

Care-educational technologies: an emerging concept of the praxis of nurses in a hospital context

Tecnologias cuidativo-educacionais: um conceito emergente da práxis de enfermeiros em contexto hospitalar
Tecnologías cuidativo-educativas: un concepto emergente de la praxis de los enfermeros en contexto hospitalario

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ABSTRACT

Objective: to know the praxis of nurses in the hospital context and, from this, to define a concept about Care-Educational Technologies. **Method:** qualitative, exploratory-descriptive research, developed in a university hospital in Rio Grande do Sul State, Brazil, with 21 nurses (non-probabilistic sampling), through non-participant observation and semi-structured interview, conducted from March to December 2015. Records were analyzed through content analysis. **Results:** the results showed that in the context of nurses' work, it is possible to deduce care-educational possibilities, based on the person-person, person-tool and/or person-universe relationship. The concept was defined based on the intertwining of caring-training and training-caring for oneself and other people. **Final considerations:** the reflections point to the need to develop or strengthen the autonomy of those involved in the health-disease process. This is based on the empowerment of people under their lives' conditions, in their multidimensionality, within human praxis.

Descriptors: Technology; Nursing; Nursing Care; Hospital Assistance; Concept Definition.

RESUMO

Objetivo: conhecer a práxis de enfermeiros em contexto hospitalar e, a partir disso, construir um conceito acerca de Tecnologia Cuidativo-Educacional. **Método:** pesquisa qualitativa, exploratória-descritiva, desenvolvida em um hospital universitário do Rio Grande do Sul, com 21 enfermeiros (amostragem não probabilística), por meio de observação não participante e entrevista semiestruturada, realizadas durante o período de março a dezembro de 2015. Os registros foram analisados por meio da análise de conteúdo. **Resultados:** os resultados expressaram que no contexto do trabalho do enfermeiro, depreendem-se possibilidades cuidativo-educativas, a partir da inter-relação pessoa-pessoa, pessoa-ferramenta e/ou pessoa-universo. O conceito foi construído a partir do entrelaçamento do cuidar-educar e educar-cuidar de si e do outro. **Considerações finais:** as reflexões apontam para a necessidade de desenvolver ou fortalecer a autonomia dos envolvidos no processo saúde-doença, tendo como fundamento o empoderamento do ser humano sob sua condição de vida na sua multidimensionalidade, no âmbito da práxis humana.

Descritores: Tecnologia; Enfermagem; Cuidados de Enfermagem; Assistência Hospitalar; Formação de Conceito.

RESUMEN

Objetivo: conocer la praxis de los enfermeros en contexto hospitalario y, a partir de ésta, construir un concepto acerca de Tecnología Cuidativo-Educativa. **Método:** la investigación cualitativa, exploratoria-descriptiva, desarrollada en un hospital universitario del Rio Grande do Sul, con 21 enfermeros (muestreo no probabilístico), por medio de observación no participante y entrevista semiestruturada, realizadas durante el período de marzo a diciembre de 2015. Los registros se analizaron mediante el análisis de contenido. **Resultados:** los resultados expresaron que, en el contexto del trabajo del enfermero, se desprenden

posibilidades cuidativo-educativas, a partir de la interrelación persona-persona, persona-herramienta y/o persona-universo. El concepto fue construido a partir del entrelazamiento del cuidar-educar y educar-cuidar de sí y del otro. **Consideraciones finales:** las reflexiones apuntan a la necesidad de desarrollar o fortalecer la autonomía de los involucrados en el proceso salud-enfermedad, teniendo como fundamento el empoderamiento del ser humano bajo su condición de vida en su multidimensionalidad, en el ámbito de la praxis humana.

Descriptores: Tecnología; Enfermería; Cuidados de Enfermería; Asistencia Hospitalaria; Formación de Concepto.

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INTRODUCTION

The hospital environment is characterized as a setting that is historically conceived from the use of sophisticated tools, which aid in the practices performed by nurses and other health professionals. In this scenario, it is possible to identify the use of technologies, under a product and/or process perspective. Technology, as a product, encompasses computerization, information and artifacts; technology, as a process, encompasses resources related to teaching and learning processes of individuals, as well as the knowledge and structured knowledge of man that can allow the construction of products⁽¹⁻²⁾.

