Skills and competences of the interventional radiological nurse in preparing a patient for an invasive cardiovascular procedure - condition in Bulgaria

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Abstract: The population of Bulgaria as of December 2015 is 7 153 784, according to the National Statistical Institute estimates. In the first six months of 2016, 5943 people in Bulgaria were diagnosed with acute myocardial infarction and 13.6% of them died. A number of factors can help to reduce lethality, including access to quality emergency care, timely patient transportation and high quality of service in specialized healthcare facilities for invasive diagnosis and treatment of cardiovascular disease. Over time, invasive coronary procedures have increased in number and complexity. This trend is turning into an increased need for economic and human resources, among which the nursing staff is most affected. With the expansion of her role, the interventional radiological nurse should seek to continue her training and raise her level of competence. In Bulgaria, the doctors who work in invasive cardiovascular diagnostic laboratories, have acquired specialty of invasive cardiology according to Ordinance № 1 of 2015 and in the same ordinance there is no specialty for nurses. They acquire the necessary practical skills and competences after starting their work in the nursing field. In the study of nurses training in Bulgaria, no specialized training in invasive diagnostics and treatment of cardiovascular diseases, is established.

Key-Words: interventional radiological nurse; interventional cardiology procedures; cardiovascular diseases; competencies of nurse.

1 Introduction

A number of publications describe the burden of the cardiovascular diseases within Europe for 2016. Statistically they show that death from CVD, remains the most common cause of death on the old continent. It represents 45% of all deaths; 49% of women's deaths, and 40% among the men, as 1.4 million of these deaths are before the age of 75. Increasing hospitalization rates are linked to rising costs in healthcare systems that are connected with CVD, despite decreasing mortality. A number of factors can help reduce lethality, including access to quality emergency care, timely patient transportation and high quality care in specialized healthcare facilities for invasive diagnosis of cardiovascular disease [4].

According to data of the National Statistical Institute of Bulgaria, for 2015, 72 028 Bulgarians

died from diseases of the circulatory organs, which represents 65.4% of all causes of death in the country. Following the global trend, compared to 2010, the mortality rate from the CVD in our country decreased by about 2% [11]. In the first six months of 2016, 5943 people in Bulgaria were diagnosed with acute myocardial infarction and 13.6% of them died [10].

2 Statement

With time, invasive coronary procedures have increased in number and complexity. This trend is turning into an increased need for economic and human resources, among which the nursing staff are most affected. In order to identify the possible predictors of nurses' workload, during and after diagnostic and interventional procedures, their commitment to serving patients in an Italian clinic has been investigated. A nurse in the Catheterization Laboratory has an average workload of 86 minutes and 174 minutes respectively for radial and femoral access. A nurse in a cardiac unit has an average workload of 386 minutes and 720 minutes respectively for radial and femoral access. The systematic application of radial access, when not contraindicated, is an effective strategy to reduce the workload of nurses during and after invasive coronary procedures [1].

Trans-radial access is an increasingly standard approach, and the Allen test is needed. It is important that this practice varies between invasive diagnostic and therapy centers, and is usually not performed everywhere. One reason for this variability is that the sensitivity and specificity of the Allen test is relatively small [17]. A variety of non-invasive options, including pulse oximetry and duplex ultrasound, are available to complement the Allen test, performed mainly by specially trained nurses. Yet, there is no consensus on the best test for circulatory hand safety, and the choice of test depends on the preference of the cardiologist and the available equipment. Given the high rate of false-positive Alan-test, many patients are wrongly excluded from trans-radial access for coronary angiography. In order to evaluate the efficacy and safety of the trans-radial approach, regardless of the results of the Allen test, a prospective data collection was conducted at the Cardiac Department at Red Cross Hospital, Athens, Greece in 2015. The study concludes that the trans-radial approach for coronary angiography and angioplasty, can be effective and safe regardless of Alan's results before the procedure [8].

A large-scale randomized trial in England (London) proves the safety of patient's preparation for diagnostic cardiac catheterization, by specially trained nursing practitioners. The study compares the patient's preparation either by junior nurses or by nursing practitioners. Basic unwanted clinical events, patient's satisfaction, length of hospital stay, and cardiologists' assessment for patient preparation are been evaluated. This approach can be related to improving patient's satisfaction and reducing hospitalization time [14].

Preliminary information and patient's education is essential. The results of the study aimed at assessing the effectiveness of two educational methods (video information and oral information) for patients with imminent coronary angiography, confirm the usefulness of video information prior to invasive coronary angiography. The group of patients who also received video information, showed statistically significant reductions in heart rate and blood pressure after educational activity, and had significantly higher levels of comfort, satisfaction and tolerance, than the control group receiving only routine verbal information from the nurses [6].

A Swiss study, designed to assess the learning outcomes and those of the patient's percutaneous coronary intervention (PCI) trial, shows that current preventative practice almost fails to meet the challenge posed by advances in modern invasive cardiology. The results of the post-PCI study of the patients motivate a deeper review and adaptation of cardiac rehabilitation programs, with the inclusion of trained nurses to improve the patient's understanding of the disease and cardio-protective lifestyle [13].

In the "Guidelines for Nursing Interventional Radiology", it is stated that the preliminary assessment of the admittance of planned patients, is an established role of the interventional radiological nurse. Nurses must have a different level of qualification, corresponding to the assumed responsibility, and this must be noted in their job description. Interventional nurses must have basic knowledge of resuscitation and continue their training in resuscitation techniques. Nursing tasks do not release the clinical radiologist from overall responsibility to ensure that all necessary actions are taken. The primary responsibility of the nurse in

interventional radiology, is to observe the patient and ensure his safety [15].

