

REVIEW

by Assoc. Prof. Teodora Nikolaeva Evtimova, Ph.D.

Department of Health Care, Shumen Affiliate of the Medical University of Varna

on the dissertation titled:

Competencies and Roles of the Nurse as Part of the Interventional Cardiology Team

prepared by the full time-doctoral student:

Teodora Radeva Dimitrova

for obtaining the educational and scientific degree of **Doctor**

Field of higher education: **7. Health and Sports**

Professional subfield: **7.4. Public Health**

Specialty: **Health Care Management**

Order No. R-109-428, dated 04.12.2024 of the Rector of Medical University of Varna appointed me as a member of the Scientific Jury, and according to Protocol No. 1, dated 12.12.2024 as a reviewer in the procedure for awarding the educational and scientific degree of Doctor to Asst.Prof. Teodora Radeva Dimitrova, a full-time doctoral student in the doctoral programme of Health Care Management.

Procedure details

Asst.Prof. Teodora Radeva Dimitrova was enrolled as a full-time doctoral student in the doctoral programme of Health Care Management in the Department of Health Care, Faculty of Public Health at the Medical University of Varna. Her thesis supervisor is Prof. Sonya Toncheva, Ph.D., D.Sc.

Protocols for successfully passed doctoral minimum exams dated 25.04.2023, in accordance with Order No. R-109-231, dated 10.04.2023 of the Rector of the Medical University of Varna, and proficiency in a foreign language at level B1, according to Order No. R-100-433, dated 26.07.2022, have been presented.

Based on the decision of the Departmental Council of the Department of Health Care, Faculty of Public Health, regarding readiness for public defense, dated 12.11.2024, and the decision of the Faculty Council of the Faculty of Public Health, Asst.Prof. Teodora Radeva Dimitrova was discharged from her enrollment status with the right to defend her dissertation by Order No. R-109-428, dated 04.12.2024 of the Rector of the Medical University of Varna.

Doctoral student's biography and career progression

Teodora Radeva Dimitrova completed her semi-higher medical education in Nursing at the Semi-Higher Medical Institute of Shumen in 1997. In 2000, she obtained a Bachelor's degree in Social Pedagogy from Episkop Konstantin Preslavski University of Shumen. In 2019, she earned a

Master's degree in Health Care Management from the Medical University of Varna. In 2022, she obtained a specialty in Clinical Social Work.

Her professional career began in 1997 at the Emergency Medical Center in Shumen. She later worked in the ENT department at the Multi-profile Hospital for Active Treatment - Shumen AD. In 2013, she started working as an IR nurse at the Madara Specialized Hospital for Active Treatment in Cardiology EAD, Shumen.

Since 2020, after a competitive selection, she has been appointed as a Lecturer at the Department of Health Care at the Shumen Affiliate of the Medical University of Varna. In the department, Asst.Prof. Dimitrova conducts practical exercises in disciplines that form professional practical skills, clinical practice, and pre-graduation internships for students in the Nursing specialty.

She has participated in international and national conferences, forums, and seminars. Her publications are in the Health Care journal and electronic collections of reports from scientific forums. She is a member of the Bulgarian Association of Health Professionals, the Bulgarian Public Health Association, and the European Public Health Association (since 2020). She is proficient in Russian, both written and spoken.

General characteristics of the dissertation

The dissertation presented by Asst.Prof. Teodora Dimitrova is 147 pages long, with the standard structure for its professional subfield, divided into five chapters (I. Literature Review – relevance of the problem; II. Objectives, Tasks, and Methodology; III. Results and Discussion; IV. Model of the Modern Interventional Radiology Nurse; V. Conclusions, Contributions, Proposals, and Recommendations), bibliography, and 6 appendices. A good balance between the different parts has been achieved.

The scientific work and its results are illustrated with 61 figures and 19 tables. The bibliography includes 171 literary sources, of which 45 are in Cyrillic, 104 in Latin, and 23 internet sources.

