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RESEARCH

CLIENTS' KNOWLEDGE AND EXPERIENCES ON THE COMPUTED TOMOGRAPHY SCAN SHARED WITH THE NURSE

SABERES E EXPERIÊNCIAS DE CLIENTES SOBRE O EXAME DE TOMOGRAFIA COMPUTADORIZADA COMPARTILHADOS COM ENFERMEIRO

CONOCIMIENTOS Y EXPERIENCIAS DE CLIENTES SOBRE EL EXAMEN DE TOMOGRAFÍA COMPUTARIZADA COMPARTIDOS CON LOS ENFERMEROS

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ABSTRACT

Introduction: computed tomography is a scan that allows for the diagnosis of various diseases, being a differential in the care provided to clients with different profiles. The quantity of scans and the short interaction space between nurses and clients are factors that contribute to not all guidelines being considered. **Objectives:** to access the knowledge and experiences of clients about the computed tomography scan; to discuss the demands for knowledge and care necessary for its realization; and to present a proposal for educational material, elaborated from these demands. Freire's dialogical practice was the theoretical axis that sustained the study. **Method:** a convergent care research, conducted at a federal hospital in *Rio de Janeiro*, with 23 adult clients. Approved by the Ethics Committee of the Academic Unit and of the hospital, CAAE: 44091015.9.0000.5238 and 44091015.9.3001.5257, respectively. A semi-structured interview was used, followed by a discussion with each participant. Thematic content analysis was applied. **Results:** the main knowledge demands brought about by the clients were about contrast; purpose of the scan; duration and periodicity; pain; equipment, whether closed or open; radiation; cumulative effects on the body; withdrawal of test substance; fasting and water restriction. This moment made it possible to problematize the necessary care in the research-care convergence. From these demands and care measures, an educational material was proposed as Nursing technology, of the illustrated booklet-type, discussed and approved by the participants. **Conclusion:** the educational process introduced innovation to care through the dialogical practice and allowed to propose educational strategies and technologies aimed at performing the tomography scan.

Keywords: Nursing; Tomography; Health Education.

RESUMO

Introdução: *a tomografia computadorizada é um exame que possibilita o diagnóstico de várias doenças, sendo um diferencial na assistência prestada aos clientes com perfis distintos. O quantitativo de exames e o curto espaço de interação do enfermeiro com os clientes são fatores que colaboram para que nem todas as orientações sejam contempladas.* ***Objetivos:*** *acessar saberes e experiências de clientes sobre o exame de tomografia computadorizada; discutir demandas de conhecimento e cuidados necessários à sua realização; e apresentar proposta de material educativo, elaborado a partir dessas demandas. A prática dialógica freiriana foi o eixo teórico que sustentou o estudo.* ***Método:*** *pesquisa convergente-assistencial, realizada em hospital federal do Rio de Janeiro, com 23 clientes adultos. Aprovada por Comitê de Ética da Unidade Acadêmica e do hospital, CAAE: 44091015.9.0000.5238 e 44091015.9.3001.5257, respectivamente. Utilizou-se entrevista semiestruturada, seguida de discussão com cada participante. Aplicada análise de conteúdo temática.* ***Resultados:*** *as principais demandas de conhecimento trazidas pelos clientes versaram sobre contraste; finalidade do exame; duração e periodicidade; dor; equipamento, se fechado ou aberto; radiação; efeitos acumulativos no corpo; retirada de substância para exame; jejum e restrição hídrica. Esse momento oportunizou problematizar os cuidados necessários na*

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convergência pesquisa-assistência. A partir de tais demandas e cuidados, foi proposto um material educativo como tecnologia de enfermagem, do tipo cartilha ilustrada, discutido e aprovado pelos participantes. ***Conclusão:*** *o processo educativo introduziu inovação à assistência pela prática dialógica e permitiu a proposição de estratégias e tecnologias educativas voltadas para a realização do exame de tomografia.*

