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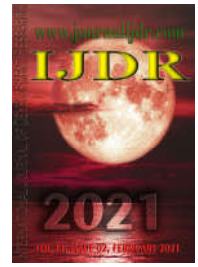
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REPERCUSSIONS OF THE NURSE'S EDUCATIONAL INTERVENTION ON PATIENTS SUBJECTED TO CARDIAC CATHETERIZATION: A QUALITATIVE RESEARCH

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ABSTRACT

Objective: To analyze the repercussions of the nurse's educational intervention on patients subjected to cardiac catheterization. **Materials and methods:** descriptive, exploratory study with a qualitative approach. Data were collected through a questionnaire and semi-structured interview with the participation of 8 patients. For data analysis, a "content analysis" technique proposed by Bardin was used. **Results:** It was identified that patients have limited knowledge about cardiac catheterization. The educational intervention has positive repercussions for the patient, such as understanding about the exam, decreasing emotional instability and reducing doubts about the procedures. **Conclusion:** In this study, it was observed that "Health Education" has positive repercussions and that it constitutes an important tool for providing holistic care to patients who are discovered by cardiac catheterization, bringing empowerment to the patient through knowledge and making him co-responsible for his health / recovery.

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INTRODUCTION

Chronic non-communicable diseases (CNCs) are a source of worldwide concern, as they are the most prevalent pathologies in populations, affecting the quality of life of millions of people and generating great individual and collective economic impact (SOUZA, et al., 2016). Cardiovascular diseases, in turn, represent the main cause of death in Brazil, being responsible for more than 30% of registered deaths. There are more than a thousand deaths daily, about 43 per hour, 1 death every 1.5 minutes - 90 seconds (SOCIEDADE BRASILEIRA DE CARDIOLOGIA, 2018). The diagnosis of heart disease is based on clinical history, associated with the identification of signs and symptoms. For diagnostic confirmation of coronary disease and definition of more appropriate therapeutic strategies, coronary artery angiography, also known as coronary angiography, obtained by the cardiac catheterization technique (MIRANDA-CHÁVEZ, et al., 2012; SOLIMENE; RAMIRES, 2003). Cardiac catheterization has been used since the 1960s as a first-line diagnostic and therapeutic method in several cardiac diseases. Through this method, coronary artery angiography, study of bridges, ventriculography, aortography, catheterization of right chambers, among others, are performed.

The procedure consists of introducing a catheter into a vein or artery to the heart and is positioned in a specific location, depending on the indication of the procedure (SANTOS, et al., 2013; RAIMUNDO, 2013). With regard to cineangiocoronariography, the catheter will be positioned in the heart of the coronary arteries, responsible for irrigating the heart muscles, where intravenous injections of radiopaque contrast will be performed to allow the visualization of the coronary anatomy. When associated with ventriculography, it can assist in assessing the patient's prognosis and defining the need for some therapeutic revascularization procedure (RAIMUNDO, 2013; BASHORE, 2012). The respective method can contribute to the emergence of uncertainty, stress, fear and anxiety during its performance, despite the low incidence of complications and the minimal possibility of death. Some of the main causes for the appearance of these feelings are: the invasive nature of the procedure, the lack of information and lack of knowledge about various aspects of the exam (TORRANO, et al., 2011; TULLY, et al., 2016). In this context, the nurse must be present, since he is part of a group of professionals who play an important role in the relationships among individuals, society, health, research and education. Nursing has "educational action" as one of its guiding axes, basing it professional practice in any place of activity (SILVA, et al., 2013).

In view of the above, the development of this study was motivated by the need to answer the following guiding question: What are the repercussions of the nurse's educational intervention on patients undergoing cardiac catheterization?

And the objective is to analyze the repercussions of the nurse's educational intervention on patients undergoing cardiac catheterization.

