ABSTRACT
Objective: to identify people's knowledge and feelings about cardiac catheterization. Method: descriptive study, qualitative approach, carried out with 12 patients in a cardiology reference hospital, in the city of João Pessoa, from November to December 2021. Data were collected through recorded and semi-structured interviews, the data analyzed by Analysis of Bardin content. Results: three thematic categories were constructed from the interviews: C1 - Knowledge of the cardiac catheterization procedure, C2 - Lack of guidance on care involving cardiac catheterization and C3 - Feelings regarding cardiac catheterization. The data highlights insufficient and limited knowledge that may be related to the emergence of negative feelings. Final considerations: There is a perceived need for guidance and information, as well as the planning and construction of educational technologies for people who will undergo cardiac catheterization, with the purpose of promoting a safe pre, intra and post-exam.

DESCRIPTORS: Cardiac catheterization; Knowledge management; Cardiovascular nursing;
RESUMEN

Objetivos: identificar los conocimientos y sentimientos de las personas sobre el cateterismo cardíaco. Método: estudio descriptivo, de enfoque cualitativo, realizado con 12 pacientes en un hospital de referencia en cardiología, en la ciudad de João Pessoa, de noviembre a diciembre de 2021. Los datos fueron recolectados a través de entrevistas grabadas y semiestruturadas, los datos analizados por Análisis de Contenido de Bardin. Resultados: a partir de las entrevistas se construyeron tres categorías temáticas: C1 - Conocimiento sobre el procedimiento de cateterismo cardíaco, C2 - Falta de orientación sobre los cuidados que envuelven el cateterismo cardíaco e C3 - Sentimientos a realización del cateterismo cardíaco. Los datos destacan conocimientos insuficientes y limitados que pueden estar relacionados con la aparición de sentimientos negativos. Consideraciones finales: Se percibe la necesidad de orientación e información, así como la planificación y construcción de tecnologías educativas para las personas que serán sometidas a cateterismo cardíaco, con el propósito de promover un pre, intra y post examen seguro.

DESCRITORES: Cateterismo cardíaco; Gestión del conocimiento; Enfermería cardiovascular.

INTRODUCTION

Cardiovascular diseases (CVD) are notable for their high morbidity and mortality rates, accounting for 41 million deaths annually on the global stage. In the national context, CVD accompanies this incidence, constituting the main cause of death, hospitalizations, outpatient care and costly financial expenses for the public health system.1

It is possible to identify a strong association between longevity and CVD, but the scenario seems to be changing as we see an increase in cases among young adults, an important change in the epidemiological profile that will have devastating repercussions on the quality of life of those affected by CVD.2

There has been growing progress in the clinical treatment of cardiovascular diseases, with the introduction of pharmacological and non-pharmacological therapeutic targets and diagnostic resources using minimally invasive techniques, such as coronary angiography, popularly known as cardiac catheterization. It is a diagnostic test, considered the gold standard for identifying obstructive lesions and visualizing the heart chambers, and consists of the introduction of catheters by percutaneous puncture and contrast infusion.3

In this sense, some precautions are fundamental for pre- and post-cardiac catheterization preparation, which requires the person to be aware of their own health condition and especially of the examination to be carried out, with a view to preventing complications related to the procedure and post-catheterization recovery.4

The literature describes that performing the cardiac catheterization procedure in the complex environment of the hemodynamics unit can predispose people to negative feelings such as anguish, fear and anxiety. Furthermore, the lack of adequate information and preparation can expose them to unnecessary risks related to pre- and post-examination management and care, leading to adverse events such as pseudoaneurysms, infections, hematomas, ecchymoses, peritoneal hemorrhages and even contrast-induced nephropathy.5

The study is justified by the need to understand and highlight the knowledge of people who will undergo cardiac catheterization, in view of experiences during the residency process in cardiovascular care that signaled possible limitation of information, since several times the exams were rescheduled due to the physical and/or emotional unpreparedness of the person, either in the pre- or intra-exam period, some post-exam complications were also identified due to lack of information that culminated in harmful outcomes.

This investigation was based on the following research question: What is the knowledge of patients about the cardiac catheterization procedure? With a view to understanding people’s knowledge and fostering dynamic and interactive educational strategies, the aim was to identify people’s knowledge and feelings about cardiac catheterization.
METHOD

This was a qualitative study, following the recommenda-
tions of the Consolidated Criteria for Reporting Qualitative
Research (COREQ). It was carried out in the medical clinic
of a teaching hospital which is a reference in cardiology and
interventional care in the capital of the state of Paraíba. At this
institution, cardiology care is provided by appointment, via
the Unified Health System and also privately, characterizing
it as a mixed dynamic.

