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Original article

Didactic strategy for the assessment of labor competencies in medical students

Estrategia didáctica para la evaluación de competencias laborales en los estudiantes de Medicina

Estratégia didática para avaliação de habilidades para o trabalho em estudantes de medicina

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ABSTRACT
The objective analysis of the training of professionals in the health area, at the present time, faces a series of challenges, among others, achieving the availability of graduates with job skills to perform in correspondence with the functions inherent to the general practitioner in a complex and changing environment. The objective of this article is to propose a didactic strategy for the evaluation of labor competencies in Medicine students. Experimental quantitative research was carried out in its pre-experiment variant, using the methods of document review, observation, analysis, synthesis, hypothetical-deductive, systemic, the pedagogical pre-experiment and the Chi-square statistician (X2). The result can be generalized at a national and international level according to the characteristics of the medical student's training process. It is concluded by stating that the didactic strategy contributes to improving the evaluation processes by systematizing an assessment process - competence certification based on the fulfillment of the functions of the evaluation act: pedagogical, innovative control.

Keywords: competition; evaluation; student; medicine; strategy.

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RESUMEN
El análisis objetivo de la formación de profesionales en el área de la salud, en el momento actual, enfrenta una serie de desafíos; entre otros: lograr la disponibilidad de egresados con competencias laborales para desempeñarse en correspondencia con las funciones inherentes al médico general en un entorno complejo y cambiante. El presente artículo tiene como objetivo proponer una estrategia didáctica para la evaluación de competencias laborales en los estudiantes de Medicina. Se realizó una investigación cuantitativa experimental en su variante preexperimento, empleando los métodos de revisión de documentos, observación, análisis, síntesis, hipotético-deductivo, sistémico, el preexperimento pedagógico y el estadígrafo Chi-cuadrado (X^2). El resultado puede generalizarse a nivel nacional e internacional acorde a las características del proceso de formación del estudiante de Medicina. Se concluye planteando que la estrategia didáctica contribuye a mejorar los procesos evaluativos al sistematizar un proceso de valoración-certificación de competencias, basada en el cumplimiento de las funciones del acto evaluativo: pedagógica, innovadora, de control.

Palabras claves: competencia; evaluación; estrategia; estudiante; Medicina.

RESUMO
A análise objetiva da formação de profissionais da área da saúde, na atualidade, enfrenta uma série de desafios; entre outros: conseguir a disponibilidade de diplomados com competências profissionais para desempenhar as funções inerentes ao clínico geral num ambiente complexo e em mudança. O objetivo deste artigo é propor uma estratégia didática para avaliação de competências laborais em estudantes de Medicina. Realizou-se uma pesquisa quantitativa experimental em sua variante pré-experimento, utilizando os métodos de revisão documental, observação, análise, síntese, hipotético-dedutivo, sistêmico, o pré-experimento pedagógico e o estatístico Qui-quadrado (X2). O resultado pode ser generalizado em nível nacional e internacional de acordo com as características do processo de formação do estudante de medicina. Conclui-se afirmando que a estratégia didática contribui para a melhoria dos processos avaliativos ao sistematizar um processo de avaliação-certificação de competências, baseado no cumprimento das funções do ato avaliativo: pedagógico, inovador, de controle.

Palavras-chave: competição; avaliação; estratégia; aluna; Medicamento.

INTRODUCTION

The University of Medical Sciences' vision is to creatively and innovatively train competitive medical professionals who promote, prevent, and restore individual and collective health, always respecting the ethical, social, and cultural principles that regulate the doctor-patient relationship in the development of their profession in society.

To achieve the aforementioned purpose, Higher Medical Education must train competent professionals, in such a way that they are fully trained to face needs and solve daily problems in any scenario that corresponds to exercising their functions as a doctor.

Medical education must be comprehensive and not just "training". The pedagogical system carried out at the university must have as its purpose the training of professionals capable of developing comprehensive health care, in accordance

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with a conception of health as a process of social construction; therefore, it must take into consideration the various determinants of the health-disease process in the biological, economic, ecological and psychosocial spheres of social groups.

The above arguments make it pertinent to recognize, as part of the medical student's professional training that within its basic pillars, to which special attention should be paid, is the academic, work and research components.

Through the criteria of employers, teachers and tutors on the state of labor competencies that medical students demonstrate during their performance in the labor context, it was possible to verify that they present insufficiencies in the development of activities to promote health and prevent risks and diseases, as well as to diagnose the state of health-disease, applying the clinical-epidemiological and scientific method with a social approach.