Nursing, as of its development as a practical discipline, aiming at the definition of theories, defines and (inter) relates fundamental concepts, which constitute a set of its own knowledge, which makes possible to establish it as a science of caring, train and manage their practices. Over the last decades, a growing process has been perceived in the production of studies focused on the development of concepts to subsidize nursing and other professions in the health area. Researchers have focused on revealing everyday situations that were previously understood as common sense. This dynamic occurs due to certain concepts, which may seem clear, but present imprecise, confusing terminology and inconsistent definitions with theories⁽²⁻⁴⁾.

The process for the analysis and development of concepts is intimately related to the development and expansion of nursing knowledge as a science. Resulting from continuous reformulation and refinement of concepts, it has been fixed on solid foundations of knowledge. As in other disciplines, one of the important points in nursing is dealing with concepts.

The process of conceptual development comes from three distinct influences, that is, the meaning, use and application of a concept in the praxis of professionals. A concept acquires meaning(s) through its possibility of serving the purposes established by people before practical situations, emerging from their daily lives. This is because a concept provides possibilities for problem solving, characterization of phenomena in an appropriate way, and the construction of feasible ideals⁽⁴⁻⁵⁾.

A concept comprises an idea or a mental construction built on a phenomenon, primary in the development of this science (under construction) of nursing. This requires insertion in a context, so that the meaning and its application are possible, enabling contributions to develop knowledge in an area⁽⁵⁾.

Therefore, this study represents the beginning of the academic-scientific-professional discussions about the concept of Care-Educational Technologies (CET) and was originated in the production of a master's thesis in Nursing⁽⁶⁾. The concept requires validity to

give meaning to a set of scientific and daily knowledge of nursing professionals, which involves the process of caring-training and training-caring for oneself and others. It is based on the principles of human praxis. These principles involve the conscious, critical, reflexive, creative, transforming and multidimensional levels between those involved and with the universe that is presented⁽⁶⁾.

CET are an innovative possibility to justify technological products and processes developed, validated and used, from a perspective that merely transcends their conception as educational or assistance technologies in an isolated way. That is, without the inter-relationship between caring-training. Thus, CET are revealed when people manifest levels of consciousness during their professional praxis.

The term praxis is sometimes referred to in research as being equivalent to practice. Praxis is performing an activity in a conscious and oriented way, which involves objective and subjective aspects of a given activity. Thus, it is not only a transforming social activity, regarding transformation of nature, creation of objects, instruments or technologies. Moreover, it is the transforming activity of people, as they act upon nature by transforming it, while producing and transforming themselves⁽⁶⁻⁷⁾.

Since studies with this focus are not available in Brazilian literature, this study proposes the interweaving of distinct theoretical-philosophical references (technologies and praxis), a new path in the production of nursing knowledge. Another point in focus refers to the theoretical knowledge produced by natural sciences, which, in isolation, does not support the approach of the phenomena of the health-disease process. As a result, nursing needs support from different references, human sciences and philosophy. It is in this tension, promoted throughout these meetings, that the conceptions of care and clinical practice that currently permeate nursing have been outlined. Therefore, the first traces of the concept of CET emerging from the praxis of nurses in a hospital context were presented.

Regarding the feasibility of the concept of CET, it allows us to insert a new mode of labelling a technology that interweaves the care process (considering the technology of care- scientifically justified knowledge and applied through techniques, procedures and knowledge during nursing care) and to train (based on the education technology - strategies and methodologies aimed at helping to raise levels of awareness among subjects)⁽⁸⁾.

The relevance of this study is represented through the opportunity to give visibility to the praxis of nurses in the hospital context as well as by the possibility of defining an emerging concept of this praxis. CET may be named in this way only if there is the interweaving of the elements caring-training, besides being anchored in the precepts of human praxis.

OBJECTIVE

Knowing the praxis of nurses in a hospital context and, from this, define a concept about Care-Educational Technologies based on the philosophical frame of human praxis.

