

Training of comprehensive general practitioners in understanding imaging reports

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ABSTRACT

The research is based on a didactic model from the relationship between the individual and the group, starting from the professional ability to understand imaging reports. It approaches a methodology with its structural and functional components, benefiting the training and socio-technical performance of health personnel in the Basic Work Groups. It offers a methodological material for mobile devices that guides teachers and General Practitioners for infocomprehension. Research methods and techniques were used. The feasibility of the research is corroborated by the results of the quasi-experiment, with the consensus of 22 specialists consulted.

Keywords: Imaging; Imaging Training; Imaging Report Comprehension; Infocomprehension

Introduction

The mission of the National Health System, through its governing body the Ministry of Public Health (MINSAP), is to direct, execute and control the application of the policy of the State and the Cuban Government in all matters concerning health as a right of the

people. It is essential to ensure. Not only the technical quality of health services in itself, but also that it is achieved through an adequate and close dynamic relationship between providers and users, and that it shows the highest quality index; particularly important are the criteria of personalized satisfaction offered by the population.

The project of the model of the family doctor and nurse serves as the theoretical-methodological basis of the research, which supports the precision of the professional profile of the Comprehensive General Practitioner and the design of the study plan of the Medicine career, where, as part of the system of professional skills, the medical diagnostic skill is declared, including the comprehension of the reports of the basic imaging diagnostic means.

Understanding (comprehension, from the Latin *comprehendere*) as a process according to García Alzola (1978, p. 42), implies "... to understand, penetrate, conceive, reach, discern (decode)"; to unweave meanings and reconstruct them in an intelligent, critical and creative way".

The insufficiencies reveal as a fundamental contradiction that there are no solutions available within the set of knowledge consulted on understanding and imaging reports; and on the other hand, its content and scope is not specified by means of a methodology in order to achieve a leap in the training of General Practitioners.

Based on the above, the insufficiencies in the comprehension of imaging reports by General Practitioners are specified as a scientific problem.

The training process of Comprehensive General Practitioners is established as the object of research.

Thus, the objective of the research is: to elaborate a didactic model expressed in a methodology for the comprehension of imaging reports.

The research is based on the dialectical materialist conception, from the use of different research methods and techniques.

The practical significance lies in the implementation of the methodology that contributes to the collaborative and interprofessional performance of the Basic Work Group. In addition, a system of workshops is contextualized and an application on digital image processing is offered as a tutorial for self-development in the process of infoimaging comprehension of General Practitioners.

Development

The category training is registered in the Larousse Dictionary of the Royal Spanish Academy (1996, p.193), as "(...) the action and effect of training". In the pedagogical field, several authors have dealt with this term; in the international context, Ruges, Mauro (1997); Villegas (2002); Calderón (1995) stand out; who link training to activities aimed at improving professional performance, for which it is necessary to provide knowledge, skills and attitudes in correspondence with the profession in the work scenario.

On the other hand, Valle Lima (2012, p. 199), referring to training in postgraduate education expresses, that "(...) it pursues the objective of enabling the professional and has as an essential step the diagnosis of training needs and at the end to perform some kind of evaluation to know what has been the result of it".

The study prepared by Spark and Loucks Horsley (1990, p. 3), recognizes the existence of training models and states that:

- The first model, individually oriented training, the teacher decides what to study and consult based on the determination of the needs found in his or her own professional development.
- The second model, of observation and evaluation, is based on suggestions and proposals that can enrich the work.
- The third model, of teacher development and improvement, seeks to overcome in correspondence with the problem that arises in the teaching scenario.
- The fourth model, professional training, where the teacher selects contents and activities that can help training, includes theoretical explorations, demonstrations in simulated situations and return of the result in the workplace.
- The fifth model, professional training, where the teacher researches and finds data to solve the problems presented.