Palavras-chave: *Enfermagem; Tomografia; Educação em Saúde.*

RESUMEN

Introducción: *la tomografía computarizada es un examen de diagnóstico de varias enfermedades, un elemento diferencial en la atención de clientes con distintos perfiles. La cantidad de exámenes y el escaso intervalo de interacción entre enfermeros y clientes son factores que contribuyen a que no se consideren todas las pautas.* ***Objetivos:*** *acceder a los conocimientos y a las experiencias de los clientes sobre el examen de tomografía computarizada; discutir las demandas de conocimiento y los cuidados necesarios para su realización, y presentar una propuesta de material educativo elaborado a partir de estas demandas. La práctica dialógica de Freire fue el eje teórico del estudio.* ***Método:*** *investigación convergente–asistencial realizada en un hospital federal de Río de Janeiro con 23 clientes adultos. Aprobada por el Comité de Ética de la Unidad Académica y del hospital, CAAE: 44091015.9.0000.5238 y 44091015.9.3001.5257, respectivamente. Se realizó una entrevista semiestructurada seguida de una discusión con cada participante; y los datos se analizaron según su contenido.* ***Resultados:*** *las principales demandas de conocimiento presentadas por los clientes fueron sobre el contraste, el propósito del examen, la duración y periodicidad, el dolor, la máquina cerrada o abierta, la radiación, los efectos acumulativos en el cuerpo, la retirada de sustancias para el examen, el ayuno y la restricción de agua. Este momento permitió discutir la atención necesaria en la convergencia entre investigación y atención. A partir de estas demandas se propuso el material educativo como tecnología de enfermería, del tipo de folleto ilustrado, que fue discutido y aprobado por los participantes.* ***Conclusión:*** *el proceso educativo introdujo innovación en la atención a través de la práctica dialógica y permitió proponer estrategias y tecnologías educativas destinadas a realizar el examen de tomografía.*

Palabras clave*: Enfermería; Tomografía; Educación en Salud.*

INTRODUCTION

The technologies used in health care, such as Diagnostic imaging (DI), provide several options for investigative research. Requesting these scans is a common practice in the daily routine of care.

Among these, Computed Tomography (CT) is a diagnostic method that utilizes computer-assisted mathematical reconstruction of body-cut images from a series of tube density oscillation and/or rotation analyzes of X-ray detectors.[1] It is an extremely useful scan, since it allows for the diagnosis of many diseases, the assessment of their severity quickly and accurately and, consequently, the establishment of more effective therapies. Thus, it represents a differential in the assistance provided to clients with different profiles and different complexities. The annual scan growth is estimated at about 10%.[2]

From a technological point of view, CT has undergone several improvements over the years, such as the increase in the number of detectors, the cutting time of images, the reduction of artifacts and the resolution of the increased images, providing more effective information for the diagnosis of client. Rapid advances in this technology have led to clinical studies of mass diagnosis and prognosis in various patient populations.[3]

The nurse is an indispensable element in the multi-professional team in this sector. The qualification and technical preparation of this professional are essential to the care of individuals undergoing procedures with ionizing radiation, covering individual guidance on the scan to be performed regarding the preparation, average duration and positioning of the client on the table during its performance, type contrast, route of administration and possible reactions after administration; and post-scan, such as the necessary increase in water intake for 24 hours, observation of allergic reactions, among others. Early identification of risk factors and signs of adverse reactions, because of the use of iodinated contrast method, is decisive in preventing harm to patients.[4]

However, the amount of daily scans and the short interaction space between nurses and clients are factors that contribute to not all the necessary guidelines being considered. Or, when they do occur, they are usually imperative and prescriptive in order to convey information about what clients may or may not do and how they should behave before, during and after the procedure. They are information limited to the actions and technical-operational procedures of the scan, based on a health education model that is oriented to a vertical pedagogy, and may not meet the expectations of clients at that time, leaving little room for listening and dialog about their concerns, with the aim of resolving any disturbances, and about their insertion in the whole process related to their realization.

In this model, knowledge is not built with the client; it is based on the assumption that there is a superiority of the professional who chooses what to transmit information and how to transmit it, and also does not know the world view of those who will consume it, placing them as passive subjects of the educational process.