METHOD

Ethical Aspects

The project was approved by the Research Ethics Committee of a Federal University of the state of Rio Grande do Sul. The requirements defined in Resolution 466/12 of the National Health Council were respected. All participants signed the Free and Informed Consent Form. To guarantee confidentiality and anonymity, capital letters were used: O (observation), E (interview), Enf (nurse), followed by the numerical identification corresponding to the order in which the collection was performed, (OEnf 1, OEnf 2; EEnf 2), and so on.

Methodological Procedures

Type of Research

This is an exploratory, descriptive study with a qualitative approach, based on the theoretical-philosophical reference of Human Praxis⁽⁷⁾. The study was conducted at different, sequential and complementary moments. The definition of a concept requires the application of systematized methods for its success⁽⁹⁾. Defining the concept of care-educational technologies occurred in two moments. At the end of the first moment (literature review), an initial concept was delimited. This was restructured and strengthened from the second moment (field research).

Research Scenario

Field research was based on a large university hospital located in the state of Rio Grande do Sul, Brazil. We identified 219 full-time nurses in 28 service units, included in this study. They had at least one nurse in their work team and met the inclusion criterion: having at least one year of professional experience in the service unit.

We highlight that three service units were excluded from research because they were composed of nurses with lower professional experience than that of stipulated for this study. Furthermore, four other professionals were excluded because they refused to participate in the study. For the places where there was more than one nurse, the selection was at random. This resulted in the final sample of 21 nurses.

Data Collection

The first moment, review of the literature, took place in: (1) Brazilian journals with *Qualis* A1, A2 and B1 for the nursing area, considering the classification of journals from the quadrennium 2013-2016, finding 15,180 studies; (2) secondary references (books of the area (n = 12), Brazilian theses and dissertations of the nursing area (n = 3,166); (3) portal of the National Institute of Industrial Property (*Instituto Nacional da Propriedade Industrial - INPI*), which makes patented technologies available in Brazil (n = 3). The period chosen was from 2005 to 2015.

This choice is due to the expansion of *stricto sensu* postgraduate courses and their reflexivity in the production of scientific knowledge and technologies⁽⁶⁾.

To refine these findings, the following selection criteria were adopted: a) texts of books and articles published in national journals in English, Spanish or Portuguese; b) original research studies, published electronically in full; the books were selected from a broad search on the internet, focusing on identifying their central theme and local publication; c) theoretical-conceptual contribution to the area of technologies, nursing technologies, innovation, development of theoretical models, professional and technological praxis in the hospital environment; d) (co) relation between the terms and the attributes care, education, technology, care technology and educational technology; e) identification and analysis of antecedents, consequents and attributes for the selected terms, impacts to the hospital's nursing praxis regarding origin, historicity, evolution, applicability, operationalization and systematization.

The studies were selected through online access to the website of the journals that met the *Qualis* Capes system classification pre-established. Subsequently, a search was carried out for the numbers and publication volumes that corresponded to the period cut chosen. The titles and abstracts of the studies were read, aiming to select those that had indications of development and/or validation/evaluation of technology. After this stage, 377 articles were selected, which were analyzed in full text, and 31 articles were included for critical analysis.

As for the secondary bibliographies, 35 dissertations, 15 theses, and 6 books met the established criteria, totalizing a sample of 90 analyzed productions. The books were acquired by researchers in digital or printed formats, read in full and only those that presented theoretical-conceptual contribution were selected. This process required several backwards and forwards processes, (re)constructions and reflections, with the intention of weaving a concept with applicability to the professional praxis in nursing and health. This review was developed by two researchers, independently. However, at times, the intervention of a third reviewer was needed to evaluate if certain studies had technological purposes, as well as to assess the attributes initially listed for the concept of interest.

We considered non-technologies papers that were: reflections, conferences, speeches and lectures; retrospective historical-presentation of a service; reports of experiences without systematization: indication of how to develop care, educational processes (formal or continuing education), administrative, that is, studies that do not present processes of conception thoroughly, development and validation of the possible technology; ethnographic studies, case studies, phenomenological studies, social representations, symbolic interactionism and exploratory research⁽⁶⁾.

