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ORIGINAL ARTICLE

Assessment of research competencies of Natural Medicine master's students in comprehensive care to the patients

Evaluación de la competencia investigativa del estudiante de la Maestría en Medicina Natural en la Atención Integral al Paciente

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ABSTRACT

Introduction: the Public Health Ministry stablished the National Program for the development and generalization of Natural and Traditional Medicine in 1995. It allowed the implementation of the master's program of Natural and Traditional Medicine, directed to comprehensive care to the patients.
Objective: to assess the research competency of Natural Medicine master's students in comprehensive care to the patients.
Methods: it was made a cross sectional, pre-experimental qualitative research. It was included 60 students from cohort one of the master's program of Natural and Traditional Medicine in Comprehensive Care of the patients in the Medical University of Holguín. The students were selected by purposive sampling. It was used the observational method and statistical tests Cronbach´s Alpha and Chi Square.
Results: it was provided the profile of research competency that characterized the masters in Natural and Traditional Medicine in Comprehensive Care of the patients, and the evaluation tool. It was detected improvements in student´s research skills by the solutions of problems of Natural and Traditional Medicine in Comprehensive Care of patients from teaching, health education and medical assistance.

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Conclusions: the research competency allows the innovation, transformation, to improve or design new diagnostic and treatment profiles, teaching alternatives, health promotion and prevention. It also promoted administrative management to improve the quality in the application of therapeutics proceedings of Natural and Traditional Medicine in Comprehensive Care of patients.

Keywords: Natural And Traditional Medicine; Research Competency; Assessment.

RESUMEN

Introducción: el Ministerio de Salud Pública al poner en vigor el Programa Nacional para el Desarrollo y Generalización de la Medicina Natural y Tradicional desde 1995, permite el desarrollo del programa de la Maestría de Medicina Natural en Atención Integral al Paciente.
Objetivo: evaluar la competencia investigativa en el estudiante de la Maestría en Medicina Natural en la Atención Integral al Paciente.
Métodos: se realizó una investigación cuantitativa de tipo pre-experimental, de corte transversal a partir de una muestra de 60 estudiantes de la cohorte 1 del programa de la Maestría de Medicina Natural en la Atención Integral al Paciente de la Universidad de Ciencias Médicas de Holguín, a través del muestreo intencional. Se empleó el método de la observación, el Alfa de Cronbach y la prueba chi-cuadrado.
Resultados: se aportó el perfil de la competencia investigativa que singulariza al master en Medicina Natural en la Atención Integral al Paciente y el instrumento para su evaluación. Se constató mejoras en los desempeños investigativos de los estudiantes al proponer alternativas innovadoras de solución a problemas de la aplicación de la Medicina Natural en la Atención Integral al Paciente desde la asistencia, la docencia y la educación para la salud (promoción y prevención de la salud).
Conclusiones: la competencia investigativa permite innovar, transformar, mejorar o crear protocolos diagnósticos terapéuticos, alternativas docentes, de promoción, prevención de la salud y de gestión administrativa para la mejora de la calidad en la aplicación de modalidades terapéuticas de la Medicina Natural en la Atención Integral al Paciente.

Palabras clave: Medicina Natural Y Tradicional; Competencia Investigativa; Evaluación.

INTRODUCTION

Natural and Traditional Medicine (NTM), known internationally as alternative, bioenergetic and naturalistic or complementary, is part of the universal cultural heritage. Its development has not been limited to the accumulation of knowledge derived from practice, but also to the design of a complete theoretical body on the art of healing, integrated into modern health systems. This has led the governments of several countries to take on the responsibility of drafting legislation in this regard.[1]

Since the 1980s, Cuban medical education began to rescue traditional medicine as a priority area in universities. It was essential to initiate this strategy under the WHO principle of choosing those modalities validated by their efficacy for the solution of health problems and patient safety.

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Natural Medicine constitutes a discipline that is necessary to study, deepen and develop in the country, it values the median in an integral way that goes from the simplest natural remedies to the application of modern treatments and new technologies and according to the development achieved in the country in this type of medicine that has Diplomas, a Specialty and numerous professionals dedicated to research in this field; hence the execution of the Master in Natural Medicine is justified, where health professionals are provided with the elements of research that allow scientifically validate all the procedures of this medicine.