This in order to deepen, through the review of documents, in what component of the formation process of the medical student of the University of Medical Sciences of Holguín: curricular project, dynamics of the process and/or the evaluation of their competences, it was possible to verify from the methodological point of view that it focuses on the existing difficulties in the evaluation of labor competencies demanded by the employer organizations to the performances of the General Practitioner, due to the following aspects:

- The methodological guidelines established by the subject programs do not take into consideration the evaluation of work skills as a certification criterion of the state of the student's training as a General Practitioner.
- In the evaluation instruments and techniques that are used, this is relegated to measuring only professional knowledge and skills, without taking into account the integration of knowledge that makes up the competencies labor that will be evaluated.
- The evaluation system used does not always take into account the educational function and the resonance effect of the evaluation.
- Limitations in the evaluation of labor competencies from the link between medical teaching and education at work and research.

These results generate a contradiction between the need to certify the job performance that the General Physician must demonstrate, in line with the teaching, care and research functions required by public health employer organizations and the existing insufficiencies in the evaluation of their job skills which makes such certification difficult.

The analysis of these causes led to a theoretical search around the development of research, specifically in the field of evaluation of labor competencies in the context of the training of health professionals, for which the works carried out by: Tobon (2013); Salas, Diaz and Perez (2014); Garcia, Corrales and Reyes (2015); True (2015); Rooms and Rooms (2017); Martínez, Lifshitz, Trejo, Torruco, Fortoul, Peña, Martínez, Hernández, González (2017); Moran (2017); Moroto (2017); Torres, Cuesta, Piñero and Lugo (2018); Spinoza (2018); Garcia (2019); Valerga and Trombetta (2019); Milan, Garcia, Cabrera, Hernandez, Rodriguez, Miralles (2020); Pupo, Verdecia and Ramon (2020) .

In these investigations, the study of the evaluation of labor competencies in health professionals is approached, from the context of education at work, from the

instructive function of this component, without delving into the study referred to how to evaluate competencies in students of the Medicine career from the integration of the academic component (medical teaching) with education at work and research from the instructive and educational function of evaluation.

The epistemological analysis carried out for this purpose made it possible to identify as insufficiency the absence, in the national and foreign scientific literature, of studies aimed at evaluating the labor competencies achieved by Medicine students during their training process, based on taking into account:

- The establishment of an evaluation process that integrates the academic component (superior medical teaching) with the labor component (care, education at work) and research.
- The systematization of the function's unit: pedagogical, innovative and control of the evaluative act for the certification of labor competencies.

That is why it was pertinent to investigate the following problem: the insufficiencies in the evaluation of the labor competencies of the students of the Medicine career of the University of Medical Sciences of Holguín limit the certification, follow-up and differentiated attention of the teaching performances, healthcare and research established by public health employer organizations

Therefore, the present work had as objective: to propose a didactic strategy for the evaluation of labor competencies in Medicine students.

The research raised the following hypothesis: the application of a didactic strategy for the evaluation of work skills in Medicine students during their training process, which integrates the academic component (superior medical teaching) with the work component (care), investigative and extensionist from the functions unit: pedagogical, innovative control of the evaluative act, contributes to improve the certification, follow-up and attention to the work performances that the teaching and health assistance units require from the General Physician.

The dependent variable is the certification, follow-up and attention to work performance required by the teaching and health care units of the General Practitioner.

The independent variable is the didactic strategy for the evaluation of job skills in medical students.

MATERIALS AND METHODS

The type of research assumed is experimental quantitative in its pre-experiment variant, according to Hernández, Fernández and Baptista (2014) and Rus (2018); since in the first place it explains the logic, the path and the path to follow for the evaluation of labor competencies in Medicine students.

On the other hand, the results are presented that from the quantitative point of view were achieved with the application of the strategy in the improvement of the processes of certification, follow-up and attention to the work performances that the teaching and health care units require from the General Physician.

Of the scientific methods assumed in this research, the method of analysis and synthesis is cited, which allowed determining the objective basis of reality, taking into account how the evaluation process of labor

competencies in Medicine students is developed; The review of documents allowed the study of national and foreign scientific literature to epistemologically characterize the process of evaluating job skills in medical students.

In addition, the following were used: the observation method, which allowed diagnosing in the evaluative processes carried out with medical students how the certification, monitoring and attention to work performances required by the teaching and health care units to the General Practitioner are carried out ; the hypothetical-deductive one, which allowed the acceptance or rejection of the research hypothesis and the systemic one, which made possible the elaboration of the didactic strategy according to its components.

