




Professional development program for angiologists on treatment of peripheral vascular diseases with the use of novel techniques

Programa de superación profesional para angiólogos sobre tratamiento de enfermedades vasculares periféricas con técnicas novedosas

Programa de aperfeiçoamentoprofissional para angiologistas no tratamento de doenças vasculares periféricas com técnicas inovadoras

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ABSTRACT

Introduction: professional development is a set of educational actions linked to update knowledge and professional skills and attitudes in correspondence with the professional problems met. In Ciego de Avila, Cuba, specialists in Angiology and Vascular Surgery lack professional improvement activities in general, systematic and collective participation way, straightly performed or oriented from the University of Medical Sciences. **Objective:** to design a professional development program for specialists in Angiology and Vascular Surgery on the treatment of peripheral vascular diseases with the use of novel techniques based on the professional problems met. **Method:** a qualitative research with descriptive study was carried out in Angiology and Vascular Surgery specialists linked directly to the patient care service in 2020. It worked with the whole

population comprised of 19 specialists. A survey was applied and descriptive statistics were used to organize and classify the quantitative indicators obtained. **Results:** knowledge on how to use the novel techniques in peripheral vascular diseases treatment proved to be inadequate at a pointed level of Less adequate and Inadequate in more than 90% of studied specialists. **Conclusions:** the professional development program is provided with characteristics of an open system and flexibility, which facilitates its constant redesign to adapt to the specific conditions of the contexts required.

Keywords: professional development; permanent Angiology training; peripheral vascular diseases

RESUMEN

Introducción: la superación profesional es un conjunto de acciones de carácter educativo vinculadas con la actualización de conocimientos y el desarrollo de habilidades y actitudes profesionales en correspondencia con la identificación de problemas profesionales. En Ciego de Ávila, Cuba, los especialistas de Angiología y Cirugía Vascul ar carecen de actividades de superación profesional de forma general, sistemática y de participación colectiva, dirigidas u orientadas desde la Universidad de Ciencias Médicas. **Objetivo:** elaborar un programa de superación profesional del especialista en Angiología y Cirugía Vascul ar para el tratamiento de las enfermedades vasculares periféricas con técnicas novedosas, a partir de insuficiencias identificadas. **Método:** se realizó una investigación cualitativa con un estudio descriptivo en especialistas de Angiología y Cirugía Vascul ar de la provincia de Ciego de Ávila, vinculada directamente con la atención a pacientes, en el año 2020. Se trabajó con toda la población compuesta por 19 especialistas. Fue aplicada una encuesta y se utilizó la estadística descriptiva para organizar y clasificar los indicadores cuantitativos obtenidos. **Resultados:** la preparación para la aplicación de tratamiento con técnicas novedosas en las enfermedades vasculares periféricas se encontró como insuficiencia en nivel de Poco adecuado y No adecuado en más del 90 % de los especialistas. **Conclusiones:** se aporta un programa de superación profesional como sistema abierto, de carácter flexible, que facilita su rediseño constante para adaptarse a condiciones específicas de los contextos de aplicación.

Palabras clave: superación profesional, formación permanente angiología, enfermedades vasculares periféricas

RESUMO

Introdução: o aperfeiçoamento profissional é um conjunto de ações educativas vinculadas à atualização de conhecimentos e desenvolvimento de habilidades e atitudes profissionais em correspondência com a identificação de problemas profissionais. No Ciego de Ávila, Cuba, os especialistas em Angiologia e Cirurgia Vascul ar carecem de atividades de aperfeiçoamento profissional de forma geral, sistemática e de participação coletiva, dirigidas ou orientadas pela Universidade de Ciências Médicas. **Objetivo:** desenvolver um programa de aperfeiçoamento profissional do especialista em Angiologia e Cirurgia Vascul ar para tratamento de doenças vasculares periféricas com técnicas inovadoras, a partir das insuficiências identificadas. **Método:** foi realizada uma investigação qualitativa com estudo descriptivo em especialistas de Angiologia e Cirurgia Vascul ar na província de Ciego de Ávila, diretamente vinculados ao atendimento ao paciente, no ano de 2020. Trabalhamos com toda a população composta por 19 especialistas. Aplicou-se um sorveu e utilizou-se estatística descritiva para organizar e classificar os indicadores quantitativos sob tudos. **Resultados:** a preparação para a aplicação do tratamentocom nova técnicas nas doenças vasculares periféricas revelou-se insuficiente ao nível de Pouco adequado e Pouco adequado em mais de 90% dos especialistas. **Conclusões:** um programa de a perfeição amento profissional é fornecido como um sistema aberto, de natureza flexível, o que facilita seu redesenho constante para se adaptar às condições específicas dos contextos de aplicação.