Relevance of the subject

The doctoral student has focused her scientific interest on a relevant and socially significant issue: the need to enhance the competencies and expand the roles of nurses within interventional cardiology teams. This dissertation has the potential for real-world practical application.

Interventional cardiology in Bulgaria is a relatively young but developing sector in healthcare, significantly contributing to the health and quality of life of patients with cardiovascular diseases. With advances in technology and specialist training, this sector can offer high-quality treatment and help reduce mortality from heart diseases.

The dissertation is particularly relevant because it proposes a comprehensive approach to integrating nurses into interventional cardiology teams.

Based on an analysis of the certification and training of IR nurses in the USA, Austria, New Zealand, some European countries, and Bulgaria, as well as her own research and her clinical experience, Asst.Prof. Teodora Dimitrova presents a self-developed **Model of the Modern Interventional Radiology Nurse** and a **Protocol for the Roles of the Interventional Radiology Nurse**.

The increasing diagnostic and therapeutic value of interventional procedures for patients with cardiovascular diseases creates challenges for the education and preparation of nurses in this field. This trend necessitates precisely performed medical activities, professional competence, and effective professional communication – challenges for the nurse as part of the interventional cardiology team.

I find the dissertation relevant and suitable for defense.

Literature

review

Chapter I provides a thorough and scientific examination of the medical and social significance and classification of acute myocardial infarction, its causes, and risk factors. It also presents a retrospective look at the development of interventional cardiology in Bulgaria, which began in the 1970s and continued over the following decades. A comparative analysis of the experience, certification, and training of IR nurses in the USA, Austria, New Zealand, and some European countries is conducted. In Bulgaria, nurses practicing in interventional cardiology face significant challenges, primarily related to their training and certification, which is a crucial step towards ensuring quality and safe care. This preparation protects patient health, supports medical staff, and aligns with international best practices in medicine.

High demands are placed on nurses working in interventional cardiology, emphasizing qualities such as diligence, reliability, emotional stability, patience, teamwork skills, creativity, a desire for continuous improvement, and physical endurance. Nurses who are part of the interventional cardiology team must be highly specialized experts capable of predicting and responding appropriately in specific situations, managing specialized equipment. This necessitates clear regulations and mechanisms for creating specialized training programs and certification, which are currently lacking in Bulgaria.

For the development of the literature review, the author relies on sufficient sources, skillfully analyzing them and demonstrating a deep understanding of other authors' opinions on the chosen problem.

Chapter II presents the objective, tasks, and methodology of the scientific study. This objective is clearly defined: *"To analyze the core competencies of the nurse as part of the interventional cardiology team and, based on this, to propose the optimization of specific nursing activities by developing a Model of the Modern Interventional Radiology Nurse and implementing a Protocol aimed at minimizing errors."*

Eight tasks are outlined to achieve the objective, covering all aspects of the doctoral student's scientific research activity. Three working hypotheses are formulated, corresponding to the tasks set. The subject, object, and scope of the study in six medical institutions with interventional cardiology clinics/departments are correctly presented. The coordination of the study (stages,

activities performed by the doctoral student, applied tools, time, and place) is presented in tabular form (Table 7).

The study design includes theoretical and empirical research. The total amount of respondents is 196, divided into three groups:

- **First group – patients**, electively hospitalized in interventional cardiology clinics/departments (**n=130**)
- **Second group – nurses** working in angiography laboratories in interventional cardiology clinics/departments (**n=35**)
- **Third group – experts** - interventional cardiologists, senior nurses working in interventional cardiology clinics/departments (**n=31**)

The tools are developed by the author and ensure the reliability of the applied diverse methods (documentary, historical, SWOT analysis of the professional development of nurses practicing in the IR suite, survey method, and in-depth interview). Through an in-depth interview, using a pre-prepared questionnaire, the opinions of experts and senior nurses in the field of interventional cardiology regarding the competencies and roles of the nurse as part of the interventional cardiology team were studied.