The training of human and material resources and the strong international exchange in this field, justifies the development of the Master's program in Natural Medicine (NM) in Integrated Patient Care (IAP), which provides specialized personnel who perform different tasks within the National Health System a deepening in the scientific method, and allows the development of research competence to solve health problems by applying the therapeutic modalities of NM.[1]

Research in this area has a great prestige at international level, since there is a wide collaboration with foreign universities and scientific societies. It has the support of the World Health Organization, the Latin American Society of Natural and Traditional Medicine and the European Society of Classical Natural Medicine.

Through scientific research, the graduate of the Master's program in NM at the AIP will provide information according to the main needs identified that will allow them to propose strategies for the solution of specific problems and provide feedback on their application through their evaluation. Likewise, the graduate will be able to act as a multiplying factor of the knowledge acquired and influence the different levels of care in the National Health System. In addition to training for research functions, this program also prepares them for performance in medical care.

The objective of this research is to evaluate the research competence of the student of the Master's Degree in Natural Medicine in Comprehensive Patient Care.

The article is an output of the research project called: Strategy for the development and consolidation of Natural and Traditional Medicine approved by the Committee of Ethics of Scientific Research and by the Scientific Council of the University of Medical Sciences of Holguin.

A cross-sectional observational research study was carried out,[2] in a sample of 60 students of the Master's program of MN in AIP of the University of Medical Sciences of Holguin, Cuba of cohort 1, selected by means of intentional sampling. For the sample selection criteria, the ethical principles of the Declaration of Helsinki were also taken into account.[3]

The scientific methods used in this research included analysis, synthesis, document review and system approach, which allowed the elaboration of the research competence profile provided for the master's degree graduate, as well as the comparison of this study with other researches in the national and foreign literature.

As part of the pre-experimental design, observation was applied to the research performance of the students in the sample to whom the research competence profile was developed, and Cronbach's Alpha[4] was also used to validate the relevance of the research competence evaluation instrument applied and the Chi-Square (X2) statistic to determine whether or not there are statistically significant differences in the data obtained by means of the percentage analysis.

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Manages research aimed at solving problems during the application of MN in AIP through inquiry and interpretation-valuation of the scientific results obtained and their impact, in an honest, laborious, creative manner, with social commitment, leadership, confidentiality, entrepreneurship, in teamwork and professional ethics in respect for intellectual property.
Levels of development of research competence:

Level 1. Investigates in the search for problems manifested in the use of MNT in AIP.

Evidence of investigative performance:

- Manifests knowledge of research methodology.
- Selects the type of research to be conducted.
- Designs research instruments and techniques for the deepening of the causes that generate the identified problems.
- Applies the designed research instruments and techniques.
- Identifies, through research, the main causes that generate problems.
- Adequately selects the population and the sample.

Level 2. Foundations from the theory of the MN in the AIP the problem and the solution proposal.

Evidence of research performance:

- Selects the main categories of his research by MNT and by AIP.
- Assumes from the scientific critique a concept of the category.
- Evaluates the concept assumed from the object of research.
- Argues the characteristics of the object of research that confer uniqueness for the critical analysis and relevance of the study.
- Argues the theoretical bases that allow understanding, explaining and interpreting how to solve the problem from the field and the object of research and the general approach of Medicine assumed (Natural or Integrative).
- Critically evaluates the scientific-technological foundations and the national and foreign scientific literature of MNT in AIP, for the search of answers to the detected problems, according to the scientific method.
- Justifies the scientific nature of the problem.

Level 3. Design innovative alternative solutions to problems in the use of NTM in the IPA.

Evidence of investigative performance:

- Generates innovative solution alternatives to research problems.
- Applies the methods assumed in the theory for the design of the alternative solution to the problem.
- Argues the scientific novelty.
- Argues the contextualization, relevance, feasibility and sustainability of the proposal.

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Level 4. Introduces and generalizes the alternative solutions to the problem.

- Introduces the alternatives through the use of research methods.
- Generalizes the proposed solution alternatives to the related problems.
- Determines indicators of evaluation of the impact of the introduction and generalization of alternatives with innovative solutions to the problems in the object, field of research, in the subjects and in the quality of the assistance, teaching, health education and administrative processes.
- Designs instruments to evaluate the impact of the introduction and generalization of alternatives with innovative solutions to research problems.
- Applies the impact evaluation instruments designed.
- Evaluates the impact generated for the continuous improvement of the use of MNT in AIP.