It is common for clients to arrive at the scan site surrounded by expectations and anxiety about the diagnosis or follow-up of their illness, often afraid of having a poor diagnosis or even the disease they have been treating has evolved. Others come to the sector with prior knowledge of the scan, its preparation and how to proceed during its scan, its risks and benefits, articulated with situations already experienced with yourself or with a family member or linked to information provided by the

media. However, they remain anxious and sometimes fearful about test results and outcomes.

This whole context should be permeated by a dialogical orientation for the CT scan, which is of fundamental importance to the client, not only in order to receive him in the hospital environment, but also to provide a change of attitude in the production processes in health. We understand that educational work in health is a complex process that goes beyond the transmission of information. Each client has their culture, their beliefs, their knowledge, which need to be known and, if possible, considered in a horizontal educational proposal; and from its historical-social insertion, it becomes an active subject of care.

In this study, health education and the construction of educational material integrated with it were presented as important technologies in approaching clients who underwent computed tomography. The proposed educational material was built from the dialogical relationship of the nurse and researcher with each client, research participant, in order to promote assistance to clients that could meet the demands they bring about the scan, surrounded by doubts and feelings that sometimes afflict them and make them insecure and afraid. This material served, therefore, as a mediator in the learning process, being a tool for the educational action of the nurse. Of course, its use does not replace the care provided to the client in its entirety, but allies with the purpose of contributing to the problematic discussion alluding to the theme.

The dialog with the client allowed access to knowledge and experiences of clients about the CT scan; discuss demands for knowledge and care necessary for its realization; and present the proposal of educational material, elaborated from these demands; these are the objectives of the present research, of a convergent-care nature.

In addition to clarifying the steps of the procedure based on what the client brings, contributing to the resolution of post-scan complications, the achievement of these objectives contributed to demystify the existing social imagination that it is a scan for the diagnosis of cancer only. As it is a growing care field, the study contributed to the investigation of the issues that emerge from the practice of Radiological Nursing, broadening the discussion and helping to build their own knowledge in the area. In addition, it allowed to propose educational strategies and technologies focused on the care needed to perform the CT scan in a shared way with the nurse, with the intention of keeping clients informed, reducing their stress and anxiety and making them participative and safe for the procedure.

Freire's educational practice was the theoretical axis that underpinned the development of research, and dialog is the indispensable tool used in valuing access to knowledge and experiences of clients about CT, mediating the process of health education implemented and the proposal of educational material as Nursing technology.[5,6]

METHOD

The project was submitted to *Plataforma Brasil* with subsequent approval by the research ethics committee, *Comitê de Ética em Pesquisa* (CEP) of HUCFF/UFRJ - CAAE: 44091015.9.3001.5257; and from *Escola de Enfermagem Anna Nery/Hospital Escola São Francisco de Assis* (EEAN/HESFA/UFRJ) - CAAE: 44091015.9.0000.5238.

This is a qualitative study, with the method of convergent care research (PCA), whose articulation with practice is intentional and indispensable, in order to find alternative solutions, propose and make changes and innovations in the face of problems that are presented to health practices. It was performed in the CT sector of a tertiary public university hospital in *Rio de Janeiro*, a reference in the treatment of several highly complex diseases. The scans are previously scheduled and may occur depending on the complexity or severity of clients. Clients from the outpatient clinic and from all sectors of the hospital are assisted, including clinical, surgical, intensive care and emergency units, as well as clients from other hospitals through the regulation system (SISREG).

Initially, the proposal was presented to members of the Nursing team, in order to involve the team in the discussion and resolution of emerging situations in the field of practice. Twenty-three adult clients, 12 men and 11 women, who underwent CT scan, aged 18 years old or older; with a level of awareness and guidance capable of answering research questions through dialog; with outpatient origin and medical records in the hospital. All were selected for convenience because of their involvement with the research problem, and children and hospitalized clients were excluded from the study. Applying the selection criteria for participation in the research, there were neither refusals on the part of the selected nor losses of participants during the development of the study, a fact that corroborated the guarantee of methodological rigor regarding the possible bias in obtaining and analyzing the data.

For data production, the semi-structured individual interview technique was used, by means of a socio-cultural identification form; followed by discussion with each client individually, with the help of a script.