During the scientific research, an experiment was conducted with a developed and tested in medical practice **Protocol for the Roles of the Interventional Radiology Nurse** as part of the cardiology team. The protocol includes the main characteristics, equipment, and procedures performed in IR suites. The goals and objectives of the protocol are described, standard operating procedures scheme for the preparation and activities of the circulating and scrub nurse, activities during cardiopulmonary resuscitation, and a list of necessary equipment, consumables, and medications are prepared. A model of a **Selective Coronary Angiography Activity Checklist** (nursing documentation) is developed.

The applied statistical methods (comparative analysis, parametric and non-parametric tests, descriptive statistics, p-level of significance) are selected according to the sought dependencies, which is a prerequisite for their significance and correctness.

The dissertation presents the obtained results from the study, structured and logically formatted in **Chapter III**, after their statistical processing. The socio-demographic characteristics of the studied groups of respondents are presented.

This chapter discusses the preliminary training of nurses in the angiography laboratory and the possibility of forming professional competencies in the process of lifelong learning. A significantly high proportion of the surveyed nurses, regardless of their years of experience in the angiography laboratory, are firmly convinced of the need for preliminary training (91.7%), which will ensure practical preparation, confidence in working with specific equipment, and effective overcoming of difficulties in providing nursing care.

The analysis of the results shows unanimity among experts and nurses regarding the need for specialized training in a real work environment, which presents challenges and provides opportunities for acquiring knowledge and practical techniques. The role of the supervisor in the

adaptation of nurses in the field of interventional cardiology is also recognized, according to the opinions of experts (65%) and nurses (47.2%).

To ensure proper healthcare, it is necessary to systematically maintain and improve the knowledge, skills, and competencies of IR nurses by enrolling them in continuing education courses, postgraduate training courses, colloquia, seminars, and symposia. Important for the analysis of the results is the expert assessment given by interventional cardiologists in the conducted in-depth interview regarding the need for participation in postgraduate training (61.3%) and an Interventional Radiology Nursing specialization (32.3%).

The Bulgarian Association of Health Professionals creates opportunities for continuous professional development and qualification improvement for nurses through organizing various forms of supportive and continuing education.

Medical universities offer postgraduate training courses focused on specific aspects of cardiovascular medicine or internships in angiographic laboratories, where nurses gain practical experience under the supervision of experienced specialists.

The motivation of nurses to work in an angiographic laboratory has been studied, considered by the doctoral student as a stimulus for achieving professional success. The motivating factors differ between the two groups of respondents. For nurses, the main reason is the positive work environment (38.9%). The opportunity to improve competencies (36.1%), the sense of teamwork (30.1%), and working in a multidisciplinary team (27.8%) are also indicated as important. A relatively low percentage of nurses indicated good pay as a motivating force (22.2%), which proves that the lack of it is not the only reason for the shortage of nurses in the Bulgarian healthcare system.

Experts express different opinions regarding the motivation of nurses to start working in IR suites. The prevailing opinion of experts from the in-depth interview is that good pay is a motivating factor for work, along with flexible working hours and a dynamic work environment.

The doctoral student studies the nurse-patient relationship during interventional examination and analyzes it in terms of:

- *Communication* - especially necessary during the procedure (62.3%). It reduces anxiety and stress during interventional examination (women - 64.7%, men - 67.1%).
- *Trust* - essential for the successful conduct of interventional procedures and the overall well-being of patients. The analysis of the results shows that patients trust nurses during interventional examination (81%), which is unconditional among patients with primary education (100%).
- *Qualities that a nurse working in an angiographic laboratory should possess* - patients expect nurses to be supportive (48.5%), communicative (43.8%), kind (36.9%), and smiling (36.4%).

The profile of the nurses has been studied through the activities they perform in the IR suite. These activities are related to working in emergency settings with specific medical supplies and

equipment in sterile environment. Competencies cover a wide range of clinical, technical, and communication skills that ensure the safety and successful conduct of angiographic procedures.