General performance evidences associated to all levels: use of informatics, Information and Communication Technologies (ICT), biostatistical methods, works in teams, develops undertakings, manifests research leadership, efficient and rational use of inputs, material and human resources, guarantees the care and conservation of the environment oriented to sustainable development, and manifests adequate communication with respect and tact to the scientific community and the use of intellectual property.

The proposed research competency profile is shown below (Fig. 1).

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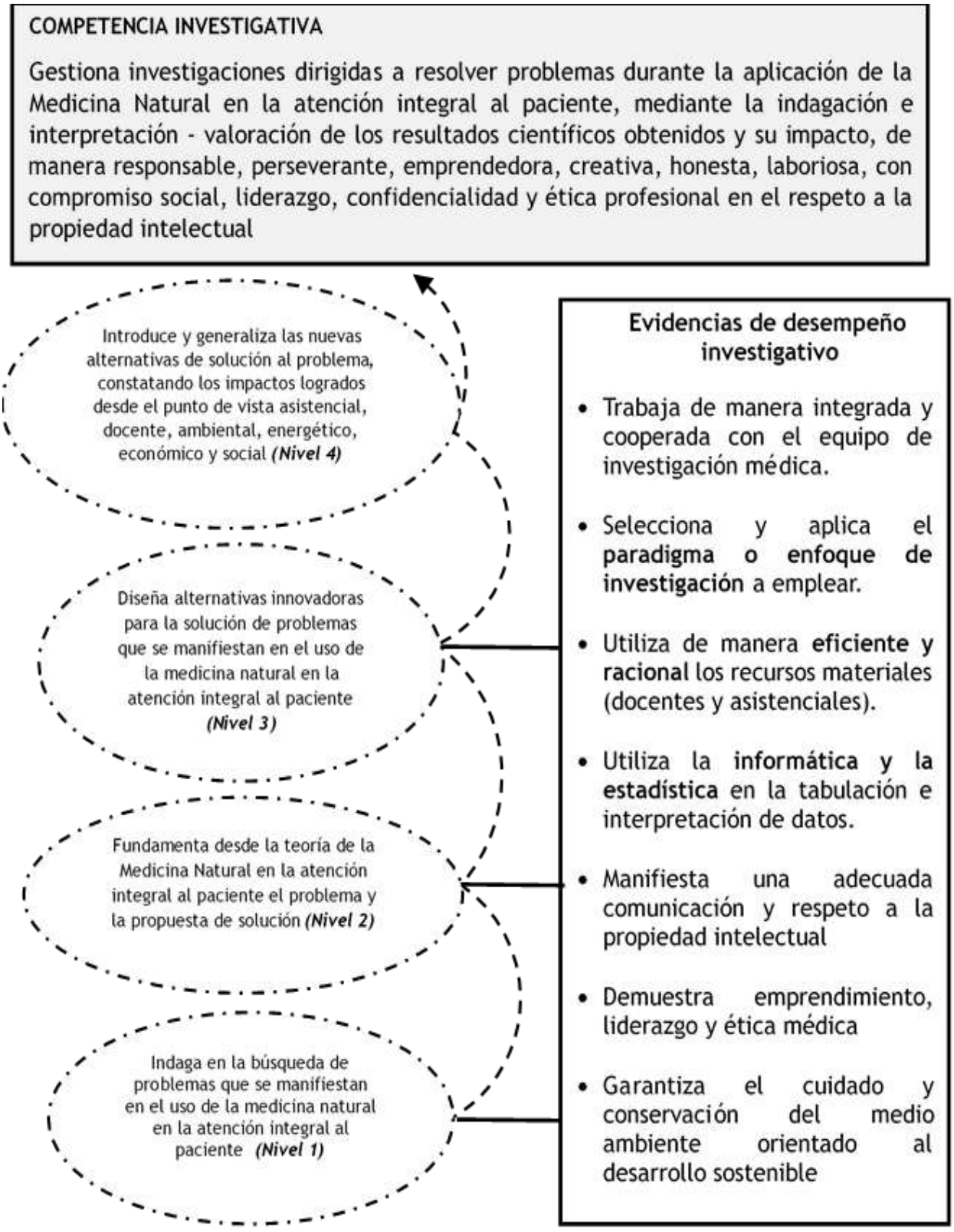

Fig. 1 Profile of the research competency to be evaluated in the master's degree student in MN at AIP (Source: authors).