Coordinated protocols and integrated means of treatment should be established, so that the interventional radiological nurse can judge whether the patient is suitable for ambulatory, or stationary interventional treatment. This will help to avoid unnecessary and sometimes prolonged hospitalizations, and thus optimize the resources and potential delay of the patient's treatment. During the preliminary assessment, the nurse prepares routine research and, according to the results, acts on accordant protocols. The nurse must have knowledge of all intervention procedures, so that she can inform the patient, and be able to answer all his questions.

Within the intervention itself, the role of the interventional radiologist nurse is to support the procedure and, with the other members of the multidisciplinary team, to take care of the patient during the study. Two experienced nurses are required to perform complex procedures - one to work sterilely with the clinical radiologist during the procedure, and the other to observe the patient and perform the appointments of the physician. The second nurse should also provide the necessary devices during the procedure. Interventional nurses should have appropriate competencies for cannulation of vein and intravenous opiate administration. With the expansion of her role, the interventional radiological nurse should seek to continue her training, and raise her level of competence. Specialized nurses in radiology are well acquainted with the special equipment and medical supplies, and can provide the necessary devices for each procedure. Early recognition of allergic reactions to the contrast matter is also part of the nurse's competence. The interventional radiological nurse evaluates, plans, and implements general nursing care for the patient (including pulse monitoring, blood pressure, electrocardiogram, oxygen saturation of the blood, etc.). She co-ordinates and documents the planned patient care, during the invasive procedure. The nurse creates a safe and therapeutic environment for both the patient and the staff. She also complies with the requirements for safe work in X-ray environment, practice aseptic principles and acting as a leading professional in the control of infections. Communicates effectively with other members of the Interventional radiology team.

The unique and patients following the procedure require high qualification and specialization of intervention nurses.

According to the Guidelines for Nursing in Interventional Radiology, developed by the Royal College of Nursing and the Royal College of Radiology, a minimum ratio of staff comprising two nurses - one them experienced, with appropriate qualification [15].

Invasive cardiology in Bulgaria made its first steps in 1963, when a functional sector of Blood Diagnostics, was formed at the National Cardiology Hospital. In 1975, the first coronarography in Bulgaria was made, which is A. Savova's merit. The first invasive manipulation, in the sense of a healing procedure in Bulgaria, was carried out in 1986 by Prof. Arnaudov and Assis. Tsonzarova. This is a child's pulmonary valve dilation. While in adults the first interventions were performed about two years later - coronary valvular dilations. Prof. Bozhidar Finkov in 1991 performed the first cardio-invasive manipulation in Bulgaria. He put the first stent in Bulgaria, on a patient with anterior heart attack and saved him. Later on, he performed the first valvuloplasty in Bulgaria [16].

In 2002, Dr. A. Doganov introduces the more gentle and economical trans-radial access. Trans-radial access quickly becomes routine, and is used for both diagnostic and interventional procedures, including patients with acute myocardial infarction. Trans-radial access for cardiac catheterization, which emerged as an alternative to the trans-femoral, is now a "gold standard" for many catheterization laboratories [2].

When an independent analysis of the data of the National Health Insurance Fund was carried out in 2008, the independent consultancy company Sanigest found that percutaneous coronary angioplasty in Bulgaria, is nearly twice as low as in the developed European countries, which objectively indicates the potential problems - with the access to specialized health care, with diagnostics of patients and the need for such a procedure , as well as the shortage of hospital structures for invasive cardiovascular diagnostics [18].

For just five years, from the beginning of 2010 to 2014, in Bulgaria, the number of hospitals funded by the National Health Insurance Fund on clinical pathways for invasive cardiology, increased from 33 to 50. By the beginning of 2016, the clinics of

Invasive Cardiology in Bulgaria are 71, 10 of which function in Sofia only [9].

For a short period of time, the wards for invasive cardiovascular diagnostics have increased many times, requiring medical teams to be redirected from cardiac structures, and recruited to work in catheterization laboratories for non-invasive diagnostics and therapy. The rapid pace of expansion of high-tech clinics for invasive cardiology in practice, requires an adequate response from universities to the training of medical staff [5]. Financial costs in modern healthcare are one of the "turning points" in managing treatment centers. In the opinion of invasive cardiologist experts procedural time and financial costs are increased when working with an untrained nurse [3].

In response to the growing needs of health care the documentation of the performed activities and interventions by the nurse, is an important element of her work and a specific moment of the training process of the field of study.

A conceptual method of the electronic dossier of the nurses has been developed, which allows the systemization and optimization of the learning process and could be successfully applied in the interventional cardiology. It also meets the expectations of digital generations [7].

4 Conclusion

In Bulgaria, the doctors working in the invasive cardiovascular diagnostic laboratories have acquired specialty of invasive cardiology according to Ordinance 1 and no specialty for nurses is prescribed in the same ordinance [12]. They acquire the necessary practical skills and competencies after starting their work in the nursing field. In the research of nurses training in Bulgaria, no specialized training in invasive diagnostics and treatment of cardiovascular diseases, is found. The Bulgarian Association of Healthcare Professionals organizes, coordinates, conducts and records the continuing training of nurses, midwives and associated medical specialists, according to Art. 182 of the Health Act. In the plan for the continuing training of nurses for 2017, only two of the universities in Bulgaria offer training, related to invasive cardiology – Angel Kanchev University of Ruse and Medical University of Sofia.

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