The pre- experiment was used, according to Hernández *et al.* (2014), to validate the strategy using the Chi-square (X2) test (statistician) at 95.0% confidence, which allowed verifying the existence of significant improvements in the processes of certification, monitoring and attention to job performance required by the teaching and healthcare units of the General Practitioner.

RESULTS

The evaluation of labor competencies during the training process of medical students must take into account the establishment of an evaluation process that integrates the academic component (superior medical teaching) with the labor (care) and research component, from the systematization of the function unit of the evaluation (integration of the pedagogical, innovative and control function of the evaluation), an aspect that constitutes an insufficiency in the evaluation strategies that are used in the Medicine career, which justifies the need for the strategy presented below.

Proposal of the strategy to evaluate labor competencies in Medicine students:

I. Rationale

The didactic strategy that is proposed is based on the theoretical framework presented previously and on systematizing a process of assessment-certification of labor competencies of the General Practitioner, based on the integration between the academic with the labor and research, which is interpreted as the process that allows assessing and certifying the state of labor competencies demonstrated by the Medicine student; all of this in correspondence with the standards and position qualifiers inherent to the functions of the General Practitioner that must be fulfilled in the health area where he works, through the appropriation of contents from medical teaching and its application in the solution of health problems during educational actions at work (investigations, medical shifts, visits, case discussions, consultations, health promotion and prevention activities in the community, among others) and the use of scientific research methods.

On the other hand, it is based on the profile of labor competencies that is provided for the General Practitioner below:

- Comprehensive medical care job competence:

Applies comprehensive and continuous medical care schemes to patients, their families and/or population groups through actions of health promotion, disease prevention, with emphasis on COVID-19 and other damage to health, timely diagnosis and treatment, and rehabilitation independently, enterprising, responsible, creative, committed, with medical ethics, working in

medical teams, with the use of ICT and other means of their professional work.

- The medical student must demonstrate during their care performance, the following evidence criteria:

Diagnosis of the patient's health status; application, under the supervision of the resident and the tutor, of treatment schemes associated with comprehensive general medical care; monitoring and control of the patient's health status; intervention in the rehabilitation actions of the patient according to diagnosis; development of actions for the promotion and prevention of health in the community, the family and with the patients attended in the consultation; completion of the dispensarization process , as part of Comprehensive Medical Care, with the active participation of the community and its organizations, contributing to the development of an individual healthy with healthy lifestyles ; care and monitoring of environmental risk factors, coordinating and executing actions according to the hygienic-epidemiological situation in its radius of action; work with the corresponding medical team, demonstrate qualities and values: medical ethics, humanism, sensitivity, independence, flexibility, creativity, expertise, confidentiality, entrepreneurship, love of Medicine, responsibility, industriousness for comprehensive medical care; demonstrate proficiency in English as a second language for communication; use Information Communication Technologies (ICT) as a work tool, object of study and means of learning.

- Teaching-educational job competence:

Develops education for the health of the population in the corresponding health area, by carrying out promotion, prevention and teaching actions on the risks of the environment, infectious diseases and harmful lifestyles that are associated with the appearance of alterations from human health to individuals, families, groups and collectives that are the object of their care; all this, independently, enterprising, responsible, hard-working, creative, committed, working in interdisciplinary medical teams, with the use of ICT, medical ethics and other means of their professional work.

- The Medicine student must demonstrate, during their teaching-educational performance, the following evidence criteria:

Identifies hygienic-environmental problems that affect the health of the population in the health area where it works; shows sensitivity and humanism to prevent infectious diseases (COVID-19, dengue, HIV-AIDS, among others) that arise in their health area; develops educational talks and educational training activities for leaders and members of the community where its health area is located, aimed at disease prevention to guarantee a healthy lifestyle; guarantees his continuous and systematic self-preparation through the appropriation of contents, which he learns from the disciplinary diversity of the Medicine career and its application in the context where he works (health area that he attends); promotes vocational training and professional guidance through his example in carrying out good medical practices; works with the corresponding teaching medical team; demonstrates the following qualities and values: medical ethics, humanism, sensitivity, independence, flexibility, creativity, expertise, confidentiality, entrepreneurship, love of Medicine, responsibility, diligence to carry out their teaching-educational work and uses ICT as a work tool, object study and learning environment.

- Administrative labor competence:

It intervenes in the administrative actions that are carried out in the health area for the optimal and rational use of the resources of the Health System available to it, as well as the care, conservation and environmental sustainability of the processes of comprehensive medical care, teaching-educational and investigative, in a responsible, laborious, creative, committed, entrepreneurial manner, with leadership and medical ethics.