The study included people aged 18 or over; inpatients
with a medical request for their first cardiac catheterization
exam; who had no visible and/or self-reported difficulties/
limitations.

Twenty people were approached the day before the exam,
however, eight participants did not fit the established criteria
and of those invited to take part, there were no refusals. In this
study, the sample was taken using the data saturation
method, i.e. until the answers were too repetitive and did not
contribute to new understandings and reflections.

The data was collected by means of an interview recorded
with a digital smartphone recorder and guided by a semi-
structured script, developed by the researcher, in a private
place on the premises of the medical clinic. Initially, sociode-
mographic and clinical categorization was carried out, with
the following variables: age, gender, marital status, family
income, family arrangement, race, schooling, indication for
the procedure, rescheduling of the exam, risk behaviors,
medications in use and presence of comorbidities.

As for the interview script, the questions were organized
in a fixed order and with the questions remaining the same
for all the participants in the survey: Have you ever heard of
cardiac catheterization? Do you know how it is performed?
Were you instructed on care before and after the procedu-
re? How did you feel when you found out you were going
to have to undergo cardiac catheterization? Tell me about
your experience.

The interviews were recorded and later transcribed, keep-
ing the regional terms used, slang and neologies, and there
was no processing of the speech. The average length of the
interviews was 15 minutes. At the end of each one, the rese-
archer explained how the cardiac catheterization procedure
takes place and the main precautions before and after the
procedure, clarifying doubts and resolving taboos expres-
sed by the participants. In order to guarantee anonymity,
the participants were numbered from 1 to 12 and given the
code name “P”.

It should be noted that the interview was conducted by
one of the researchers, who has 2 years of clinical and care
experience in cardiovascular care, as well as a postgraduate
degree in cardiology and hemodynamics.

The data was analyzed using the Content Analysis me-
thod developed in three phases: pre-analysis; exploration of
the material; and data treatment. In the pre-analysis phase,
initial ideas were organized; after organizing the content and
reading the data, the material was explored by transcribing
the data and choosing generic categories to represent the
central idea. Finally, the data was processed using a critical
and reflective analysis.

Respecting ethical precepts, the study was approved by
the Research Ethics Committee of Faculdade Nova Espe-
rança (FACENE), with a favorable opinion of No. 5,127,617.
Eligible individuals were informed about the research and
included in the study after accepting and signing the Infor-
med Consent Form.

RESULTS

The participants were 12 people who were about to un-
dergo cardiac catheterization for the first time. With regard
to the characterization of the participants, six (50%) were
male and six (50%) female, with an average age of 70 years,
ranging from 57 to 92 years, the predominant marital status
was widowed with 42%.

Seven (59%) had an income of less than the minimum
wage (R$1,192.40); eight (67%) lived with family members; six
(50%) had only attended elementary school and with regard
to color, there was a similarity where four (33%) considered
themselves white, four (33%) brown and four (33%) black.

In terms of comorbidities, there was a predominance of
Systemic Arterial Hypertension (SAH) and Diabetes Mellitus
(DM), 84% and 34% respectively. Among the risk behaviors,
eight (67%) reported smoking, seven (59%) didn’t do any
physical activity, six (50%) drank alcohol and five (42%)
ate a high-fat diet. The most common medical diagnoses
for cardiac catheterization were unstable angina and acute
myocardial infarction with ST segment elevation (33% each).
With regard to drug therapy, nine (75%) used dual antiplatelet
therapy with acetylsalicylic acid and Clopidogrel. It should
be noted that the majority of participants, seven (59%), said
they would reschedule the procedure.

Three thematic categories emerged from the groupings:
C1- Knowledge of the cardiac catheterization procedure;
C2- Lack of guidance on the care involved in cardiac cathe-
terization and C3- Feelings when cardiac catheterization is
performed.

C1- Knowledge of the cardiac catheterization procedure.

This category refers to understanding the cardiac catheter-
ization procedure and how it is performed. It is possible
to identify that the study participants have incipient, inade-
quate and incomplete knowledge. Most of the participants
associated cardiac catheterization as a procedure related to
clearing the coronary arteries, often being confused with
angioplasty (which has a therapeutic purpose). In addition,
limited knowledge is fostered by the beliefs and experiences
of other people who have already undergone the procedure,
as noted below:
No, no. I’ve heard it’s like this... it depends, it can be through the arm, which is a wire, I don’t know, and it can be through here (femoral), which is precisely to destroy the vein that’s clogged. That’s the only thing I know... put a little clamp on it so the blood can pass through. (P4)

Not me. I see the movement of the others here. (P10)

I don’t know. All I know is that when a doctor told me that my heart had two clogged veins. Then I asked a little woman who had already done it, she said that sometimes it’s done in the arm, she said it doesn’t hurt much, sometimes she said it’s done in the groin, then an anesthetic is put in, a little tool is put in and it goes in the vein that’s clogged, if you do it in the morning then it’s gone by the afternoon. (P7)

No. According to the doctor, there’s a clot that clogs the vein and the catheterization is to unclog that vein, in his words. (P9)

C2- Lack of guidance on the care involved in cardiac catheterization.