The work presented assumes the last two models referred to the professional training where the teacher selects contents and activities and about the professional training where

the teacher investigates and finds data, for the possibility that both offer to provide an abstraction of the desired state aimed at optimizing the professional praxis of the specialist in General Comprehensive Medicine, with the precision of the needs and objectives to design the system of contents, methods, forms of organization and the corresponding collaborative and interprofessional evaluation.

The theoretical references assumed from the community of researchers in Imaging headed by Barrera Jay (2016), the authors' experiences for more than 30 years in assistance and teaching, as well as by the triangulation of workshops, review of documents, surveys, interviews and observation to the postgraduate training process allowed to specify the following insufficiencies:

In the practical order:

- Instrumental deficiencies in professional performance that allow assimilating the process of collaborative and interprofessional comprehension of imaging reports (programs, strategies, technologies, work methodologies, teaching and virtualization means).
- Little participation from the relationship between the individual (Comprehensive General Practitioner) and the group (Basic Work Group) considering the objectives and techno-scientific purposes in the understanding of imaging reports.

In the theoretical order:

- Limitations in the system of imaging techno-scientific knowledge related to its main concepts, laws, principles, rules, norms comprising up-to-date models or systems.
- Shortcomings in the conceptual mastery of collaborative and interprofessional work techniques appropriate for the training in imaging of the Comprehensive General Practitioner in different health contexts.

The referred insufficiencies reveal as a fundamental contradiction that there are no available solutions within the set of knowledge consulted on imaging comprehension and reports; and on the other hand, its content and scope is not specified by means of a methodology in order to achieve a leap in the training of General Practitioners.

The contribution to the theory lies in the foundation of the techno-scientific habilitation process through the systematization of a didactic model from the dynamics of the info-

imaging comprehension method with its structural and functional components, which benefits the training process of Comprehensive General Practitioners.

From the analysis of the study program of the specialist in General Comprehensive Medicine, expressed by Álvarez de Zayas (1999, p. 9) when addressing that:

(...) it is the first step of any formative process, where the model to follow is traced and the planning, organization, execution and control of the same is projected, in order to achieve the transformations in the process of formation of the professional that responds to the cultural changes of the world for the XXI century.

Thus, the aforementioned authors connect training with proposals aimed at providing knowledge to improve the professional's practice. In this sense, it is required cognitive strategies that offer knowledge and develop socio-professional skills that enable the possession of a responsible professional conduct in the professional activity.

It is considered, from the assumed referents, that the permanent techno-scientific qualification of the specialist in General Comprehensive Medicine enables the improvement of the professional practice in Primary Health Care, based on the conditions in the institutions, so as to determine the contents, participants, when and scenario where the training should be given. This facilitates that this training can be in correspondence with the real needs, from the precise determination of learning needs, self-improvement and methodological preparation as the center of these processes.

From the perspective of this proposal, it is considered necessary to improve the knowledge, skills and attitudes of the trainees for the indication of imaging studies and the understanding of their reports in the Primary Health Care scenario, as it strengthens the integral program of attention to the family to improve the quality of life of its members with the timely detection of those benign conditions that may cause irreversible complications; as well as to promote full health.

It is considered that the training of the specialist in General Comprehensive Medicine should have as guiding ideas the principles of education at work, so as to facilitate relevant learning in the relationship between the doctor-nurse-patient, the teacher and the learning group, in order to modify the health status of the population.

It is necessary to emphasize the role of the Basic Work Group where it is contemplated that its members interact in a collaborative and interprofessional way through the execution of academic, assistance and scientific activities; they contribute and share

interests, experiences, solutions, so that in each participant a common objective is reconfigured, and higher levels of activity and individual and group development are reached. Thus, the thesis that professional activity is a collective activity is highlighted, and therefore student learning is collaborative.