- The Medicine student must demonstrate, during their administrative performance, the following evidence criteria:

Identifies needs and opportunities to consider for the improvement of comprehensive medical care services in the health area; efficiently uses research and teamwork to generate innovation alternatives in comprehensive medical care for the solution of professional problems with greater autonomy and professional creativity; assumes risks during the deployment of their mobility in the health area; manifests personal effort, decision and perseverance to face the challenges imposed by comprehensive medical care in his health area; makes the right decisions, through the cost-benefit-risk perception analysis during the generation of innovative alternatives to the comprehensive medical care and teaching-educational processes to be developed in the community and the health area in which it works; works with the corresponding medical-administrative team; demonstrates qualities and values: leadership, medical ethics, humanism, sensitivity, creativity, expertise, confidentiality, entrepreneurship, responsibility and diligence to carry out their administrative work; uses ICT as a work tool, object of study and means of learning; participates in the management of the tasks of its work team, at the different levels of the Health System and carries out intersectoral coordination for the solution of health problems.

- Investigative labor competence:

Applies the scientific method through the clinical, epidemiological, administrative and teaching-educational method, with a social and humanistic approach for the identification and solution of problems of comprehensive medical care for people, families, groups and community assigned in their area of health independently, enterprising, responsible, hard-working, creative, committed, working in interdisciplinary medical teams, with medical ethics, the use of ICT and other means of their professional work .

- The Medicine student must demonstrate during their investigative performances, the following evidence criteria:

Applies research techniques and instruments for the Analysis of the Health Situation of the community associated with the health area where he works; identifies comprehensive medical care, health prevention, teaching, and administrative problems that require the use of the scientific method for their solution; generates innovative alternatives to the clinical and epidemiological methods that it uses from its teaching-educational function, comprehensive and administrative medical care, prepares presentations and participates in scientific events to socialize its research results; prepares and publishes scientific articles to socialize their research results; develops research tasks related to problems that affect the health of individuals, families, groups and the community; works with the corresponding investigative medical team; demonstrates qualities and values: leadership, medical ethics, humanism, sensitivity, creativity, expertise, confidentiality, entrepreneurship,

responsibility and diligence to carry out their investigative work; uses ICT and the English language.

II. Diagnosis

From the review of documents and the observation of the evaluation processes of medical students (internship), it is recognized that there are insufficiencies in the evaluation processes of labor competencies, based on the integration between the academic, labor and research components.

III. General objective

Taking into account the result of the diagnosis, the strategy pursues as a general objective: to evaluate the work skills that medical students achieve from the discipline of Comprehensive General Medicine, through the integration between the academic with the work and research.

IV. Action plan (strategic planning and implementation)

The strategy has been conceived from defining the objectives to be achieved in stages, which contribute to the fulfillment of the general objective set.

To achieve the general objective, three stages have been conceived.

Stage 1. Assessment of the labor competencies of the General Practitioner

Objective: to assess the labor competencies that the General Practitioner must demonstrate, this will be evaluated.

In this stage, actions are conceived aimed at medical students assessing which are the labor competencies of the General Practitioner that will be evaluated. Once the actions for the planning of this process have been carried out, the second stage is carried out.

Stage 2. Development of the evaluation of the labor competencies of the General Practitioner

Objective: to apply certification instruments of the labor competencies of the General Practitioner.

In this stage, actions are conceived aimed at the application of instruments for the certification of the labor competencies of the General Practitioner.

Stage 3. Certification of labor skills achieved by Medicine students.

Objective: to certify the labor competencies reached by Medicine students as a result of the applied instruments.

The actions to be carried out at each stage are listed below:

Stage 1. Assessment of the labor competencies of the General Practitioner.

Actions to be carried out by the students under the mediation of the teacher and the tutor:

Action 1. Analyze the inputs, standards and demands of the job in the health area where he works as a General Practitioner.

By observing and reviewing documents, students will inquire about the inputs, resources, standards and demands of the job that characterize the functions of the General Practitioner in the health area where they work. They will do this taking into account the professional teaching-assistance and research problems they face, in relation to the functions that, in the context, that is, in

the health area where they work, they must fulfill as a General Practitioner.

Date: 1 session of education at work.

Responsible: students and tutors.

Action 2. Characterize the labor competencies of the General Practitioner under evaluation.