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Instrument used for the evaluation of the research competence profile:

The following is the instrument, the observation guide, employed to evaluate the research competence in the MN master's student at AIP:

1. Manifests knowledge of educational scientific research 2.

   Not observed ___ Partially observed ___ Observed ___ Observed _____

2. Identifies, through inquiry, problematic situations that difficult the application of the MNT in the AIP.

   Not observed ___ Partially observed ___ Observed ___ Observed _____

3. Models problems related to the application of MNT in the AIP, taking into account the use of research methods.

   Not observed ___ Partially observed ___ Observed ___ Observed _____

4. Interprets the scientific foundations that support the MNT in the AIP through practicing, teaching, health education and managing, directed to solve the problems detected by research methods.

   Not observed ___ Partially observed ___ Observed _____

5. Generates alternatives of innovative solutions to the problems of the application of MNT in the AIP, taking into account the use of researching methods.

   Not observed ___ Partially observed ___ Observed _____

6. Introduces the proposed alternatives solutions to the problems related to the use of therapeutics proceedings of MNT in the AIP by the research methods.

   Not observed ___ Partially observed ___ Observed _____

7. Assesses the generated impact in the solution of teaching, practicing, researching, managing and health problems, by the use of innovative solutions generated using scientific method to solve MNT problems in the AIP.

   Not observed ___ Partially observed ___ Observed ___ Observed _____

8. Manifests professional values for research: honesty, hard work, responsibility, self-realization, social commitment, leadership and professional ethics, teamwork and respect for intellectual property.

   Not observed ___ Partially observed ___ Observed ___ Observed _____

9. Uses informatics as an object of study and work tool for the development of their scientific-research activity.

   Not observed ___ Partially observed ___ Observed ___ Observed _____

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In order to consider the research competence of the master's degree student in MN evaluated in the AIP in the category of VERY GOOD (MB), the following indicators must be evidenced:

1. Possesses knowledge associated with the processes of scientific research associated with the solution of MNT problems in the AIP.

2. Shows an adequate development of research skills that allow the inquiry, systematization of theoretical foundations, generation, introduction and generalization of innovative alternative solutions to the problems of the application of NTM in the IPA during the assistance, teaching, health education (promotion, prevention) and administration.

3. Manifests qualities and values such as: honesty, hard work, honesty, perseverance, creativity, confidentiality, medical ethics and organization during the management of research projects associated with NTM in the IPA.

4. Manifests leadership, entrepreneurship, teamwork and uses informatics in the performance of scientific-research activity.

The student's professional research performance is considered in the category of GOOD (B) when he/she evidences the following indicators: 1, 2 and 4; and shows difficulties in indicator 3.

The student's professional investigative performance is considered REGULAR (R) when he/she evidences the following indicators: 1, 3; and shows difficulties in 2 and 4.

The student's professional research performance is considered in the category of DEFICIENT (D) when it does not reach the indicators foreseen for the category of regular.

This instrument was applied before introducing the research competence profile provided in the research, with Cronbach's alpha 0.718229. After the use of this profile, 0.784186 was obtained, which supports the reliability and internal consistency of the results obtained by means of this instrument.

The observation of the research performance of the master's students with the use of the proposed instrument before and after the introduction of the research competency profile provided in the research (Fig. 1) during the Research Methodology course was carried out to verify its level of effectiveness and the impacts achieved in the improvement of the research competency training of the master's student in MN at the AIP.

The results obtained were:

Table 1. Status of the research competence of the students of the master's degree in MN at the AIP before introducing the profile provided in the research.

Evaluative scales	Number	Percent (%)
Very good	1	2,0
Good	10	17,0
Fair	42	70,0
Poor	7	11,0

N= 60 Source: Observation Guide (instrument applied)

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As can be observed in the data of the table, it can be seen that the observation showed that the students manifest insufficiencies in the investigative competence.