MATERIALS AND METHODS

This is an exploratory, descriptive study with a qualitative approach, whose research methodology was guided by the Equator instrument "Standards for Reporting Qualitative Research (SRQR)" (O'BRIEN, 2014). The study was carried out from a constructivist point of view, using an interpretative phenomenological epistemological approach that assumes that what results from an investigation are not the facts themselves (an objective reality), but the researcher's interpretation of the individuals' interpretations who participate in a certain phenomenon (ZANELA, 2009). The study also used as a theoretical framework for data analysis: the "Content Analysis" technique proposed by Bardin (2016). The study was carried out at the "Hemodynamics Laboratory" of the Pronto Socorro Cardiológico Universitário de Pernambuco - Professor Luiz Tavares (PROCAPE), connected to the University of Pernambuco (UPE). It is one of the largest cardiology centers in the Brazil with approximately 256 beds registered in the National Register of Health Facilities - CNES. It has works with as assistance references, aortic surgery, coronary artery bypass surgery, treatment of arrhythmias, among other procedures. The sample consisted of 8 patients who would submit to cardiac catheterization to investigate CAD (Coronary Artery Disease). The sample size was delimited using the data saturation technique. Inclusion criteria were patients over 18 years old and who were undergoing the exam electively. Exclusion criteria were hospitalized patients; patients in SCAs; patients who had previously performed the exam; patients with mental illness or dementia. To perform the data collection, it was necessary to build a serial album, which was used in the lecture on cardiac catheterization (educational intervention). The serial album consists of is a technological resource used for educational purposes (LOPES, 2017).

The album was prepared based on scientific literature, in a manual on cardiac catheterization validated in 2016 (MACIEL, BARROS, LOPES, 2016), in the routine of the PROCAPE Hemodynamics Laboratory (LHP PHL) and in the opinion of medical professionals and nurses working in the laboratory. The resource contains information about cardiac catheterization, from its meaning to the precautions needed care after the procedure, going through the preparation before the day of the exam and on the day of the exam, technique of carrying out, possible need for angioplasty and possible complications. Contains illustrative images of photographs taken from the hemodynamics sector and explanatory text in topics. The data collection took place in February 2019 by a socio-demographic and clinical questionnaire containing questions about age, race, education, religion, allergy, comorbidities, among others, and a semi-structured interview prepared by the authors, which was recorded with the aid of an audio device before and after the nurse's educational intervention, which contained questions such as "Did you receive information about how cardiac catheterization will be performed? If so, who provided the information? "Do you know how cardiac catheterization is performed? If so, describe it in your own words.", "Do you know what the exam is for? If so, what is the purpose of it?", "Are you anxious, afraid or worried about the exam? If so, why?". And, after the intervention, containing questions such as: "Did you understand how the exam is performed? Describe it in your own words.", "Were the feelings of fear, anxiety and worry lessened after the explanation? If they have been previously reported ", "Do you think it is important that the exam is explained before it is done? ".

The data collection was performed individually. The patient was taken to a private environment, in which the research was explained in detail, the Informed Consent Form (ICF) signed by the patient and the questionnaire delivered to be answered. After finishing the questionnaire, the first interview was conducted. After the patient answered all the questions from the 1st interview, the lecture with the flipchart (intervention) began, which lasted around 10 to 15 minutes, and finally, the 2nd interview was conducted. The entire process took approximately 30 to 40 minutes. The respondents' answers were transcribed in the Microsoft Word 2007 program and submitted to Bardin's "Content Analysis" (2016), with the following stages for its conduct: 1) Pre-analysis; 2) Exploration of the material and 3) Treatment of the results: inference and interpretation.

Categories and subcategories: After transcribing the recorded audios, the interviewees' speeches were analyzed using the "Content Analysis" technique. Pre-analysis was performed, which consists of a general reading of the material to be analyzed (interviews) categories (SILVA, FOSSÁ, 2015). Second stage: Exploration of the material: Coding for the formulation of analysis categories; Cut the material, in comparable units of record (words, phrases, paragraphs) and with the same semantic content; grouping of registration units into common categories; progressive grouping of categories (SILVA, FOSSÁ, 2015). Thus, 3 thematic categories and 7 subcategories were identified.