The student, through a workshop as a form of organization of medical teaching, will proceed to characterize each of the labor competencies of the General Practitioner. To do this you must:

- Define basic concepts associated with the contents of each of the job skills of the General Practitioner, through the use of the questions: What *is it? And what is it for?* As teaching guides.
- Describe the essential features and properties, the structure of each labor competency, using the analytical reading of bibliographic sources and through the use of the basic question referred to: *what is it like?*

From here, proceed to:

- Compare the criteria and evidence of performance of each labor competency, in accordance with the qualifiers and performance standards that characterize the care, teaching and research processes that operate in the health area where it is inserted, establishing similarities and differences; all this, through the questions: *what makes it what it is and not something else? And what relationship exists between the general practitioner's job skills provided in the model and the real demands of the jobs in the health area where he works?*

The student, from the comparison made, will achieve an adequate orientation about the meaning and sense that it has for him to achieve the labor competencies of the General Practitioner.

Action 3. Socialize the labor competencies that will be evaluated, according to their diagnosis, the level of complexity of the content and the adaptability of their corresponding training structure (assistance, teaching - educational, investigative or administrative).

Once the students have carried out the previous action individually, they will proceed to collectively socialize each of the criteria issued; in this way, the students, through the investigation carried out in actions 1 and 2, will be able to socialize in the workshop, as a form of organization of medical teaching, the labor competencies that will be evaluated.

This socialization will be carried out through reflective dialogic communication, in which they characterize and establish analytical relationships between each of the following aspects:

- Requirements of the job in the health area where they work (they are located in education at work).
- Professional teaching-assistance-research problems faced.
- Functions of the General Practitioner, which they fulfill in the context where they carry out education at work.
- Labor competence to be evaluated, its relationship with the previous aspects.

Action 4. Assess, through the inquiries carried out, the labor competencies of the General Practitioner that will be evaluated.

Once the relationships are established through the socialization carried out in the previous action, then the student will proceed to assess the meaning and meaning of achieving each of the General Practitioner's job skills. This will be done by guiding questions addressed to: why *it happens? What consequences does it have? What if...? What value does it have for the health status of the population to achieve the job skills of the General Practitioner?*

Actions 2, 3 and 4 will be worked on in one or two workshops, as a form of organization of medical education in the discipline of Comprehensive General Medicine, as decided by the group of teachers of the career; It will have a duration of up to four hours and the resources used will be classrooms, books, ICT, documents, among others.

Stage 2. Development of the evaluation of the labor competencies of the General Practitioner.

Actions to perform:

Action 1. Design the instruments for certification of labor competencies of the General Practitioner.

In this action, the instruments for certification of the labor competencies of the General Practitioner, socialized in the previous stage, are designed. For this, three essential aspects will be taken into account:

- The educational potential of the diversity of forms of organization of teaching and education at work, which establishes the discipline of Comprehensive General Medicine.
- Fulfillment of evaluation functions: pedagogical, innovative and control.

The instruments, depending on the typology that is designed, will respond to the following types (there may be others): observation of their attention, teaching, scientific and management work in the workplace, with the use of observation lists and/or rating scales for each of the activities and procedures to be evaluated, during medical shifts, consultations, visits, presentation and discussion of clinical cases, investigations, among others.

They will also use the medical audit, in order to assess the quality of the different components of the medical records and health records, the records and charge sheets; dispensing, household income, among others, the analysis of their contribution to the improvement of health indicators and/or the quality of the service and institution, surveys of chiefs and managers, members of the work group or team of health, surveys of the population and community leaders, written exam on presentation and discussion of clinical cases, use of patient simulations, group exercises, role-playing, analysis and presentation systems, based on a topic or problem with little poorly structured information, probable critical incident techniques within their work context and performance reviews.

- Assume, for its design, the following general structure:

o Labor competence: the labor competence of the General Practitioner who will be evaluated is declared.

o Criteria and evidence of performance and suitability: the traits, elements and criteria are delimited to predict, assess and certify job competence, according to the demonstration made by the student in the health area where he works.

o Sequential actions of the evaluation of labor competence: the items of open questions, closed questions, case studies, among other actions that the student will carry out, are established, according to the

type of instrument and form of organization of education at work, through which will be applied contextually and taking into account the functions of the evaluation.

o Evaluation Rubric: Finally, the evaluation rubric is declared that allows measuring the successes and failures and certifying the labor competence that is evaluated.

Time span: first week of every month.

Responsible: group of teachers and tutors of the Comprehensive General Medicine discipline.

Participants: teachers of the subjects of the professional training axis.

Word processors, *PowerPoint,* supplies from the health area, among others.

Action 2. Carry out the instruments of certification of labor competencies of the General Practitioner.