It took place in six subsequent and interrelated stages, of which the initial three occurred in the first meeting between one of the researchers and each participant, comprising the client's awareness phase of the research, the individual interview and the discussion with the participant, to survey

previous knowledge and experience on the subject, in order to define priorities and problem situations to be addressed individually.

The fourth stage was produced by the researchers through the discussion generated with each participating client in the previous three steps. It consisted of the elaboration of the educational material, of the illustrated, informative, self-explanatory and interactive booklet-type, focused on the questions related to the proposed scan, in order to be a facilitator during the health education process. This material was generated from the capture of content resulting from the problematizing dialog with the clients participating in the third stage of production and presented aspects related to the preparation of the scan and its performance, as well as pre-, trans- and post-scan care.

The fifth and sixth stages were developed at the second meeting with the participants. The presentation, discussion and evaluation of the educational material by the clients, designed by the researchers in the light of the proposals discussed with each participant for their preparation, were intended, respectively. It fulfilled the purpose of assessing the participants' understanding of the content of the educational material. From there, the research team made the necessary adjustments to the proposal of educational material, in order to contemplate the evaluation and changes suggested by the clients. Immediately after that, the participants evaluated the entire educational process implemented, conducted by a semi-structured interview script applied by one of the researchers, with the purpose of making feedback of the stages developed in this research.

The interviews were recorded on digital media and then transcribed in full for interpretation and data analysis. The participants were identified by alphanumeric codes, as follows: E1 to E23; and the researcher responsible for production with clients was identified with the letter "P" (*Pesquisadora*). The thematic content analysis technique was applied in the treatment and analysis of data, suitable for studies involving opinions, attitudes, values and beliefs.[8] Using its principles, it started from the semantic categorization, that is, from the themes that most appeared in the texts and, from there, they were grouped into categories. It was a long process enriched with appropriate theoretical material, giving rise to the most satisfactory final version, analyzed in the light of the proposed concepts, emerging the following categories:

- previous knowledge and experiences of clients about the computed tomography scan;
- knowledge demands and the necessary care to perform the computed tomography scan, questioned with the clients.

RESULTS

Prior knowledge and experiences of clients about the CT scan

The first three phases of the study (awareness to participate, interview, and discussion) occurred at the time the client scheduled their scan. The choice of this period is due to the possibility of access to their knowledge before contacting the Nursing team responsible for the orientation during the scan. Each participant had their own thematic universe related to the reasons that led to the scan: trauma or tumor in the head region, diverticulitis, scleroderma, sinus inflammation, pulmonary nodules, hearing impairment, labyrinthitis, atrophy of the vertebrae, headache, and pain in the breast region. Regardless of these reasons, imaging allows efficient clinical or surgical diagnosis of conditions with direct consequences in selecting the type of treatment for clients.

The initial dialog of the researcher who conducted the production of data with the participating clients about the CT scan was provided by the question: "What do you know about the CT scan you are going to perform?" Of the 23 participants, 17 initially revealed that they had no knowledge of the scan they would undergo (E1; E2; E3; E5; E7; E9; E10; E11; E12; E14; E15; E16; E17; E18 ; E19), statement that was gradually being deconstructed according to the movement of the discussion. After all, "there is no absolutization of ignorance or absolutization of knowledge. Nobody knows everything, just as nobody ignores everything. Knowledge begins with the awareness of little knowledge (while someone acts)." [5]

In the continuation of the dialog, with the stimulus for reflection, the knowledge of these participants about the scan was being unveiled, either because they had already done it, following experiences lived by other people or having access to information from different sources.

> *Did you ever need to use [...] (P).*
>
> *Dye? No, I didn't need to use contrast at other times (E1).*
>
> *So, you know that, as you've had previous experiences [...] (P).*
>
> *Yep! (E1).*
>
> *[...] I warned you I had an allergy. Today that I came to get the paper, I warned again, that I have an allergy problem that must see if it must take contrast and they didn't explain to me [...] (E3).*

[...] Must be like an X-ray [...] (E7).