The profile of the research competence was introduced during the academic, work education and research activities carried out by the students in the construction of the thesis during one academic year.

At the end of the academic year, the research competence of the master's degree students was evaluated again, after having developed the profile provided in the research.

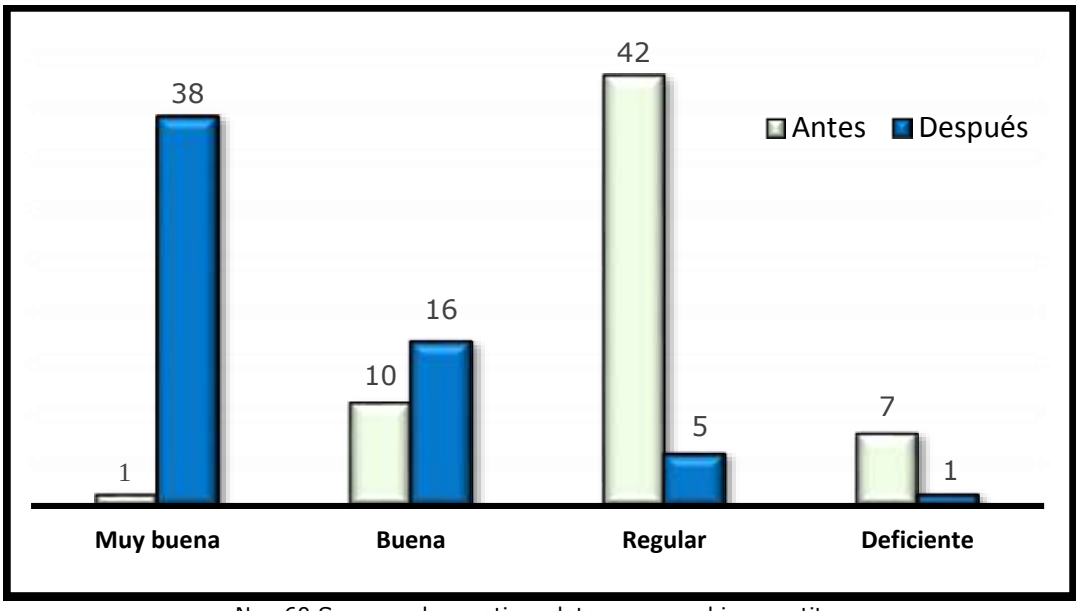
Improvements can be seen in the research competence demonstrated by the master's students after working with them on the profile contributed to the training program during one year of training. (Table 2)

Table 2. Status of the research competence of the students of the master's degree in MN in the AIP after applying the profile contributed in the research.

Evaluative scales	Number	Percent (%)
Very good	38	63,0
Good	16	27,0
Fair	5	8,0
Poor	1	2,0

N= 60 Source: Observation Guide (instrument applied)

The following graph shows a comparison of the input diagnosis (table 1) with the output diagnosis (table 2).



N = 60 Source: observation, data expressed in quantity.
p (X2) < α; p (X2) = 0.00003 < 0.05; statistically significant differences.

Graph 1. Result of the evaluation of the research competence of the students of the Master's degree in MNT in AIP before and after implementing the profile.

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After introducing and developing the research competence profile, improvements were observed in the application of the scientific method by the students to generate health care-teaching-education (promotion, prevention) and administrative alternatives aimed at solving problems in the application of MNT in AIP.

- From the graph, the following interpretations are made regarding the result of the evaluation of the research competence:
- From 1 student evaluated as very good in their research competence, it rose to 38, after applying the profile (Fig. 1), for an increase of 61,0 %.
- From 10 students evaluated as good in their research competency, it rose to 16 after applying the profile (Fig. 1), for an increase of 10,0 % with respect to their initial status.
- From 42 students evaluated as fair in their research competence, it decreased to 5 after applying the profile (Fig. 1), for a decrease of 62,0 % with respect to their initial status.
- From 7 students evaluated as deficient in their research competence, it decreased to 1 after applying the profile, (Fig. 1) for a decrease of 9.,0 % with respect to their initial state.

In order to determine whether the differences in the data obtained before and after the introduction of the competency proposal were statistically significant or not (Fig. 1), the Chi-square test (X2) was applied (Table 3).