Palavras chave: aperfeiçoamento profissional, treinamento permanente em angiologia, doenças vasculares periféricas

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INTRODUCTION

Professional development is a set of actions of educational nature, linked to the updating of knowledge, the development of professional skills and the formation of values in the area of pedagogy, in correspondence with the identification of professional problems.^(1,2) It is a pedagogical process that is not reduced to the teaching-learning process present in the course of it, but includes other formative and developmental processes closely linked to the present or future work activity of the professional who accesses its various organizational forms.^(3,4)

The dynamics of professional development is based on a systematic succession of learning activities in a specific historical-cultural context, of construction and social reconstruction of knowledge, through activity and communication, where the professional experience of those who participate generally have an important place in the multiple exchanges that take place; it is transformative, not only of the object of learning and its environment, but also of the subjects who are part of it, and is conceived from the understanding that it is possible to learn and develop throughout life.^(3,4)

University academic processes, when developed from methodological perspectives, acquire spaces directed towards the preparation of participants through didactic activities. In the medical-care contexts, the link with professional profiles is facilitated and allows on-the-job training⁽⁵⁾, so it is considered important to take into account this perspective in the professional development of the specialist in Angiology and Vascular Surgery.

In the province of Ciego de Avila, specialists in Angiology and Vascular Surgery lack general, systematic and collective participation professional improvement activities, directed or oriented from the University of Medical Sciences. That is why the need arises to look for solutions that allow these specialists to receive professional improvement, with the optional opportunity of having it in the workplace,^(2,3) conceived and executed in coordination with the university. Thus, professional development becomes a fundamental tool,⁽¹⁾ in this case, for the application of novel treatments in peripheral vascular diseases.

In view of the above, the scientific problem is stated as follows: How to contribute to the professional development of the angiologist in the treatment of peripheral vascular diseases with novel techniques?

The objective of the research is to elaborate a professional improvement program for the specialist in Angiology and Vascular Surgery in the treatment of peripheral vascular diseases with novel techniques, based on identified insufficiencies.

METHOD

A qualitative research was carried out with a descriptive study in specialists of Angiology and Vascular Surgery of the province of Ciego de Avila, directly linked to patient care, in 2020.



The study had a dialectical hermeneutic approach that facilitated the interpretation of the theoretical, tendential and empirical data from its comprehension and explanation, as a result of the different levels of epistemological and methodological systematization.⁽⁶⁾

We worked with the entire population, composed of 19 specialists, for the characterization of the current state of the dynamics of the professional improvement process of the specialist in Angiology and Vascular Surgery, for the treatment of peripheral vascular diseases by means of novel techniques.

Theoretical level and functional structural systemic methods were used for the elaboration of the program, which expressed the logic or succession of procedures followed by the researchers in the construction of knowledge, consequently, with the General Theory of Systems. The survey (supplementary file) was used as an empirical method to characterize the specialist's level of preparation on the application of novel techniques, such as regenerative medicine, in the treatment of peripheral vascular diseases.

Descriptive statistics were used to organize and classify the quantitative indicators obtained in the measurement. The results were presented in frequency distribution tables.

The research is part of the result of the research project: "The teaching-learning process in Universities. Challenge for its optimization from self-training". University of Ciego de Avila "Máximo Gómez Báez", Cuba. Doctorate Program in Education Sciences at the University of Ciego de Avila, Cuba.