The information brought by E4 and, later, by E20, E21, E22 and E23, about the previous knowledge about the CT scan, despite its incompleteness, contributed to mediate the dialogic interactions established during the interview:

Well, I know it is for a better use or deeper analysis of the body, inside the body [...] Through the images and in detail for use, to fight infection, see the anatomical aspect of the organs, even for proliferation of [...]. So let's say infection, right? [...] (E4).

How did you know that? (P).

I watched through the conversations of the doctors, the nurses, the technicians [...] We saw, I observed the technical language of each one that was for [...] for this purpose (E4).

In the movement of dialog the previous experiences of the clients were emerging and articulating to what was again presented to them. The fact that you have had previous experiences with the CT scan does not always guarantee the client to feel fully informed about the whole process.

[...] I've done [CT] of the ear because I had a head tumor. I know you must get in the machine, that's all. [...] No one guided me. I know nothing! [...] (E3).

In the hospital setting, where relationships are almost always based on the traditionally verticalized model of education and care, it is common for clients to be subject to the established norms, following the commands given to them. In doing so, one submits to knowing the other, ignoring the existence of knowing from one's experience.

I arrive, lie in bed and stay there until they send me out (E1).

I came, I did the scan... I lay down and then they released me (E10).

According to the participants' reports (E2, E10, E12, E13, E15, E16, E17, E18, E22, E23), scan guidelines, when provided, are almost always restricted to the necessary fasting of a few hours prior to completion of the scan.

Demands of knowledge and care required to perform the CT scan questioned with the clients

The discussion on the knowledge demands about the computed tomography scan, from the perspective of the clients participating in the research, was generated from the following question: "What would you like to be informed about this scan"? The announcement of the debate issue led the participants to bring their concrete demands for knowledge related to the CT scan, some generated by previous experiences, others from different sources of information, regardless of whether they had already submitted to this type of scan.

The questions involving the CT scan that came up in the dialog with the clients were of various natures and complexity levels, having the following as main themes: use of contrast (E1; E3; E4; E10; E11; E12; E16; E17; E19; E20; E21 and E23); purpose of the scan (E10; E11); duration (E3; E13); pain (E5); need for companion (E3); information about the equipment, especially if it is closed or open and if it emits radiation (E4; E5; E8; E13 and E14); periodicity of the scan and its cumulative effects on the body, such as those resulting from radiation (E4; E13; E16); if any substance for scan is removed (E7); need for fasting (E18; E22) and water restriction (E18).

Knowing the medication needed in some cases for the scan - the contrast - was one of the main concerns highlighted by clients and was mentioned by 12 participants. During the dialogic interaction, it was possible to discuss the functions, possible reactions and solutions, if any adverse effect to the medication occurs. Reassuring the client in this moment of anxiety and insecurity is fundamental.

The risks of the scan are related to radiation exposure and the administration of iodinated contrast, the latter often being required to better visualize the body structures being evaluated. Concern about the effects of radiation on the body was brought about objectively by E4, being also recurrent in the speech of E16, E20 and E21. It is justified due to the repeated scan due to the need for diagnostic follow-up.

[...] How much damage can [radiation] do to our life and body over a long period? For example, we do today, but how many years from now, what will it bring about [...] about [...] let's say, harm? (E4).

Well, the tomography scan emits ionizing radiation, but harm will only occur in the long run if you do it often, in a short time (P).

Unnecessary exposure of patients to ionizing radiation can lead to unnecessary risks due to their stochastic effects. The Commission on Radiation Protection states that the benefits of radiation exposure must substantially outweigh any risk.[9]

E4's speech in sharing his concerns related to the possible harms of radioactivity in his body over time reinforces the importance of the health education process in the area of diagnostic imaging. Staying still during the scan reduces the client's time in the scan room, which decreases exposure to ionizing radiation and promotes a better-quality result.