Table 1. Categories and Subcategories, Recife, Pernambuco, Brazil, 2019

CATEGORIES		SUBCATEGORIES
Category 1	Patient's knowledge about cardiac catheterization (before the intervention)	Aspects of cardiac catheterization and its purpose
		Source of information
Category 2	Emotional State (before intervention)	Emotional instability (anxiety, nervousness, worry, among others)
		Tranquility and confidence
Category 3	Repercussions of the nurse's educational intervention	Understanding of the cardiac catheterization procedure
		Decreased emotional instability
		Reduction of doubts

Source: Own author

Finally, the third phase "Inference and interpretation" was carried out, which comprises the treatment of results, where a comparative analysis is made, associating the results with theoretical purposes (SILVA, FOSSÁ, 2015). This research followed the guidelines of Resolution 466/2012 of the National Health Council and started after approval by the Research Ethics Committee involving human beings. All participants were informed about the research and signed the Free and Informed Consent Form. The representation of the participants' names was expressed by the letter "p" and the number, according to the chronological order of the delivery of the questionnaires, guaranteeing their confidentiality and anonymity during the entire research process.

RESULTS

Characterization of interviewed participants: Eight patients were interviewed who were going to submit to cardiac catheterization to investigate CAD and who had the exam scheduled in an elective way. In total, 5 participants were female (62.5%) and 3 male (37.5%). About 5 patients were aged between 35 and 59 years old (62.5%) and 3 were older than 60 years old (37.5%). 6 participants had a stable union (75%), 1 was a widower (12.5%) and 1 was single (12.5%). About the level of education, 3 were illiterate (31.5%), 2 had incomplete elementary school (25%), 2 had complete elementary school (25%), and 1 had incomplete high school (12.5%). Of the 8 patients, 7 lived in an urban area (87.5%) and 1 lived in a rural area (12.5%). With regard to religion, 5 were Catholics (62.5%), 2 were Protestants (25%) and 1 had no defined religion (12.5%). Regarding race/color, there were 2 blacks (25%), 3 browns (37.5%), 2 whites

(25%) and 1 yellow (12.5%). 5 did not work (62.5%), 2 worked (25%) and 1 was retired (12.5%). About 3 people claimed to be allergic (37.5%) and 5 had no allergy (62.5%). Of the interviewed participants, 3 reported having angina (37.5%), 5 SAH (Systemic Arterial Hypertension) (62.5%), 3 DM (Diabetes Mellitus) (37.5%) and 3 HF (Heart Failure) (37, 5%).

Detailed description of categories and subcategories

Thematic Category 1 - Patient knowledge about cardiac catheterization (before the intervention)

This category shows patients' knowledge about cardiac catheterization and shows how respondents obtained this information. From this category, two subcategories emerged: Aspects of cardiac catheterization and its purpose and Source of information.

Subcategory - Aspects of cardiac catheterization and its purpose

In the statements below, we can see how the patients' perception of the aspects that involve the procedure and its purpose are limited and do not reflect the real indication of the procedure, since they mostly refer to therapeutic catheterization, despite they are being submitted for the first time to the examination for CAD investigation (diagnostic catheterization).

"... I heard that it is a simple procedure." (p3)

"... It's a 30-minute procedure on the arm... After the procedure it's necessary to rest" (p4)

"To unclog the arteries..." (p4)

"To do something in the heart ... To unclog the veins." (P5)

Subcategory - Information Source

In the following statements, we can verify that the main sources of information for the patient about the procedure are through, not only the health professional, but also, the internet, family members or close people.

"He (the doctor) explained everything to her (daughter). I told him that I don't listen well." (p1)

"She informed about fasting, the girl at the counter quickly. The doctor made the appointment scored." (p4)

"I researched. I searched on the internet." (p3)

"She did the research (the wife)." (p4)

"I had this, right, from my husband that he did this same exam, so my neighbor who lives next to me ... did that same exam ..." (p1)

It is important to note that some patients had their exams suspended and rescheduled for not having complied with the preparation recommendations for the procedure. They claimed not to have received guidance from their doctor.

Thematic Category 2 - Emotional State (before the intervention)

This category demonstrates the emotional state the patient is in before performing cardiac catheterization. From this thematic category it was possible to identify two subcategories: Emotional instability and Tranquility.

Subcategory - Emotional instability (anxiety, nervousness, worry, etc.)

We can observe, below, that the interviewees presented feelings such as anxiety and nervousness, which may be related to the limited knowledge about the procedure, to the fact that they never performed the exam and to the comments that family members and close people make about the procedure.