We considered technologies as studies that presented concrete processes, from the daily experience and research for the development of a set of activities (conception, elaboration, planning, execution, operationalization and maintenance) produced and controlled by people. Moreover, propositions to develop theories and models for practice; techniques or procedures for intervention; methodologies for guiding processes and artifacts⁽⁶⁾.

As for field research, the second moment, data collection took place from March to December 2015. The non-participant observation portrayed nurses' daily routines in the hospital environment regarding the use of care-educational technologies. For the record, a dense description⁽¹⁰⁾ of the observations was made in a field diary, accounting for 256 observational hours.

The observations were made at different shifts, depending on the participants' working schedules. The hours of observation performed in each unit ranged from 10 to 15 hours.

There was also the individual and semi-structured interview, developed with the help of a script with questions about sociodemographic data; practices in the hospital; the terms "care and education" in nursing care; conception about care-educational technologies; contributions to the praxis of nurses.

Organization and Analysis of Data

The data obtained from the literature review and field research were treated based on the content analysis of the thematic type⁽¹¹⁾. The following stages took place: pre-analysis and material exploration, through readings and organization of the findings to identify the units of significance that responded to the object under study. The following criteria were used: completeness, representativeness, homogeneity, pertinence and exclusivity. Finally, there was an examination and interpretation of data, based on the theoretical-philosophical reference of Human Praxis⁽⁷⁾, which allowed the definition of three analytical categories, described in the results section. These categories were designed by crossing the results obtained during literature review and field research.

RESULTS

Based on the literature review, we identified three aspects: antecedent, consequent and attributes for CET (Chart 1). Since it is a concept under development, theoretical constructs on technologies of care and education were added, which, together, contributed to the design of the concept of interest. As a result, the initial defining characteristics for CET were defined.

We could note that CET are based on theoretical and/or technical-scientific knowledge from multiple subjects (professional, user/patient, companion). The concept has as potentiality the resolution of daily demands of professionals; assistance skills; promotion of change in behavior; process of emancipation and empowerment. The concept also reveals multiple performance for care-training mediation in nurses' praxis.

The analysis of data on field research allowed the development of three categories: interrelation and inseparability of the care-educational process; care-educational technologies: tools/products in the nurse's care practice; care-educational technologies: management tools for nurses.

Chart 1 – Description of the antecedents, attributes and consequents for Care-Educational Technologies, Santa Maria City, Rio Grande do Sul State, Brazil, 2017

Antecedents	Consequents	Attributes:
Scientific knowledge; Practical knowledge; Professional skills; Training; Creativity; Dialogical approach; Respect/Ethics and commitment.	Troubleshooting; emancipation; Improvement of care; Organization; Change of behavior; Personal and professional strengthening; Participation; Independence and empowerment; Humanization.	Tools; Products; Instruments; Strategy; Innovative approach; Resources; Devices; Support; Processes; Artifacts; Acquisition of skills; Care and educational process in health; Interaction; Multidimensionality; Pedagogical approach.

Interrelationship and inseparability of the care-educational process

Participants conceptualize CET⁽⁶⁾ as the interweaving and interrelation between the elements caring-training and training-caring. Thus, the caring process becomes inseparable from the process of training, and vice versa, that is, one, does not (co) exists without the other in the praxis of these professionals.

[...] in fact, it is precisely the knowledge, that in the moment you perform care, at the same time provides autonomy, so that the other person may also perform it. I imagine that when I talk about care-educational technologies, that would be the question, a kind of care with a gastrostomy, I carry out the care, the procedure, showing to the familiar, and I am, at the same time, enabling other professionals, so that they can do that care [outside the hospital]. (EEnf 03)

[...] at the same time you are taking care of them [patients], you are learning and you are training [...] I took care [of a patient], but at the same time I tried to train "her" so that she would have selfcare with her body, and at the same time, I also learned from it, because I observed in it the way I'm going to see other patients who may have the same problem. (EEnf 13)