To carry out this action, the following recommendations are offered:

- Observe which instruments meet the requirements of: objectivity, relevance, balance, fairness, diagnosis and effectiveness.
- Achieve intensive work, revealing the potential of students and their progress on the path of training their job skills.
- Reaffirm the student's motivation and interest in the career during the evaluation act.
- Create a climate of mutual trust between teachers, tutors, employers in the areas of public health (evaluators) and students (evaluated) during the evaluation process, so that they feel stress-free and clearly express their evaluation criteria.
- Promote a prospective self-assessment of the experiences (positive and negative) acquired and the student's capacity for critical analysis
- Stimulate self-assessment and co-assessment among students.
- Stimulate the best results and offer differentiated attention to students, according to their needs and potentialities, according to the level of achievements achieved and develop the student's self-esteem, based on respect for others and the professional environment
- Certify job skills by obtaining, understanding and interpreting evidence of performance and job suitability; formulate, based on critical reflection, value judgments about the job skills that the student demonstrates and achieves and establish a correlation between individual and group evaluation.
- Qualitatively and quantitatively assess their results and those of their peers, through a comparison between what they actually did and what they should have done, based on the criteria and evidence of performance and the training structure of professional competence and/or the objective, socialized with the teacher.
- Integrate the evaluative actions of the instrument that is applied to the student, in education at work, with the academic and investigative component.
- Apply research during the implementation of clinical and epidemiological methods in real conditions, according to performance standards of the job in the health area where the student is evaluated (where the student is inserted or rotated at the time of the evaluation act).

- Systematize the unit of instructive, educational and developer actions during the evaluation act.

These recommendations should not be lost sight of by teachers, tutors and students, during the realization of the instruments that they have selected.

Time span: second and third week of every month.

Responsible: main professor of the Comprehensive General Medicine (MGI) discipline.

Participants: teachers, tutors, students and agents involved in the evaluation act.

Resources: supplies and media in the health area, ICT, documents, printed materials, among others.

Action 3. Control compliance with the instruments for certification of labor competencies of the General Practitioner.

Finally, we proceed to the control and monitoring of the realization of the instruments, which must be carried out based on taking into account the following criteria: compliance with the functions of the evaluation: pedagogical, innovative, control, adequate application of the recommendations offered, as well as the deepening in each one of the components of the evaluation process. On the other hand, other criteria must be considered, such as: the determination of the excellence of the medical service offered, whether it is teaching-educational, healthcare, investigative or administrative; verification of the performance and employment suitability demonstrated by the student; the evaluation of the correspondence model of the professional *vs.* the functions of the General Practitioner in the labor context; the preparation, humanism and commitment of the evaluation team and those evaluated; compliance with the time periods for the application of each competency certification instrument.

Time Lapse: Permanent

Responsible: head of the MGI discipline.

Participants: teachers, tutors and Medicine students.

Resources: supplies from the health area, ICT, printed materials, among others.

Stage 3. Certification of labor skills achieved by Medicine students.

Actions to perform:

Action 1. Assess the criteria issued by each student, according to their self-assessment.

Once the application of the instrument in the labor component is completed, a workshop must be developed as a form of organization of teaching (academic component) so that the student, individually, issues an assessment judgment about the result in terms of the evaluated labor competence of the General Practitioner.

For this, the student is recommended in the workshop to answer the following questions: Is the application of clinical, epidemiological, teaching-educational and administrative methods that I applied correct, with respect to those that should have been applied? Can I apply them in the work context where I work (health area where I rotate)?

An analysis of the economic, environmental and social impact that the possible application of the demonstrated labor competencies would bring is suggested, through the following questions:

For the economic and environmental analysis: what consequences does the work carried out have on quality, saving resources and for the care and preservation of the Environment?

For social analysis: are the health needs of the population of the community of the health area to which I belong met?

Other questions for the student's self-assessment will be: what successes and failures were evidenced during the performances and suitability demonstrated? How can I improve and correct the mistakes made?

For this, the teacher must specify the indicators to be measured for the certification of the labor competence that is evaluated, according to the criteria of evidence and suitability of their work performance.

Finally, the student will proceed to:

- Qualitatively assess the results through a comparison between what was actually done and what should have been done.
- Quantitatively assess the result (propose its qualification according to conceived indicators).

Action 2. Assess the criteria issued by the students, through co-evaluation and hetero-evaluation.

Once each student has self-evaluated, each of the evaluations that were issued individually are socialized collectively among the students, the teacher and the tutor of education at work.