This category shows the predominance of participants who said they had not received any information/guidance on pre- and post-examination care. The minority of interviewees who said they had received guidance on the procedure said that this information corresponded to general and empirical care, which did not address the specific care of cardiac catheterization, according to the statements made:

No, no, I really wanted to know what I should do... It would be better if they informed us, wouldn’t it? Because they tell us to do it and they don’t say anything, I just see people going back and forth. (P11)

No, they didn’t tell me anything, but you can tell me, can’t you? (P5)

No, I wasn’t. I like to be honest, no one told me anything. I like to be honest, nobody guided me... because I wasn’t guided at all. It would have been much better if someone had come to guide me, but nobody came to tell me anything, what is that? (P6)

Guided. He said I had to rest a lot. Then he told me to rest, take a shower and take the bandage off my leg, not just dry it off, it has to be wet. (P1)

Not so far. All I know is that I shouldn’t do anything extravagant, right? When the appointment was made, they said I was going to be hungry all day, I wasn’t going to eat anything, but it didn’t work out and then they canceled it. (P10)

C3- Feelings after cardiac catheterization.

In relation to the feelings and the way in which the participants received the information about the need for cardiac catheterization, it is possible to see that the majority felt some negative emotional impact, however, others were hopeful that it was the only way out of their health problem.

I went into despair, I went into despair, I cried, I got so nervous that I needed a head doctor, and I’m going crazy after being old? I didn’t even like people talking about catheterization, or doctors, or going back to the doctor, I was like, terribly scared, I was traumatized. (P1)

I was nervous and scared, as anyone is, right? If I didn’t, it would have been better. (P2) I was scared. I was very nervous... (P3)

I wasn’t prepared, I felt like crying (crying), I’m anxious about the delay, anxiety is terrible, it gets on anyone’s nerves. (P6)

I felt relieved, because it’s going to solve my heart problem. (P11)

I felt happy, because it’s going to improve my situation, but I felt a bit scared, because it’s going to mess with my heart, I put God first. (P5).

DISCUSSION

Based on the analysis of the interviews, it is possible to identify that the study participants have little knowledge about the cardiac catheterization procedure; however, it seems to be a compilation of disjointed information, predominantly based on the beliefs and experiences of other patients who have already undergone the test. In addition, there is a lack of pre- and post-exam educational guidance, which is based solely on the need to fast before the exam. Care before the procedure and especially after cardiac catheterization is of fundamental importance for safety during the procedure and to mitigate possible complications.

It should be noted that guidance on the procedure to be carried out is a patient's right and should be given in a clear and concise manner, in order to provide the person with adequate, truthful information based on science, and thus avoid unnecessary exposure that could lead to complications that are often avoidable. It’s important to remember that when the patient is admitted for the test, they sign a form agreeing to all the procedures involved, so there seem to be flaws in communication and in the purpose of the form, since generally the professional responsible for ensuring that the form is signed is the nurse, a professional who wasn’t even mentioned in terms of providing guidance.

Lack of information predisposes patients to negative feelings related to the procedure, such as fear, anxiety and nervousness, which will have a direct impact on physiological and emotional responses and may even prevent cardiac catheterization from taking place.7

The results found corroborate a study carried out in Maranhão, whose objective was to describe the knowledge and meaning of cardiac catheterization for patients with heart
disease, which points out that knowledge is limited, since patients are submitted to the procedure without knowing what it is about, which leads to confusion between the different procedures of cardiac catheterization and angioplasty, that is, the purpose of the former as being an investigation and the latter as therapeutic.  

A study carried out in the interior of São Paulo found that patients had little or no knowledge of interventional procedures (cardiac catheterization and angioplasty). Participants sought to expand their knowledge by consulting the internet via smartphones, so it is important to be cautious when acquiring information from virtual sources, it is interesting to pay attention to reliable and renowned sources, giving preference to guidance from health professionals.  

It is imperative to highlight the potential of adequate and dynamic guidance that fosters the understanding of the exam by the person who will undergo cardiac catheterization, considering that they will be an active agent during the entire procedure, since lack of knowledge can affect the performance of the exam and bring harmful complications, so nurses are one of the professionals in charge of the educational process, that is, the dissemination of adequate information.  