> *[...] How do you identify whether the person is allergic to contrast the first time? (E21).*

> *The person may have a history of allergy, he can know if he is allergic to shrimp, fish, iodine, then he signals. Usually he speaks at the appointment when he will schedule the scan. So they [sector] schedule all the allergic patients for Monday, but sometimes it happens that the person does not signal, as one patient had last week that when entering the scan room, she said that when she ate shrimp in her mouth it swelled up. And she had to come on Monday and prepare to take the scan (P).*

> *Sorry, does it [dye] cause anything serious? (E21).*

> *No, it can cause shortness of breath, heart beating fast [...] But when this happens, we always advise the patient to call the Nursing staff, because there are medications to reverse this situation, corticosteroids, antiallergic drugs. [...] (P).*

> *And to draw it [dye] from the blood? Is it just with serum? (E21).*

> *No. You should drink plenty of water to flush it out (P).*

Some research participants associated the CT scan with the MRI, for which a closed device is used, which causes a feeling of discomfort, anxiety and fear. Cases of claustrophobia should be carefully observed, and it is important to reassure them about this situation by clarifying that most appliances are open. The relationship of anxiety and claustrophobia is multifaceted, as it involves the fear of the unknown, the discomfort of small environments and possible diagnostic results to be revealed.

> *[...] It's what goes on inside, that we will enter a place and I, as I have asthma, bronchitis, I have phobia, I am terrified of entering that business! Going in, going in [...] And I tell her, to whom is doing: – Oh! If it takes too long, I get agonized! I will panic inside! (E3).*

> *Do not worry, the device is opened. Upon entering the room you will be greeted by a Nursing professional who will direct you to the machine table. You will only be alone at the time of the scan. You will lie flat throughout the scan, motionless [...] (E3).*

DISCUSSION

For the biomedical model, the human body is symbolically compared to a gear system, such as the very technological services it uses, like CT. The disease, in turn, is seen as a malfunction of this machine, which needs to be fixed. To deconstruct this machinic symbolism of health is not simple and implies considering the client endowed with alterity, subject of law, historically situated, holder of knowledge. It is worth noting that, just like the health professional, the client speaks of the same body, but from another place, "from the place of daily life, subject with the body and corporeality".[7]

Therefore, in the practice of health care, it is necessary to remember that the client brings with them experiences and knowledge proper to their social place and that deserve to be considered in the perspective of libertarian health education. After all, to educate and educate oneself in the practice of freedom is to keep in dialog with those who almost always think they know nothing, so that they, transforming their thinking that they know nothing into knowing that they know little, may also know more.[6]

When not provoked by a problematizing health pedagogy, the client often has difficulties to elaborate his questions about the procedure, its purposes and repercussions, especially when he has not had previous experiences in the scan. The hospital has been facing constant situations of financial crisis with direct impact, among other aspects, on the number of Nursing professionals, which increasingly has their number reduced in view of the needs demanded by different sectors. This fact limits the maintenance of a holistic and humanized care process, sometimes resulting in the prioritization of managerial activities and technical-procedural care.

The characteristics inherent to the care model in the hospital space, especially in sectors whose dynamics of care and Nursing care are very focused on the objectivity of the actions, such as the Radiology Sector, may hinder dialog, information exchange and experiences among the participants of the care relationship. The short time with the client, although not the

determinant, can also interfere in the construction of this relationship.[8-10] But time must be used, albeit restricted, in favor of the needs and demands of the client who will undergo the scan.

Therefore, the prior preparation of the client, guaranteeing him a space in which to express his questions, doubts and concerns, problematizing the different situations presented to him, favor the safety, effectiveness and quality of the scan. It is noteworthy that access to information is an ethical attitude of care, and it is up to the nurse to be based on a health pedagogy that transcends the traditional hegemonic practice of educate-care of the hierarchical type, whose knowledge extends "from who thinks they know to those who think they do not know." Libertarian knowledge "is constituted in human-world relations, relations of transformation, and perfects itself in the critical problematization of these relations."[6]

Learning has different dimensions, drawing from it the essence of the practice. Its movement allows more than just adaptation or accommodation, but the transformation and recreation of the established reality.[11] Learning builds and reconstructs itself in a spiral movement. Its sources are varied, the result of the different social interactions that the subject establishes, such as E4, which incorporated the technical-scientific language of the professionals with whom he had contact. His discourse reveals the use of proper expressions of scientific knowledge that are intertwined with language and common-sense knowledge. It is worth noting that knowledge does not change into another, but both coexist and sometimes articulate and interpenetrate each other. E4 also highlights an important mediating instrument of learning: observation. As a social being, taking a critical position in front of the reality he experiences, the client becomes more and more able to build his own knowledge, appropriating what he has learned and applying it to concrete existential situations.