For this, it is recommended to take into account the following aspects:

- The impartiality that allows each student to be able to criticize other students in a favorable or unfavorable way, in terms of the evaluative criterion that was proposed during their self-assessment, based on the honesty expressed to the extent that they are capable of having demonstrated the labor competencies of the General Practitioner.
- The meaning and sense that the students have conferred, in the evaluation act, to the instruments of certification of labor competencies that they carried out.
- The consequences that it can generate for their training as General Practitioners and for the improvement of lifestyles and the health of the population, show successes and failures in their teaching-educational, care, research and administrative performance.
- The interpretation that has been achieved between the students evaluated and those who are assuming the role of evaluators, so that they achieve the same level of understanding of the criteria of evidence of performance and job suitability demonstrated.
- Mutual respect in the face of non-concordance of ideas and value judgments issued during the socialization of the results obtained in the individual and collective order.
- Level of effectiveness, reliability and validity of the applied instruments.
- Reflect on the evaluations offered by the teacher and the tutor with the evaluative criteria that the students have offered individually and in groups.

For actions 2 and 3 of this stage:

Time span: fourth week of every month.

Responsible: head of the MGI discipline.

Participants: teachers, tutors, employers and Medicine students.

Resources: supplies from the health area, ICT, printed materials, among others.

Action 3. Accredit the labor competencies that the student achieves.

Once the criteria of the students have been taken into consideration through the self-assessment and the student co-assessment, as well as the criteria of the teacher and the tutor, the labor competencies that each student has achieved must be accredited as the final result of the evaluation process carried out.

To do this, they must consider the following aspects:

- Compliance with the suggestions established in the instrument.
- Quality of the teaching-assistance-research and administrative work carried out.
- Care and use of supplies in the health area.
- Compliance with the standards of performance and suitability demonstrated, according to evaluative scales from the qualitative and the quantitative (the latter will depend on the criteria determined by the group of teachers of the MGI discipline from each of the labor competencies provided in the first subsystem of the model).

This accreditation will be carried out at the end of each evaluation instrument that is applied, in such a way that it reflects a qualitative evaluation of the state of performance and work suitability that each student demonstrates as an expression of the labor competence that has been evaluated and on the basis of the criteria issued by each student in the individual and collective (group) order ; as well as considering , in addition , the criterion of the teacher, the tutor and the employer. On the other hand, it will allow verifying the impact of the result of the medical education process carried out, that is, to what extent the expected results were achieved.

Time span: fourth week of every month.

Responsible: head of the MGI discipline.

Participants: teachers, tutors, employers and Medicine students.

Resources: ICT, printed materials, among others.

Once the labor competencies have been accredited, pedagogical decisions are made, based on addressing the successes and failures that the student shows in their teaching, care, research and administrative performance, which allows them from the concretion of an action plan, its continuous and systematic improvement.

Action 4. Determine follow-up actions and continuous improvement of the medical student's job skills.

Derived from the problems and causes , as a result of the accreditation of labor competencies, follow-up actions are proposed for the errors demonstrated by each student, which implies: the improvement of teaching-learning methods; the ways of organizing the student's medical education process during the academic, work and research component; the resources and means to be used; the preparation of teachers, tutors, as well as the curricular design of the career, so that differentiated attention is given in order to achieve higher levels of suitability in their performance as General Practitioners.

Time: permanent (monthly).

Responsible: head of the MGI discipline.

Participate: teachers, tutors and Medicine students.

Resources: ICT, printed materials, among others.

DISCUSSION

The strategy was applied through a pedagogical pre-experiment carried out through the observation of 100 evaluative acts from the academic component and education at work (labor component) to the Medicine students of the University of Medical Sciences of Holguín, Cuba, since January from 2021 to December 2021, the results of which are shown below.

The observation was aimed at verifying the behavior of the variable dependent on the hypothesis: certification, monitoring and attention to work performance required by the teaching and health care units of the General Practitioner.

The dependent variable was operationalized from the study carried out by Salas *et al.* (2014), expressed as follows.

The certification, follow-up and attention to work performance required by the teaching and health care units of the General Practitioner is considered to be in the very good category when the following indicators are observed in the evaluation process:

1. Design of instruments and evaluation techniques that take into account the unity of pedagogical, innovative and control functions of the evaluation act.

2. Design and application of evaluation instruments and techniques that take into account the validity, reliability, precision, clarity and originality of their components.

3. The academic component (superior medical teaching) is integrated with the labor component (education at work, healthcare), research and extension.

4. The standards of performance and suitability that the General Practitioner must demonstrate are taken into consideration, according to the functions they perform in the teaching and health care units.

5. Self-assessment and co-assessment are encouraged.

The certification, follow-up and attention to work performance required by the teaching and health care units of the General Practitioner is considered in the category of good, when indicators from 1 to 4 are observed, with certain difficulties in 5.