Nurses can be considered to be the professionals closest to the patient and, for this reason, qualified to provide appropriate guidance, clarify doubts about possible harmful events, taking into account the appropriateness of the content and the way of explaining it to the patient’s educational, cultural and social level, with a view to avoiding limitations in the information and erroneous inductions about the procedure.  

Because it is a highly complex service, the practice of health education can be perceived as something punctual and not a continuous process, observing the absence of the role of nurses in this aspect. It is essential to note that the situation of the covid-19 pandemic seems to have hindered the process of health education due to the restrictions and limitations imposed on the world scenario, according to a study in which challenges and barriers to guaranteeing health education in the face of the pandemic were evidenced. Therefore, dispersing information alone does not guarantee patient understanding and awareness. It is necessary to plan, adapt educational material and evaluate health education based on interactivity, dynamism and potential for understanding.  

International research carried out in Peru, with the aim of determining the effectiveness of a nursing educational intervention on cardiac catheterization in terms of information and prevention of complications, points out that it was vital for the participants to conduct an educational intervention using images and dialogue in order to understand the examination to be carried out, in the prevention of complications and also in the acquisition of didactic skills related to the nurse facilitators of this service.  

It is important to emphasize that the educational process has as one of its pillars the emancipation of the person, responsibility for the health situation and also the patient’s contribution to the care offered, and this should not be different for the person who will undergo the cardiac catheterization examination, and it is necessary to demystify certain conceptions and clarify symbolism related to the heart and the procedure itself.  

Adequate knowledge and precise guidelines with a view to liberating health education that gives the patient the possibility of autonomy over their current health situation is of fundamental importance to ensure a safe, effective and complication-free procedure, adding that a patient equipped with knowledge can also be freed from negative feelings caused by ignorance.  

In addition to the person’s educational and biological situation, it is important to reflect and consider the social, emotional and cultural context, given that the heart is considered an organ with symbolic significance, responsible for emotions and the center of life. Thus, any procedure carried out on the heart often represents a situation that involves negative emotional impact, conflicts and anxieties, as this procedure can be understood by the individual as a threat and, at the same time, a salvation, favoring increased levels of anxiety and fear in this population.  

It should be noted that cardiac catheterization can represent a borderline situation for those who are going to undergo it, since on the one hand there is the disease/injury that needs to be corrected because it poses a risk to the continuity of life, and on the other hand there is the lack of knowledge about the procedure. It is important to emphasize that there is a predominance of elderly people being targeted for cardiac catheterization, and it is worth inferring that this population may have other chronic diseases in progress, as well as the possibility of a higher frequency of low levels of education, making it difficult to properly understand the health-disease process and its interfaces.  

Misinformation and ignorance are potential sources of anxiety, especially when this information is provided in an unsatisfactory manner, and it is possible to observe transient and somatic manifestations in the patient, such as sweating, tachycardia, altered sleep patterns, increased blood pressure, hyperventilation, among others. The lack of information can be considered distressing and is aggravated by the increase in waiting time, especially when it exceeds the scheduled date, as is the case in this study, in which most of the participants have already experienced rescheduling of the procedure.  

The study is promising for clinical nursing practice, as it shows and signals the knowledge of people who will undergo cardiac catheterization, thus attesting to and presenting gaps related to guidance and receiving information, thus allowing professionals to act in a problem-focused way, in order to implement educational technologies that favor the construction of their knowledge and autonomy.  

In this way, we are reflecting on the central role of nursing care for patients undergoing pre-examination for cardiac catheterization, in order to foster educational strategies that strengthen patient autonomy, as well as sensitizing them to self-care. It is suggested that intervention studies using edu-
cational technologies be carried out, with a view to ensuring comprehensive care that is applicable in a wide variety of settings where cardiac patients will be present.

The limitations of this investigation may be related to the method used to select the sample, such as the use of saturation and the low number of participants, which do not allow the findings to be generalized, and this information should be interpreted with caution.

**FINAL CONSIDERATIONS**

From the above, it is possible to identify that people in pre-procedure situations for cardiac catheterization have limited knowledge about the exam, with conceptual confusion and confusion about its purposes. The knowledge exposed by the study participants is formulated by the experiences of other patients who have already undergone cardiac catheterization.

It can be seen that the guidance given is primarily focused on technical and general situations, with no specific information being provided on pre- and post-cardiac catheterization care.

The lack of information and/or inadequate guidance not only places the person in situations of physical risk, but also brings psychological suffering, which has a strong impact on conducting a quality examination. It can be seen that the health professionals involved in cardiac care provide fragmented information and guidance on care, highlighting the need for nursing to play a leading role in educating and guiding the dissemination of knowledge, thus relieving the tensions, fears and anxiety that permeate cardiac catheterization.

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