Table 3. Results of Pearson's Chi-square test:

Chi-square	Degrees of freedom (gl)	p-value (X2).
70,1148	3	0,00003

It is shown that the value of p (X2) = 0.00003, which is below the assumed degree of reliability which is α = 0.05, so it is recognized that the differences obtained in the evaluative results of the evaluative results of the research competence of the MN master's student in the AIP are statistically significant and proves the relevance and validity of the proposal of the research competence profile provided in the research.

DISCUSSION

Postgraduate university training in health cannot only be linked to work,but, like all formal education, should be concerned with the person in his or her integrity, as a being in as a developing being and as a social subject. In this sense, although labor competencias competencies guarantee a professional's performance, they do not cover the full spectrum of the complete spectrum of the graduate's training, which also includes his or her personal and social formation.[5,6,7,8,9] This study shares the criteria proposed and, in line with them, it singles out the need to guarantee a suitable professional research performance in the graduate of the master's degree in MN at the AIP by providing the profile of his or her research work competence, an aspect not addressed in the research consulted.

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Labor competence is the capacity, quality of the worker to use the set of knowledge, abilities, skills, attitudes and values, developed through educational processes and work experience, for the identification and solution of the problems faced in their performance in a given area of work.[10,13,14,15]

Student professional competence has three major components that act in an integrative manner, namely: Key knowledge, essential skills, attitudes, and values.[15]

Possessing skills does not mean being competent. Competence does not reside in the capabilities that a person possesses, but in his or her mobilization to solve problems. Knowing, moreover, is not to possess, but to use; it is by putting an action into practice that one becomes competent. On the other hand, knowing how to do is not the routine application of the individual's knowledge, but is knowing how to act. Knowing how to act entails a set of actions where the execution of each one is dependent on the fulfillment of the whole.[15]

It is important to point out that competences are not the patrimony of a job position or of any curricular unit or program, but are attributes of the learner who incorporates individual and social elements in a learning trajectory that in each case is unique.[14,15] This criterion is shared in the study carried out, since research competence is an attribute that the master's degree student incorporates according to his individual and social needs, that is, it is a quality he possesses centered on the human being.

It coincides with the points of view and concepts previously stated and it is interpreted that the research competence of the master in MNT in AIP is a quality in which integrates knowledge of different nature: knowledge (knowing), skills (doing), values, attitudes, interests and motivations (being, being, living) aimed at solving problems of the application of the therapeutic modalities of MNT during AIP through the use of the scientific method, which are mobilized and expressed through their research performance.

Performance is the behavior of the learners, both in the educational, professional and technical order, as well as in the interpersonal relationships that are created in the training / care of the health / disease process of the population; in which, in turn, the psychosocial and environmental components have an important influence. [15] From this point of view, it is considered that the investigative performance is the way of manifestation by the master's degree student in MN in the AIP of the investigative competence that he/she possesses during the generation of innovative alternatives of solution to problems that arise in the application of their therapeutic modalities.

Competency-based training in the health sciences must be an open and flexible process of competency development. open and flexible process of professional competency development where, based on identified and standardized competencies competencies are identified and standardized, curricular designs are established, didactic materials, as well as professional development activities in the health units and services, are health services, which make it possible to guarantee effective professional performance [8,10,12,15].

It is considered that all competency-based training should be designed on the basis of increasing the quality of the professional to be trained.

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the quality of the professional to be trained and that he/she possesses all the knowledge, skills and values required to knowledge, skills and values required, so that they are able to identify, prevent and solve the various health problems, prevent and solve the various health problems of the population, in a humane and ethical manner. and ethically. These curricula must also be pertinent in correspondence with the needs of the existing health system.

with the needs of the existing health system.[7,10,11,16,17] We agree with these criteria since the research competence of the MN master's degree student in the AIP is based on the theoretical points of view referred to above.

The study conducted differs from researches that have addressed research competence in undergraduate[5] and graduate programs,[8,11,15,16] which, although they recognize competence as the integration of knowledge, skills and values, in the proposed profiles, due to their objectives, do not delve into research competence, specifically, for the student of the master's degree in MNTE at the AIP.