In this sense, it is necessary for the specialist in General Comprehensive Medicine to maintain contact with the object of his profession and thus achieve the incorporation of knowledge, skills and attitudes in the medical consultation, scenario where the aforementioned relationship is essential, as a way to ensure and strengthen comprehensive care to the family, under the fulfillment of the necessary professional ethical requirements to be considered for the indication of simple and contrasted conventional radiographies, ultrasound reports, computerized axial tomography and nuclear magnetic resonance in Primary Health Care, due to its relevance, the following requirements are proposed:

1. Legal procedures and execution of medical action during the teaching-learning process: the development of the process of indication of simple and contrasted conventional radiographies, Ultrasound reports, Computerized Axial Tomography and Nuclear Magnetic Resonance and the understanding of the imaging reports that requires an interactive communication between the teacher and the specialists in General Comprehensive Medicine, so that the known and consensual criteria are applied. Due to its ethical nature, techno-scientific communication should be horizontal, dialogic, empathic and effective, and should be carried out under the precepts of medical ethics.
2. Humanism: it emphasizes the dignity of all persons involved in the indication of imaging studies, taking into account the benefit-risk ratio; and includes consideration and respect for their rights, feelings and emotions.
3. Benefit for the user: requires that the process of indication, diagnosis and understanding of the results implies adopting medical conduct that respects the interests of those involved and society.
4. Flexibility: protects the intellectual freedom of the specialist in the indication, diagnosis and understanding of the results of the imaging reports and the enjoyment of the teacher during the teaching process.
5. Respect for autonomy: each participating agent has the right to reasonable independence in the performance of his/her role.

The methodological theoretical evolution according to Miranda (2011) seeks to specify the general movement of the historical development of the object and the field, in specific aspects, characterized to reveal the behavior over time of a process with a generalizing approach in the history of undergraduate and graduate education.

Within the content system of the current study plan E of the career, there is no specific subject for the teaching and learning of contents related to Imaging where the student is initiated in the study of images and propitiates the achievement of the systematization of the respective knowledge as part of the clinical cycle of the career.

It should be noted that, in relation to Imaging, the content of the program of the subject Clinical Propedeutics and Medical Semiology is structured in such a way that in the PEA the student appropriates the basic knowledge for the development of the skills of identification, interpretation and study of the most important symptoms, signs and syndromes of each apparatus or system, using the imaging diagnostic means.

According to Barrera Jay (2016, p. 12) states that:

In relation to the system of skills, in the program of the subject Clinical Propedeutics and Medical Semiology, it is stated as a general skill that the student should be able to identify normal imaging studies and radiological signs indicative of their main alterations; It can be inferred from this that it is implicitly stated that the student should use this knowledge together with the use of the clinical method to make a positive diagnosis of the most frequent symptoms, signs and syndromes, or to determine the investigative conduct and its correct interpretation of the most important symptoms, signs and syndromes of each apparatus or system.

This author emphasizes that this need is evident from the first year of the course in the disciplines of Human Morphophysiology, General Comprehensive Medicine, Psychology, which provide the necessary knowledge to begin the study of Imaging in the subject of Clinical Propedeutics and Medical Semiology (CPMSM), the systematization of which is given throughout the rest of the subjects of the practice of the profession.

In the third year of the course, collaborative and interprofessional methodological work is required from the group of professors of Imaging, Clinical Laboratory, PCSM, Medical Psychology II, Pharmacology I and II, and Internal Medicine, according to the general objectives of the course, academic year and main integrating discipline to achieve the preparation of the student for the integral medical care of the individual of the different

age groups. Therefore, it is essential for the student to develop professional diagnostic imaging skills.

The purpose of the student reaching the development of the diagnostic imaging skill is not inherent to one or two disciplines or subjects.

Regarding the postgraduate level, it is emphasized that in Cuba the specialty in General Comprehensive Medicine began in 1984, with the implementation of the family doctor and nurse program, the main axis of the health system that constitutes the foundation of the social approach to medicine, based on a holistic conception of undergraduate and postgraduate training.