In **Chapter IV**, the doctoral student, after conducting a SWOT analysis of the professional development of nurses practicing in IR suites, proposes a **Model of the Modern Interventional Radiology Nurse**. The professionalization of IR nurses requires a balance between personal qualities (responsibility, discipline, and empathy) and teamwork skills. The accumulated clinical experience of Asst.Prof. Teodora Dimitrova, as an IR nurse, is reflected in the developed theoretical Model of the Modern Interventional Radiology Nurse, describing teamwork skills, personal qualities, and lifelong learning. The acquisition of specialization and certification, as elements of the Model, are crucial for ensuring quality patient care, safety, and efficiency in the nurse's work.

A significant contribution to the dissertation of lecturer Teodora Dimitrova, with a practical-applied nature, is the developed and experimentally implemented **Protocol for the Roles of the Interventional Radiology Nurse**. The experiment was conducted in the IR departments/clinics at the university hospitals in Varna and Ruse for 3 months. As part of the nursing documentation, a **Selective Coronary Angiography Activity Checklist** (nursing documentation) and **Standard Operating Procedures for Interventional Nursing Activities** were developed.

Following the experiment, the effectiveness of the protocol and the need for its implementation in practice were evaluated. Both groups of respondents (experts and nurses) feel positive about introducing the documentation describing the activities of the nurse working in the IR suite, despite the additional administrative duties, which will increase the workload, responsibility, and stress in the nurses' work process.

The need to introduce a **Protocol for the Roles of the Interventional Radiology Nurse**, describing sequential steps of actions in specific manipulations, is supported by experts (83.3%) and nurses (75.0%). It has a positive effect in a few aspects:

- Ensures consistency and safety in providing interventional nursing care;
- Maintains high standards of medical practice;
- Supports the adaptation process of a newly hired nurse in the IR suite;
- Ensures rational use of resources;
- Increases team coordination;
- Creates an opportunity for nurses to make independent decisions within their competence, after overcoming the fear of taking responsibility, lack of experience, and insufficient higher education qualifications.

I recommend that Asst.Prof. Teodora Dimitrova publish the **Protocol for the Roles of the Interventional Radiology Nurse** to facilitate its introduction in other interventional cardiology departments and clinics.

Chapter V outlines nine conclusions derived from the conducted theoretical and empirical research. These conclusions are correctly analyzed, relevant to the tasks set in the dissertation, and serve as a basis for the recommendations to healthcare institutions related to the issues discussed in the dissertation.

The results of the scientific research outline contributions of both theoretical and practical-applied nature, which I accept without remark.

The abstract is in line with the standard format requirements, developed in a volume of 53 pages, well-illustrated with highly informative figures and tables. It fully reflects the content of the dissertation, highlighting the most important results and conclusions of the research.

Publications related to the dissertation topic

In relation to the dissertation, three full-text publications are presented. In these, the doctoral student, Teodora Dimitrova, is the first author (either individually or as part of a collective).

Conclusion

The dissertation on the Competencies and Roles of the Nurse as Part of the Interventional Cardiology Team is a comprehensive scientific work, aimed at enhancing patient healthcare. Notable for its significance and originality, the dissertation highlights lecturer Teodora Dimitrova's expertise in conducting independent scientific research.

The dissertation fully meets the requirements of the Law on Academic Staff Development in the Republic of Bulgaria, its Regulations, and the Academic Staff Development Rulebook at the Medical University of Varna.

Based on these merits, I give my positive assessment and confidently recommend that the esteemed Scientific Jury award Asst.Prof. Teodora Radeva Dimitrova the educational and scientific degree of Doctor in the field of higher education: 7. Health and Sports, professional subfield 7.4. Public Health, specialty in Health Care Management.

15.01.2025

Reviewer

Assoc. Prof. Teodora Evtimova, Ph.D.

Заличено на основание чл. 5,
§1, б. „В“ от Регламент (ЕС)
2016/679