 % reported an average degree of deepening.

In residency, 12, representing 36.36%, described a low degree of deepening of clinical-basic integration.

In the independent study, the respondents reported an average degree of clinical-basic integration in their training as specialists (15; 45.45 %).

The majority of the respondents rated the integration of clinical and basic contents as essential for their professional activity, medical care, research and teaching; however, in management they rated it as very useful.



The majority considered the systematization of the integration of clinical and basic contents in the residency as extremely necessary (26; 78.78 %).

With the purpose of describing the way in which the content related to conditions in the family and social contexts is taught, an observation guide was applied to the teachers.

The results asserted that:

- Concept, Etiology, Clinical picture, Diagnosis, Behavior and Prevention were addressed in adequate order, with much depth and without interdisciplinarity treatment.
- Physiopathology treated in adequate order, with superficiality and without treatment of interdisciplinarity.
- Evolution treated in adequate order, with little depth and without treatment of interdisciplinarity.

DISCUSSION

The authors believe that this result shows the insufficient knowledge presented by the residents of the specialty regarding the previous contents of the biological bases of Medicine and a low level of integration capacity in the clinical-basic direction, which would have allowed better results to be obtained.

This result is conditioned by the superficiality with which these contents were approached during the clinical cycle in the undergraduate training and during the residency; besides, the superficial didactic treatment and without interdisciplinarity given to Physiopathology when subjects related to the main affections in the family and social contexts are taught.

The scientific and technical advances in the field of medicine have made it possible to know with great precision the elements involved in the health-disease process, which guarantees medical training with a wide range of knowledge that in practice must be systematized and updated. It is inconceivable that a professional has lost his basic theoretical knowledge and his ability to integrate it to support clinical practice and solve clinical problems of greater complexity in a context in which new diseases appear, new diagnostic systems emerge and promising treatments advance at a dizzying pace.

As far as it was investigated, there is no research results available that allow establishing a comparison of the results obtained in the present research regarding clinical-basic integration, which represented a limitation of the study.



Dionisio de Cabalier and Chalub⁽¹³⁾ suggest that the teaching of morphological sciences should be combined with didactic strategies that guide the understanding of cellular anatomy and histology in the context of health and disease. In the opinion of the present authors allows the use of the results of the present study for the future design of a didactic strategy.

Chi Maimó et al,⁽¹⁾ reported that students will use more basic biomedical sciences after graduation, an argument that justifies the research conducted at the postgraduate level, specifically in the medical residency in Family Medicine, a clinical medical specialty that requires an adequate use of the clinical method and a mastery of the biological bases of medicine.

Developing in the resident the capacity of clinical-basic integration will allow a better performance in the functions declared in the professional's model (medical assistance, teaching, research, management) and, in this way, to achieve the professional competence for which the Medical Education in Cuba bets.

CONCLUSIONS

Family Medicine residents present a low level of clinical-basic integration, as a result of insufficient treatment during the clinical cycle in medical training and residency, in whose teaching-learning process there is insufficient treatment of interdisciplinarity and pathophysiology is approached superficially.

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Conflicts of interest:

The authors declare that there are no conflicts of interest.

Author contributions:

Ricardo Lorenzo Mora Betancourt: conceptualization, data curation, formal analysis, research, methodology, project management, resources, supervision, validation, visualization, original draft-writing, drafting-revising and editing.

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