This revolutionary process was preceded by the different models of community health care that emerged with the Triumph of the Cuban Revolution in 1959 as a reference in Cuba to the establishment of the specialty in General Comprehensive Medicine in 1985.

In order to analyze the historical evolution of the training of the specialist in General Comprehensive Medicine, the researcher proposes the period from 1984 to 2022 within the Revolution in Power, and recognizes as the initial milestone the emergence of the Family Doctor and Nurse Program in 1984,

In this sense, the following moments are considered:

- First moment (1984-1989). Organization of the training of the specialist in General Comprehensive Medicine.
- Second moment (1990-2010). Strengthening of the training of the specialist in General Comprehensive Medicine within the framework of program transformations.
- Third moment (2011-2022). The university polyclinic as a setting for the training of the specialist in General Comprehensive Medicine.

The following indicators are proposed for the study of its historical evolution:

- The level of treatment of imaging contents in the training of the specialist in General Comprehensive Medicine and the transformations that have occurred in the training of the specialist in General Comprehensive Medicine from the priorities of the different programs in Primary Health Care.

- The transformations that have occurred in the training of the specialist in General Comprehensive Medicine due to the priorities of the different programs in Primary Health Care.

Quantitative results in the implementation of the proposal

In the study carried out during three fiscal years (2020 to 2022), a substantial difference was observed in the results collected during the measurement of the dependent variable in the post-test based on a didactic model and its corresponding methodology from the relationship between the individual and the group expressed in the conditions of permanent transformations of the health services.

The results obtained in the analysis of the instruments applied showed 62.7% in the pre-test and 92.5% in the post-test.

Once this result is achieved, the feasibility of reaching the external validity of the achievements obtained in the research is verified, that is to say, its possible generalization in the techno-scientific training processes of the Integral Medical General Practitioners in the understanding of imaging reports, from the relation of the individual and the group, in the conditions of permanent transformations of the Primary Health Level in Cuba.

When performing the statistical analysis of the instruments applied during the quasi-experiment, the feasibility of the proposed methodology is corroborated from the quantitative point of view with an effectiveness of the proposal of 29.8 %, that is to say, the objectives and goals are achieved with greater rationality of time and in the use of financial, material, technical and human resources according to performance indicators, which is confirmed in the socio-professional activity of the Basic Working Group.

Qualitative results of the implementation of the proposal

The verification of the validity of the training methodology is corroborated by the qualitative evaluation of the actions implemented to increase the understanding of imaging reports by Integral Medical General Practitioners based on a didactic model and its corresponding methodology in the conditions of permanent transformations of the health services and by the consensus of the criteria offered by the 22 specialists consulted.

The results can be summarized as follows:

Collaboration, consensus and a climate of trust are favored in the collaborative and interprofessional training activity of Integral Medical General Practitioners in the process

of understanding imaging reports in the three Basic Work Groups belonging to the 4 de Abril polyclinic of the Guantánamo municipality.

The interpretation of the meaning of useful knowledge in the different technologies in the activity of the Basic Work Groups benefits, in which a greater identification of the personnel in the different services of the polyclinic is appreciated.

- By contributing to the implementation of action research, it contributes to the continuous improvement of the collaborative and interprofessional performance of the Basic Work Groups, where the reinterpretation of the agreed activities is assisted. In addition, socio-professional skills at the primary health level are integrated and synthesized.
- The processes of reconceptualization of knowledge, skills and values in the reinterpretation of the socio-professional activity in the Basic Working Groups are deepened in a participative way, as well as in the role of collaboration and interprofessionalism in the integral care of patients.
- The use of specialized networks and available digital tools is stimulated as a way for collaborative and interprofessional work according to the objectives and goals of the Basic Working Group at the Primary Care Level.

Validation of the level of feasibility of the proposal by specialists' criteria.

The feasibility of the validity of the didactic model and its corresponding methodology for the understanding of imaging reports is ratified by means of the consensus of the criteria offered by the 22 specialists consulted.