"I'm a little anxious. Because it is the first time and because it is a procedure that has anesthesia, then I get a little worried..." (p3)

"I'm like this... kind of... thoughtful, but not much. I was more nervous early in the morning. Because I was wondering how... it's it going to be... if I wouldn't to have an attack... if I wouldn't die of heart disease the moment I was taking the exam. Then I was scared without knowing where it is... how will it be ... then the feeling of nervousness of thinking how it's gonna be..." (p5)

"I'm nervous ... kind of scared. Because ... I have heard some reports of people I know who died ... doing this exam, understand? And I got like this..." (p7)

Subcategory - Tranquility and trust

In the statements that follow we can show that some patients were calm before the exam. This tranquility may be related to the knowledge obtained through previous research and to the individual spirituality or religiosity of each person.

"I'm not. I'm calm. I'm just waiting to get my turn." (p2)

"Not worried because I also did a lot of researches and learned that it is a simple procedure." (p3)

"I'm not so worried. I'm calm ... my neighbor who lives next to me ... took this same exam, then she said to me: look, don't worry, have faith in God and with the strength of God they will make your exam. You'll be fine." (p1)

"...But I'm trusting God. In medicine too ... because God is in the first place, I believe in the Lord and I also believe in medicine ... in the wisdom that God gave to men to develop this work well..." (p7)

Category 3 - Repercussions of the Nurse's Educational Intervention

This thematic category identifies the repercussions caused in patients submitted to the nurse's educational intervention. From this category, 3 subcategories emerged: understanding the patient about aspects related to the procedure; decreased emotional instability; questions' explanation.

Subcategory - Understanding the patient about aspects related to the procedure

We can evidence in the statements below that the research participants were able to understand important aspects of performing cardiac catheterization according to the indication of the procedure.

"...prepare the skin, then put the local anesthesia where you are going to do it and when the doctor is going to do it, he will see by the wrist if the procedure can be done on the arm or leg. Then they will introduce something to put the catheter to go to the artery to analyse if it needs to be unobstructed..." (p3)

"preparation of the area ... put the catheter ... It serves to check if my artery is blocked." (p4)

"I think I understand. Put a little piece, a string to the heart. To see if it's clogged" (p5)

"...I understood the procedure, the doctor will examine the vessels and only if I need something, the procedure will be done (angioplasty) right away or he will leave it for later. There will be a thread that will enter the heart." (p6)

Subcategory - Decreased emotional instability

In the following speech, we observe that the educational intervention contributed to a reduction in anxiety and concern in the patient.

"Decreased further. I'm (more calm) ... because the person has questions, right ... when it is explained ... then the person is more relaxed because he knows how it will happen." (p5)

Subcategory - Decreased doubts

In the statements below, we can evidence that the interviewees had their questions about the procedure resolved.

"Decreased. I thought I would be doing it all day or doing it on my arm or doing it on my leg. I didn't know that doing it by the arm was only two hours. I thought the two of them were all day and I was only going to be released at night." (p3)

"That explanation you gave me was better because it cleared all my questions..." (p6)

"...I understood how it is and the questions diminished because I understood how it will be done." (p7)

DISCUSSION

With regard to the profile of the research participants, it was observed that the prevalence was female, which is not consistent with the study by Castro (2016), which brings a higher male prevalence (CASTRO, *et al.*, 2016). The age group from 35 to 59 years old had a higher prevalence, the same was not evidenced in another study (MOREIRA DE SANT'ANNA, *et al.*, 2016). The most evident comorbidity in the interviewees was SAH, corroborating the study by Sousa (2014), in which 82.2% of the patients who underwent cardiac catheterization between February and July 2012 had systemic arterial hypertension. The results showed that the interviewees have a certain limitation with regards to knowledge about cardiac catheterization, which may be related to the low level of education shown in the study and / or the lack of adequate guidance. This finding corroborates other studies (CASTRO, *et al.*, 2016; SANTESSO, FRIEDRICH, 2017) conducted in Brazil. A recent research similar to the present study, carried out in a hemodynamics service that serves SUS users and members of the municipality of Juiz de Fora / MG, showed that the participants did not know how to inform what procedures they would be subjected to or even did not remember. about how the exam would take place (SANTESSO, FRIEDRICH, 2017).