The research competence profile provided for the student of the Master's degree in MN at the AIP was elaborated on the basis of research studies carried out,[5,10,13,17,18] which has been systematized by the authors of the present research in line with the objectives of the master's degree program that confer its uniqueness, since they differentiate it from the aforementioned studies in the use of knowledge associated with scientific research (expression of the general) with an exit to the application of MNT in the AIP (expression of the particular) from the following lines of research:

1. basic research and preclinical studies aimed at determining the safety, effect and quality of MNT, prioritizing areas of non-communicable diseases and in the Primary Health Care setting.

2. Clinical trials aimed at validating the therapeutic use of MNT modalities approved by the National Health System.

3. Use of approved herbal medicines in the National Health System.

4. Therapeutic modalities of NTM based on natural or integrative medicine.

5. Health education (health promotion and prevention).

6. Integrated use of NTM in contingency situations including epidemics.

7. Neurophysiological studies in Natural and Traditional Medicine.

8. The training, teaching and teaching-learning of NTM in comprehensive patient care, both in undergraduate and graduate programs.

Another difference that the research has with respect to other studies[13,14,15,18] is the foundation of the features that distinguish the research competence, they are:

Indagative: by enabling the search for alternatives necessary to solve the problems manifested during the application of MNT in AIP, from the application of the scientific method in each of the lines of research.

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Argumentative: in a way that makes it possible to express in oral and written form arguments with scientific basis and the use of concepts that allow to base judgments and valuations, to demonstrate with security the domain that one has about the scientific-technological foundations that from the theoretical bases of the MNT and the application of its therapeutic modalities, contribute to solve problems in the AIP, besides the clarity and coherence with which the scientific foundations are offered in which the considerations are sustained that are arrived at as a result of the process of solution of health problems with this aspect of the Medicine.

Innovative: since it makes possible the discovery of novel aspects in the generation of therapeutic diagnostic protocols based on Natural or Integrative Medicine, procedures, strategies, manuals, training programs that contribute to increase the quality, sustainability, efficiency and effectiveness of AIP with the use of MNT from each of the lines of research.

Managerial: since it makes possible the management of research projects or research situations, which is assumed with mastery of the factors that allow pointing to the guarantee of its impact, to the validity of its hypotheses, to the justification and relevance of the problem under investigation, in short, to all those elements that validate these types of scientific-research activities carried out by the students of the master's degree.

Technological: it makes possible the access and consistent use of inputs, material resources and methodological and scientific-research didactic work means, with the objective of making optimal research results, or problem solving, both for their levels of contrast and verification, as well as for the speed in the processing of data and information in general.

Axiological: it is based on the expression of professional values related to the performance of the research activity: exigency in the application of the scientific method, willingness to work in teams, scientific honesty, scientific responsibility, leadership, entrepreneurship, social and institutional commitment, in which intellectual property is respected.

Behavioral: it makes possible the integration of those psychological processes that stimulate, sustain and guide the student's professional research performance, integrating the knowledge (being, doing, knowing, knowing how to be, living, living together) that make up the research competence.

CONCLUSIONS

The investigative competence constitutes a quality that the Master in Natural Medicine in Integral Patient Care should have, integrating knowledge of different nature associated to the application of the scientific method with an inquiring, argumentative, innovative, managerial, technological, entrepreneurial, axiological and behavioral character.

The evaluation carried out through the application of the pre-experiment and the Chi-square test (X2), showed at 95.0% confidence, that with the introduction and development of the research competence profile, the application of the scientific method to innovate, transform, improve or create therapeutic diagnostic protocols, teaching alternatives, promotion, health prevention and administrative management aimed at solving problems that arise in the application of therapeutic modalities of Natural Medicine in Comprehensive Patient Care is significantly improved in the master's degree student.

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Conflict of interest
The authors report no conflict of interest.

Authorship contribution
LAB: participated in conceptualization, research, project management, supervision, visualization, writing - original draft, writing - revision and editing.
MCB: participated in conceptualization, research, visualization, writing - original draft, writing - review and editing.
SENE: participated in conceptualization, research and writing - original draft.
VAH: participated in conceptualization, research, writing - original draft.
All authors approved the final version of the manuscript.
MES: participated in visualization, writing - original draft, writing - revision and editing.
JJCP: participated in visualization, writing - original draft, writing - revision and editing.

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