Nurses show four flyers that are handed out to family and patients. These flyers address issues such as: treatment of AIDS, knowledge of diabetes, guidance in caring for elderly people, and orientation of hospitalization and discharge. We use these materials as a didactic resource to enlighten the [patient/caretaker] staff, to supply information to them in a more accessible way. I can come closer to the patient and speak, speak, speak, but is there anything left? We are creating differentiated alternatives to deal with demand. These are care-educational technologies, because I develop training for care or self-care of that patient. I have this patient who is well, lucid, oriented, talkative, but she is using tracheostomy; she goes home like this... so it's up to me, nurse, to give all the necessary guidance so that she can take care of herself at home. (excerpt from the field diary; OEnf 17, 07/28/2015, from 8:30 a.m. to 11 a.m.)

[...] I cannot separate much one technology from the other [care and training], because for me they are, in nursing, at least very connected. [...] it is very difficult to separate them, this is a technology of care, it's educational. They are intertwined because one thing does not exclude the other.

[...] care-educational technologies will teach, or will work, both the issues of care, and the issues of training together, integrated. (EEnf 18)

Care-educational technologies: tools/products in nurses' care praxis

A technology can be understood in different ways, such as tools, instruments, technological devices, among others. Above all, to be called *care-educational*, it is necessary to disclose and clarify how and for which professional purpose it is used. The main attribute involves praxis from its philosophical origin. This praxis requires raising levels of practical awareness and/or the praxis of nurses during the exercise of a practical process (human work)⁽⁶⁾.

[...] care-educational technologies are tools we will use to teach and provide care [...] for both patients and their relatives. [...] teaching to provide selfcare for that person. [...] a tool can be an illustrative material, a reading material, such as an apparatus, it depends very much on its purpose [...]. (EEnf 02)

It is something allied with care, for patients and relatives, supplying information. An example would be that of the catheters [simulator]. [...] it is an informative care that is showing what is going to be performed [procedure], it is something we pay attention to, because it softens anxiety, doubts... it helps in the issue of care. (excerpt from the field diary; OEnf 05, 6/16/2015, from 1:30 p.m. to 7 p.m.)

[...] I care for and I train them [patients] and with the team, it would be the same role, with the use of technology, with the use of tools [...] if I had a web page of orientations on the internet about care, examination guidelines, this could be a tool used for patient care through training. (EEnf 12)

Under the philosophical perspective of praxis, it is inferred that nurses used both consciences, interrelating them before the practical and care-educational process. The existence of a reflective process about the context in which they were inserted was found, allowing a mapping of care plans that would meet the demands of care and training in nursing⁽⁶⁾.

Everything you develop in the hospital serves to inform and help your client in some way. As an example, I will know through the system that my patient has 3000 platelets, go there to talk to him, explain: you will receive blood transfusion... I tell the family member or already contact the social worker to see with family members the possibility of donations of platelets and at the same time notice the staff that this patient is at rest in bed, and that he will have to bathe in bed, to avoid leaving it... that the staff will have to provide all care related to this, I will be able guide him by telling he will not be able to brush his teeth. (EEnf 08)

Upon returning to the nursing station, we witnessed some of the female employees discussing the dosage of a medication, where one of them calls the pharmacy, which was not able to inform properly. The participant goes to the computer saying that they would search the "Google doctor". After the search for the medicine, its dosage, pathologies for treatment with its

signs and symptoms, she says: "I wonder what would happen to us if there was no internet"! (excerpt from the field diary; OEnf 19, 04/29/2015, from 08:30 to 11:35)

Care-educational technologies: nurses' management tools

The management context of the units/services was also considered, due to nurses' characteristic of managing during the development of care. This dyad, in the context under study, reveals the qualification of the process of caring-training and training-caring for the other (patient, companion, team) in the complexity of the nurses' performance in the hospital environment⁽⁶⁾.

I follow the participant to one of the computers of the nursing station to update the patients' map, in order to update the punctures that were made, the discharge, hospitalizations and, later, to print it at the end of the shift. This tool, according to the participant, facilitates nurses' shift. The list is on the computer and has a description of the number of beds, the patient's full name, procedures performed by the team in the patient [dressing, puncture...], medical diagnosis and the clinic that is attending the patient. (excerpt from the field diary; OEnf 09, 12/3/2015, from 8 a.m. to 1 p.m.)