The certification, follow-up and attention to work performance required by the teaching and health care units of the General Physician is considered in the regular category when compliance with at least 50.0% of the indicators is observed.

Below the regular category, it is considered deficient, which allows us to verify that there are insufficiencies in the evaluation processes of labor competencies in Medicine students; note how 50.0% of the evaluative acts reached the category of regular and 40.0% of deficient, only 10.0% was good.

Based on this result, the didactic strategy was applied, according to the actions planned during the period from April 2021 to November 2021, with flexibility and adaptations to the conditions in which the training process of the Medicine student was developed, evidencing the following

transformations that attest to the scientific novelty of the scientific result of the investigation:

- The profile of labor competencies to be evaluated is incorporated into the model of the medical student's professional.
- Evaluation instruments were designed that took into account the unity of evaluation functions: pedagogical, innovative and control, based on a professional approach and on the measurement of its reliability and validity.
- An evaluation process was carried out, this time from the integration of the academic, labor, research and extension component.
- authentic nature of the certification, accreditation and assessment of labor competencies was systematized, attention to the cognitive and affective complexity of the knowledge associated with the evidence of performance and professional suitability of the Medicine student, according to the year in which it transits and to the workplace education program.
- Self-assessment and co-assessment were taken into account in the evaluation act.

With the objective of verifying the transformations achieved in the evaluation process, the observation of the evaluation acts was carried out in the months of November and December, appreciating with the application of the strategy improvements in the evaluation acts; that is, in the processes of certification, follow-up and attention to the work performances required by the teaching and health care units of the General Practitioner , since 60.0% of those observed reached the category of very well, 30.0 % good and only 10.0% fair, none were poor.

In order to verify the differences before and after the didactic strategy was applied, the Chi-square statistical test (X^2) was applied; For this, a 95.0% confidence level was used, recommended for educational sciences, assuming a degree of reliability of á = 0.05. The following working hypotheses were outlined:

- Nullity hypothesis (H_0): the differences reached in the processes of certification, follow-up and attention to work performance required by the teaching and health care units of the General Practitioner, before and after the application of the work skills evaluation strategy was not significant.
- Alternative hypothesis (H_1): the differences achieved in the processes of certification, follow-up and attention to job performance required by the teaching and health care units from the General Practitioner, before and after the job skills assessment strategy was applied, is significant.

The following statistical condition was applied:

- If the value of the probability obtained (X^2) is less than the degree of reliability assumed (á); that is, it is true that: p (X^2) d" á, then H $_1$ is accepted and Ho is rejected.
- If the value of the probability obtained (X^2) is greater than the degree of reliability assumed (á); that is, it is true that: p (X^2) > á, then H o is accepted and H 1 is rejected.

When applying the statistical test with the use of *Excel,* a probabilistic value of p (X^2) = 0.001789 was obtained, which is below the degree of reliability assumed, which is 0.05; that is: p (X^2) = 0.001789 < 0.05, so H 1 is accepted and Ho is rejected

This result allows us to prove, at 95.0% reliability, that the strategy proposed in the research is pertinent, novel and contributes to improving the certification, monitoring and attention to work performance required by the teaching and health care units of the Physician. General during the evaluation processes of labor competencies in Medicine students, thus proving the research hypothesis.

This study made it possible to recognize competence as the integration of knowledge (knowledge, skills, and values) that emerge from the standards of performance and suitability established by public health entities. The unity of evaluation functions is recognized: pedagogical, innovative and control, as well as the integration of the academic, labor, research and extension component as an essential premise of the evaluation act.

It can be concluded that, in order to contribute to the improvement of the work performance of the student of the Medicine career, in correspondence with the teaching, assistance and investigative functions that the employer health organizations demand of the General Physician, a labor competency evaluation process must be systematized from taking into consideration the principles, characteristics and functions of the process, through the treatment of the pedagogical, innovative and control function of the evaluative act.

The didactic strategy is structured in three stages and has a flexible, integrative and contextualized character for the evaluation of the work of the Medicine student from the MGI discipline as an alternative, which contributes to the improvement of his teaching-educational, assistance, investigative, administrative and educational performance, from the relationship that occurs between the evaluative and certifying inquiry of the labor competencies of the General Practitioner.

The pedagogical pre-experiment carried out at 95.0% reliability showed that, with the application of the strategy for the evaluation of job skills in medical students, significant improvements are seen in the processes of certification, monitoring and attention to job performance required by the teaching and health care units of the General Practitioner, which allows testing the research hypothesis.

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Conflict of interests

The authors declare no conflict of interest.

Authors contribution

All authors managed the information, reviewed the writing of the manuscript and approved the version finally submitted.