The Delphi Method was used to select these specialists, specifying their level of competence evidenced by their knowledge and capacity for techno-scientific argumentation about the research problem, as well as their proven experience in the performance at the level of health being addressed.

In the strata, it can be seen that the selection of specialists ranges from those who have a high scientific level and are in charge of elaborating theories, to those who have a fundamentally practical level and are responsible for health services in Primary Care.

The strata of the 10 subjects with a high theoretical level were broken down as follows: 5 Doctors in Pedagogical Sciences, 5 Masters in different specialties of medical knowledge.

On the other hand, in the strata with a preferably empirical level, 12 subjects with prestige in their performance and accredited by the evaluations received in the last five years were included. For this purpose, no less than ten years of experience in the activity they perform were considered.

In relation to the collection of the specialists' criteria, the main characteristics and the elements contained in the new training proposal were explained to them, i.e.: the system of topics, objectives, contents, methods/means, methodological indications and evaluations. In addition, the training and performance levels of the model were specified, as well as its distinctive features and purposes.

Six workshops were convened to make partial and final evaluations, make adjustments and consider the feasibility of the proposal of the didactic model and its methodology for its perfection and validation based on a successive process of approaches through the conciliation of authorized opinions.

The level of agreement of the 22 specialists consulted was recorded on a scale of five values: strongly agree, agree, neither agree nor disagree, disagree and strongly disagree.

These values were given a score ranging from five to one, so that the scale of strongly agree was given a score of five points and the scale of strongly disagree was given a score of one.

Precisely, the 22 specialists consulted gave an average score between four and five points to the statements with positive criteria on the proposal. These results have allowed the researcher to arrive at inferences for the extrapolation of the methodology for the technoscientific training of Integral General Practitioners in the understanding of imaging reports from a didactic model from the relationship of the individual and the group expressed in the conditions of permanent transformations of health services in Guantánamo.

The authors of this article believe that the didactic model and its methodology are supported by the consensus of positive opinions regarding the usefulness and potential of the scientific work of the consulted specialists and by the functional impact of the proposal in the techno-scientific training and in the collaborative and interprofessional performance of the Comprehensive General Practitioners and the Basic Work Group.

Conclusions

The unity of the philosophical, sociological, technological, psychological, pedagogical, didactic, higher medical education and legal foundations allows taking advantage of the strengths of the integration of the interprofessional contents for the understanding of imaging reports in Primary Health Care in the contextualized design of the imaging training of General Comprehensive Physicians, as well as the possibilities of the General Comprehensive Physicians and the potentialities of the Basic Work Group in the process of collaborative and interprofessional professionalization.

The effectiveness of the suggested didactic model is evidenced in the improvement of the technoscientific training process in the understanding of imaging reports, which starts from the dialectic conception of the categories activity and communication, from the individual and the group, as well as the recognition of the insufficiencies manifested in the training level -as a theoretical basis- and in the performance level -as a practical manifestation-, which are improved through the implementation of the info-imaging comprehension method aimed at achieving a harmonious transition from quasi-comprehension to meta-comprehension in the performance of the Basic Working Group. The didactic model and the corresponding methodology for the development of the process of comprehension of imaging reports by General Practitioners are corroborated by the quantitative-qualitative results obtained in the practical application of the experience and by the consensus of the criteria offered by the specialists consulted, which validate the feasibility of the proposal in the improvement of the techno-scientific training of General Practitioners in the understanding of imaging reports from a didactic model based on the relationship between the individual and the group expressed in the conditions of permanent transformations of health services.

The proposed methodology, which meets the requirements of Higher Medical Education, offers ways and moments to strengthen the dynamics of the training process of Comprehensive General Practitioners in the understanding of imaging reports, based on the dialectic relationships of the didactic categories objective, content and method, through which the individual and group protagonism is enhanced in the different spaces and levels of training and performance in Primary Health Care.