RESULTS

As shown in Table 1, the level of preparation of the specialist in Angiology and Vascular Surgery for the application of treatment for peripheral vascular diseases with novel techniques was evaluated between the ranges of Poorly adequate and Inadequate in more than 90% of the specialists in all indicators.

The identification of these inadequacies allowed the elaboration of a professional improvement program from the work place of the specialist in Angiology and Vascular Surgery for the treatment of peripheral vascular diseases with novel techniques.



Table 1. Level of preparation of specialists on the application of the novel technique in the treatment of peripheral vascular diseases

Indicators	Evaluation					
	Adequate		Poorly adequate		Inadequate	
	No.	%	No.	%	No.	%
Mastery of new techniques in the hospital where he/she works.	1	5.26	7	36.84	11	57.90
Degree of information on new techniques in the treatment of peripheral vascular diseases.	-	-	9	47.36	10	52.64
Level of guidance received for professional improvement on novel techniques.	1	5.26	14	73.69	4	21.05
Level of satisfaction with the development of skills from the workplace for the application of novel techniques in the treatment of peripheral vascular diseases.	1	5.26	-	-	18	94.74

Source: Survey to specialists.

Rationale

The program took into account the need for the professional improvement of the angiologist from the workplace, in order to update him/her in the use of new techniques in the treatment of peripheral vascular diseases.

In this training process, the appropriation of contents is developed in dialectic unity with the systematization of investigative-attentional skills, through the links: updating in basic contents for vascular diagnosis; formative orientation for the diagnosis of peripheral vascular diseases and their informational argumentation; cognitive stimulation for the selection of the treatment of peripheral vascular diseases with the use of novel techniques, from the attentional-investigative point of view.

These links express the stages or moments through which the professional improvement of the specialist in Angiology and Vascular Surgery for the treatment of peripheral vascular diseases through the use of novel techniques takes place, so they correspond to the levels established in the program. They do not occur in a linear fashion, but are interrelated to achieve the desired results.

The qualities of this training process emerge from the dimensions (cultural-research, methodological-research, professional-research), which are defined in the model in each link, from the triads formed by the relationship between the configurations.

These qualities are an expression of the academic-research-attentional character of this training process, which is developed from the workplace and through the use of the research method as the basis of progress, that is manifested in the professional improvement of the specialist in Angiology and Vascular Surgery for the care of peripheral vascular diseases with the use of novel techniques.



The fundamental relationships: relationship of updating the specialist in basic knowledge from the reconstruction of experiences and bibliographic research; relationship of formative orientation from the attentional practice and the search for information for the diagnosis of peripheral vascular diseases; relationship of integration of cognitive meanings for the selection of the treatment of peripheral vascular diseases with the use of novel techniques and their corroboration from the interpretative heuristic activity; were taken into account in each of the actions that were defined in the different levels of the program.

Characterization of the problem addressed

At present, specialists in Angiology and Vascular Surgery in the province of Ciego de Avila show insufficiencies for: the application of new treatments, the assistance of the complications produced, the follow-up of patients who present peripheral vascular diseases; therefore, it was required the design of actions that make it possible to contribute to their pertinent performance.

Objective: to contribute to the professional improvement of the specialist in Angiology and Vascular Surgery of the General Teaching Hospital "Dr. Antonio Luaces Iraola" of Ciego de Avila, in novel techniques for the care of peripheral vascular diseases from the workplace.

Initial preparation

- Selection of the group of specialists who will coordinate the professional improvement program.
- Meeting with specialists in Angiology and Vascular Surgery from the Hospital "Dr. Antonio Luaces Iraola" in Ciego de Avila and the Hospital "Roberto Rodríguez" in Morón, for the presentation of the training program and exchange of criteria.
- Exchange with specialists in Angiology and Vascular Surgery from both hospitals, for the identification of strengths and weaknesses in their training for the care of peripheral vascular diseases.
- Specialists commitment with their professional improvement, acting from the motivation coming from the recognition of the existence of effective novel techniques, which have been little studied and applied in the context.
- Planning of professional improvement in correspondence with the weaknesses found and the real possibilities of the participants.
- Identification of the material and human resources required for the application of the program.