The knowledge that is structured in the knowledge of the experience made[6] is mediated by the practice of ordinary daily life, a practice that is interpenetrated in the knowledge of the other, the common and the scientific universe, and thus moves in comparison, repetition, doubt, curiosity, building, deconstructing and rebuilding. This analysis is based on the assumptions of social constructionism for which knowledge is built from the subject's experience, its relationship with the world and with other subjects.[12]

It is common for the interview conducted by the Nursing professional to restrict, at a moment prior to the scan, to standardized questions whose answers follow this same perspective, not opening to dialog, thus surrounding the discussion, reflection and criticism of the client. The lack of Nursing consultation at the Radiology Service makes it difficult, although not precluded, due clarification to the client, in a dialogic and participatory manner. Prior access to information about the scan is a client right, a matter of citizenship, provided for in the *Política Nacional de Humanização*.[13]

When information is accompanied by dialog, it opens the possibility of argumentation, knowledge exchange, interaction with the professional, which can result in safety and tranquility of the client during the procedure. Feeling this way, they tend to be more cooperative and participant during the scan, contributing to its efficiency. In order to be successful in this process it is necessary to pay attention to the quality of this information and to the attitude that the professional and the client adopt in the care relationship. Therefore, it is necessary to overcome the model of transmission of vertical and unidirectional knowledge still predominant in the relationship established between educator (nurse) and learner (subject care). In the logic of this model, the care subject is considered as lacking information and it is up to the nurse to transmit his scientific knowledge. It is taken as the object of the educational practice and not as its subject, which hinders dialog, critical reflection and conscious decision making, thus maintaining the culture of silence.[10]

The lack of information about the entire procedure, for some, generates feelings that are sometimes avoidable, such as fear, tension, worry and discomfort. The peculiar characteristics of the physical environment of the scan, combined with the diagnostic possibility that may arise from it and the effects of the pre-scan (contrast) medication, contribute to exacerbate these feelings. In addition, it is common to have no meeting between the client and the nurse in the pre-scan phase, and the relationship between both is restricted at that time, which may compromise the communication process and the establishment of trust.

It is worth bearing in mind that common sense knowledge is generated from an experience; although it does not become scientific knowledge, it changes in its quality from the reflection provided by the problematizing dialog. And as such, it transforms the reality of the subjects gradually. This is the importance of a health education that must go beyond the simple transmission of information; it builds knowledge that comes from science and common sense, using dialog as a tool for this process. This should be permanent, contributing to health intervention practices based on a problematizing methodology.

Concern about the use of contrast is legitimate as it may cause anaphylactic reaction in some people. It is necessary to know the client's previous pathological history so that, if necessary, the client should use pre-medication before the scan, in order to prevent a possible anaphylactic reaction. The venipuncture site should be carefully evaluated, as contrast extravasation may infiltrate and cause necrosis of the affected

tissues. The recommended contrast dose depends on the requested TC type, client weight, renal function and medical history.

The administration of the contrast should be done just like other types of medicines, considering, among other aspects, the client's history. As a preventive measure for clients with indication for intravascular (IV) contrast and who have a history of sensitivity to iodine, antihistamines and corticosteroids are administered prior to the CT scan.

Nurses perform the assessment, guidance, preparation of the client for the procedure, arrangements for the necessary materials, positioning of the client at the table and follow-up during the scan, contrast administration (when indicated) and observation of reactions that may occur during or after the conduct. It is important to advise the client in advance on how to list medicines for continuous use. Those with chronic kidney problems should be advised to bring the urea and creatinine test result up to three days. Clients who are diabetic and taking metformin-based medicines should ask their doctor to discontinue these drugs two days before the scan and for the first 24 hours after the scan. In the post-scan, the Nursing staff should record in the medical chart all the information related to the procedure: the administered contrast, volume, dose and reactions, if any, followed by the instructions given to the client. In case of any reaction to the use of contrast, the doctor should be notified immediately.