Another study, carried out in Maranhão, also recent, which aimed to obtain information about the patients' knowledge concerning the exam, presented a result similar to ours, when it says that the interviewees, when asked about the meaning of cardiac catheterization, referred to the unblocking of the coronaries, realizing that the cardiac catheterization for them had only therapeutic function (CASTRO, *et al.*, 2016). These findings make us reflect on the great gap that exists in communication between the health professional and the patient, which allows the patient to arrive at the health service to perform an invasive procedure without the basic guidelines on the procedure to which he will be submitted. Authors of a study that found results similar to ours, believe that the lack of information and misunderstandings in the speeches, are a sign of the gradual loss of autonomy of individuals, which may be associated with the growing authoritarianism of health teams (TEIXEIRA, AVILA, BRAGA, 2019). This deficient relationship makes patients and families look for information in other ways, as shown in the results of our work. These instruments can be the internet and / or friends and family, who sometimes pass distorted information, causing fear and anxiety in the patient. This finding was also confirmed by other studies (SANTESSO, FRIEDRICH, 2017). In another study (CASTRO, *et al.*, 2016), aiming to assess anxiety in patients in the pre-cardiac catheterization period, anxiety (65.0%) was identified in most experimental studies in publications conducted in the United States (41.1%), Brazil (23.5%) and others (35.3%). Anguish (30.0%) was the second stressor reported by the interviewees, followed by depression or fear (15.0%). The lack of knowledge about the exam generates concern, anxiety, discouragement, fear and nervousness, caused mainly by the negative expectation in the face of the unknown (CASTRO, *et al.*, 2016, MOREIRA DE SANT'ANNA, *et al.*, 2016; LEYTON, *et al.*, 2014). We were able to clearly demonstrate the emotional instability in the interviewees on this work, which reinforces the need to carry out effective interventions to modify this situation and mobilize health professionals as a whole to provide adequate guidance to the patient, aiming at quality and holistic care, thus contributing to a better performance of the examination and post-procedure recovery of the patient.

As it has been seen in other studies, feelings such as anxiety and fear can cause physiological changes in the patient, such as increased HR (Heart Rate) and BP (Blood Pressure), which increases oxygen consumption, worsening the evolution of the disease. In addition, these symptoms occur during the procedure, may increase the duration and difficulty of the procedure, in addition to causing possible changes in the results of the examination and causing physical damage to the patient (FERREIRA, RAMALHO, LOPES, 2015). The guidance provided by the nurse responsible for the patients allows further clarifications and clarification of the future event. If effective, the guidance shows positive results (LOPES, *et al.*, 2015). With regard to emotional instability, more specifically to anxiety, our study corroborated with the research by Secco (2017), a quasi-experimental study, and Ayasrah and Ahmad (2016), a randomized clinical experiment, in which, the patients who were submitted to cardiac catheterization achieved the reduction of anxiety after conducting educational intervention with video. Patients who acquire a greater degree of knowledge about their health problem, tend to acquire more confidence about self-care and better adherence to the therapeutic plan, avoiding future complications (CASTRO, *et al.*, 2016; RODRIGUES, *et al.*, 2019). Nursing has stood out as a promising area for the study of cardiology in the area of health care, organization of health care, patient safety and increasingly demonstrating the role of nurses in education and promoting the health of patients, nurses being the protagonists in care and assistance. (SILVA, *et al.*, 2019). What drew attention in this study was that, unlike the studies found in the scientific literature on the emotional aspects of patients with cardiac catheterization in the period that "precedes" the procedure, not only were emotional feelings that characterize emotional instability, such as anxiety, nervousness and concern, already mentioned above, but also, positive feelings like tranquility and confidence. These feelings, which are justified, according to the interviewees themselves, by family support or close people and also by the spirituality / religiosity of each participant, which makes us consider these two factors as attenuators of emotional instability in the face of invasive procedures.

Contributions to the Health Area

This research contributes to instigate health professionals, especially nurses, to reflect on the process of the educational practice in hospitals, constituting themselves as a tool that favors humanization and holistic care, providing the patient's empowerment based on knowledge.

CONCLUSION

As it was possible to demonstrate in our study, the educational intervention brought positive repercussions, contributing to a better understanding of the patient about the procedure and a reduction in his emotional instability, which constitutes yet another relevant finding that points to health education as a key factor to favor holistic assistance, bringing empowerment to the patient through knowledge and making them co-responsible for their own health / recovery.

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