Action planning

Level 1: Updating in basic contents for vascular diagnosis from an attentional-research point of view.

Objective: to contribute to the updating of the specialist in Angiology and Vascular Surgery on basic contents for vascular diagnosis from the deepening of bibliographic research.



Actions to be developed:

- Give a lecture on vascular diagnosis by an experienced specialist.
- Show a video on vascular diagnosis.
- Debate on the contents of the video.
- Conduct a bibliographic search on the subject and prepare a paper.
- Conduct workshop-discussion on the searches carried out since the presentation of the papers.

Level 2: Formative orientation for the diagnosis of peripheral vascular diseases and their informational argumentation from the attentional-investigative point of view

Objective: to contribute to the updating of the specialist in Angiology and Vascular Surgery in contents related to the diagnosis of peripheral vascular diseases from the formative orientation for the diagnosis and its informational argumentation.

Actions to be developed

- Project a video on vascular disorders: prevention and treatment.
- Conduct a discussion of a modeled clinical case where the patient's vascular condition is presented and use the brainstorming technique to make the diagnosis with solid arguments.
- Conduct a workshop to present the basis of the diagnosis of a real clinical case, from the interpretation of each specialist from their experience and the existing information on the type of vascular condition.

Level 3 Cognitive stimulation for treatment selection of peripheral vascular diseases using novel techniques, from the attentional-investigative aspect

Objective: to contribute to the updating of the specialist in Angiology and Vascular Surgery in novel techniques for the treatment of peripheral vascular diseases, from the integration of cognitive meanings for the selection of treatment and its corroboration in the interpretative heuristic interactivity.

Actions to be developed:

- Project video on novel techniques for the treatment of peripheral vascular diseases, example: regenerative medicine.
- Conduct a workshop on the rationale for solutions to a clinical case from the interpretation of each specialist based on their experience and the study conducted to select the type of treatment, medical or surgical, and the most appropriate technique.
- Conduct a scientific workshop on novel techniques for the treatment of peripheral vascular diseases.
- Make a compilation of the papers presented to serve as a reference for specialists in Angiology and Vascular Surgery in the treatment of peripheral vascular diseases.



Bibliography

Basic and complementary bibliography will be provided according to new techniques for professional improvement in the workplace.

Resources for its implementation

The on-the-job professional development program is developed at the General Teaching Hospital "Dr. Antonio Luaces Iraola" of Ciego de Avila, with real didactic means (the patient), a classroom for lectures and scientific debates, with projector and computer.

Material and administrative support for the program

Updated bibliography

Internet-connected computers.

Overhead projector for the presentation and follow-up of the specialists

Virtual Classroom with mobile access to facilitate self-management of learning and autonomy in the study for lifelong learning

Database for monitoring activities and participants

Evaluation

The purpose of the control and evaluation of the professional development program for specialists in Angiology and Vascular Surgery is to systematically assess the fulfillment of the actions planned to mitigate the insufficiencies detected in the performance of this professional, so as to contribute to his preparation in new techniques for the care of peripheral vascular diseases; as well as the transformations achieved in the specialist.

The following indicators will be used to evaluate the relevance in the application of the program:

- Degree of compliance with the objectives at each level and in general.
- Degree of compliance with the actions at each level.
- Transformations achieved in the specialist's actions.

Obstacles may arise in their application, so it is necessary to take into account the possibility of reorienting actions, changing methods or means, in correspondence with the demands of the context. The application of the actions will lead to transformations in the process of professional improvement of the specialist in Angiology and Vascular Surgery for the treatment of peripheral vascular diseases, its verification will be carried out taking into account the following indicators:

- Relationship between academic-research and assistance in the professional development of the angiologist.
- Methods used in the professional development of the angiologist.
- Forms of professional development of the angiologist.



To measure the transformations achieved in the specialist, the following indicators are taken into account:

- Degree of precision in the application of novel treatments.
- Relevance of the assistance of the complications produced.
- Follow-up of treated patients.