In the deepening of the discussion about the CT scan, the importance of the previous orientation exposed by the nurse became increasingly evident. It is important that the professional is able not only to perform the technical procedures relevant to the scan, with skill and dexterity, but also to gather in his action other qualifying elements of human care, such as dialog and attentive listening. Nursing interventions in the Radiology Sector usually include awareness of the imaging technique, informing and preparing patients, safety and communication.[14] Despite the importance attributed to the care that is built in the encounter between subjects, in the face-to-face relationship, nurse and client, there are other actions performed by the professional that characterize their concern with the client, ensuring their comfort and well-being.[10]

The set of actions related to the prevention, identification and treatment of adverse reactions to contrast, as well as all other aspects that involve the scan, is fundamental in the daily Nursing care. But attention is drawn to what suggests us to differentiate this study or serve as an addition to others already developed on the subject now proposed, namely, their special consideration to the dialog between nurses and clients, as a way to integrate it consciously and critically to all the stages that comprise the scan, making it a participant in the care process.

In the deepening of the discussion, it was possible to transcend the moment restricted to data production, since it favored, through dialog, to problematize the demands that were brought by the clients about the scan and, from this action, to establish a frank educational moment about their care, thus converging research with assistance. The PCA allowed one of the researchers, once inserted in the research field as a nurse, while performing the production of data, to intervene in the problems that emerged. And so, the proposal simultaneously converged actions of practice and research carried out in the same physical and temporal space, meeting the criteria of immiscibility and simultaneity of the method.[7]

The access and problematization of the theme with clients enabled the construction of educational material in the form of illustrated booklet. Its main features were the use of a vocabulary that is easy to read and to understand, inviting the target audience, with basic information related to the preparation and completion of the scan, including pre-, trans- and post-scan care.

In order for the participants to evaluate the educational material, the composition of the proposed content returned to the participating clients, at which time, in the dialog between me, nurse-researcher and them (clients), the time came to revisit the previous discussion, bring new elements to the current meeting, make additions and propose adjustments to the language used in order to facilitate the understanding and communication of its readers. This feedback by clients clearly demonstrated the practical application of the research and its benefits. But we emphasize the limits that are presented to the dynamics of caring and of care in the hospital that does not always favor the adoption of strategies and technologies of assistance and research of a participative nature, since their success requires time, availability and commitment of the team working in this area. space.

FINAL CONSIDERATIONS

The CT scan has contributed to the clinical practice, but it has required nurses' training not only from the technical point of view, but also in meeting the different demands of care to clients, both regarding the procedures that must precede the scan and in attention to their doubts, questions and the different feelings of these clients when undergoing the CT scan. The nurse should learn the vocabulary universe of clients and encourage them to share their previous knowledge and experiences, as well as what they bring as a demand for knowledge so that the educational action based on the communicating dialog occurs through reciprocity and exchange, in the interest of the quality of care. Encouraging dialog allowed them to think freely about what they were

interested in, freeing them from the worry of having a speech ready.

The educational process implemented as a care strategy, with a dialogic approach, has brought benefits to the care practice, enabling the sharing of knowledge and practices with clients about the CT scan and the main demands of knowledge brought by them and proposing educational material in the form. of primer. The argument that supports the elaboration of this material as Nursing technology is based on considering it as an important instrument in the mediation of health education, acting as a facilitator in conducting the entire process.

It has to be said that the reduction in the number of staff that the hospital, research field and other health care spaces undergo in recent years is a factor that presents a challenge to care, given the necessary investment of time direct client care, but not as an impediment to the implementation of the proposal. Therefore, for a successful adoption of the educational material by the Radiology Sector, it is necessary that the Nursing staff is willing to actively participate. This means that the continuity of the educational process established and the use of the proposed technology depend on the engagement of this team.

It is also worth mentioning that the production of knowledge about the role of Nursing in the diagnostic imaging sector is a field still little explored in view of the potential growth of the technology employed in it, requiring expansion and diffusion.

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