At the end of the application of the program, an integral evaluation of the development of all the processes and the transformations achieved is carried out, for the elaboration of a summary of the inaccuracies detected and the relevance of the instrument, which makes it possible to improve the program for future applications and its generalization in other provinces. The report contains the following aspects:

- Analysis of the fulfillment of the actions proposed for the improvement of the professional development process.
- Transformations achieved in the professional development process.
- Transformations achieved in the performance of specialists.
- Analysis of the deficiencies detected.
- Solutions proposed to minimize inadequacies.

At the end of the postgraduate course, participants are asked to write three sentences about positive, negative and interesting aspects they observed during the training, which will enrich the report.

DISCUSSION

In this research, the results obtained in the characterization of the level of preparation of the specialist in Angiology and Vascular Surgery on the application of novel techniques in the treatment of peripheral vascular diseases, revealed that only one specialist participates in national and international activities of professional development, which are not replicated at municipal and provincial level, nor are development activities carried out at the University of Ciego de Avila, all of which infers the need for professional improvement in these specialists and the development of the Program for this purpose.

In the educational field, a program is understood as the organization and sequencing of contents and novel actions conceived in a systemic and flexible manner, oriented to make the subjects involved capable of organizing, directing and influencing the transformation of the training process under study. Among its fundamental characteristics, it should be preventive, corrective, systemic, contextualized, procedural and integrated. This instrument, as a type of scientific result, emphasizes the orderly and scientifically based projection of a better way of carrying out the educational activity under analysis.^(4,7)



For the elaboration of this program as a scientific result, Cabré was assumed in the structuring: introduction or rationale, characterization of the problem it addresses, objective, areas that comprise it, glossary or explanation of the terms that integrate it, bibliography or resources for its implementation and its evaluation.⁽⁷⁾ The relationship between the appropriation of contents and the systematization of investigative-assistance skills was also taken into account.

The program was considered an open system. Structural levels were determined, which account for a hierarchy of levels of different complexity, revealing qualities, regularities and specific laws, in the relationship of each lower level included in the higher level, and should be considered as a component element of the latter, which was identified with the recursiveness and hierarchization of the system.

On the other hand, the potentiality of contributing to the professional improvement of the specialist in Angiology and Vascular Surgery from its actions, accounts for the synergy manifested by the professional improvement program, as the property of reaching qualities that are the result of the integration of the component elements and are not manifested in the elements separately.

Entropy could be observed when there were insufficiencies in the preparation of the teaching staff that coordinates the training or the non-recognition by the specialists of the need for training. In order to contribute to the dynamic balance of the system, homeostasis, the potentialities of the methodological preparation work developed in order to instruct the teachers (specialists who coordinate the training) on the need to prepare the specialists in the use of novel techniques for the treatment of peripheral vascular diseases, based on on-the-job training and scientific research, were used.

The autopoiesis was given in its flexible character, which facilitated its constant redesign to adapt to specific conditions of the application contexts. The synergy lay in the fact that the actions contributed in an integrated way to the professional improvement of the specialist in Angiology and Vascular Surgery for the treatment of peripheral vascular diseases, from the relationship established between the appropriation of contents and the systematization of research-attentional skills.

Professional development from the workplace contributes to the appropriation of know-how and know-how-to-be skills by the specialists. The intention is that they can demonstrate professional competencies in their work performance, which respond to real professional improvement needs.^(8,9,10,11) The objective is to present pedagogical strategies that combine the organizational forms of the postgraduate course, on-the-job training and professional workshops on specific contents,^(8,9,12) in this case, of novel treatments in peripheral vascular diseases.

CONCLUSIONS

The level of preparation of the specialist in Angiology and Vascular Surgery for the application of treatment for peripheral vascular diseases with novel techniques was evaluated as Poorly Adequate and Inadequate in most of the specialists.



A professional improvement program is provided as an open system, flexible in nature, which facilitates its constant redesign to adapt to specific conditions of the application contexts.

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