[...] When I am developing care, I may be supplying information on improvements, I may be preparing the team with another mentality, more open, a current mindset. When I speak about care, it is encompassing, not only doing or giving a bath. If I have knowledge, when I am providing care, I observe changes, supply information, develop a technique more safely, take information so that other teams can help with care. This is under the holistic view that we have with the patient. In my daily practice, I notice the Systematization of Nursing Care as CET, because it makes me reflect on the patients' clinical picture and the most appropriate assistance plans. (EEnf 11)

CET can also be identified when the nurse professional identity is constructed and reconstructed. This allowed us to infer that the levels of consciousness involved in the practical process of participants triggered (re)thinking their professionalism, with positive effects on the care provided. The technology with the *empowering potential* of people, patient, companion or nursing professional was noted⁽⁶⁾.

The results of both moments, which analyzed aspects from the literature and the praxis of nurses, allowed the (re)construction of the initial concept of CET as a set of scientific knowledge, resulting from concrete processes that support the operationalization of the process of caring for and training the other (user/patient, companion and nursing professional). These results are directly and indirectly perceived in nurses' praxis, based on daily experience and research, in a perspective that involves a critical, reflexive, creative, transforming and multidimensional consciousness between those involved and the environment in which they are inserted⁽⁶⁾, shown in Figure 1.

The concept (re)constructed from the praxis of nurses represents the intertwining of training and care, that is, at the moment of human praxis, the process of caring-training and training-caring in nursing occurs through the interconnection of these elements, with the purpose of building and/or strengthening empowerment, autonomy and well-being of people.

They are inserted in a context of a health-disease process of an individual and/or community. Therefore, Care-Educational Technologies, of both process and product are intermediated by the relations between the subjects in the unfolding of the professional practice in health.

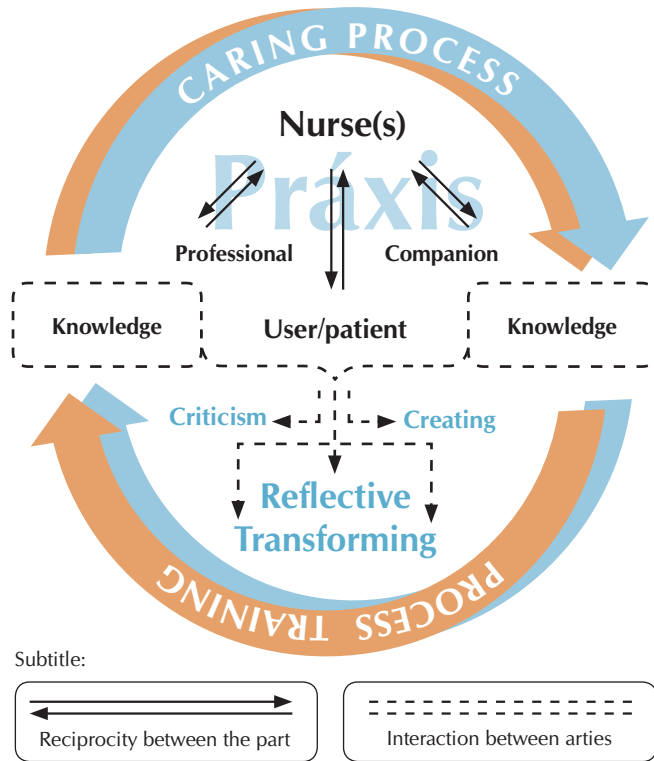


Figure 1 – Representation of the concept of Care-Educational Technologies, Santa Maria City, Rio Grande do Sul State, Brazil, 2017

DISCUSSION

The development of the concept of Care-Educational Technologies introduces a new way of designing technological products and processes in the contexts of practice and research in nursing and health. They transcend a merely, reductionist and isolated view between caring and training. This means that care and training daily developed by nursing, in their different settings, do not need to be dissociated from each other, that is, during a care practice training can also be present. Following this linearity, praxis reveals itself as people demonstrate levels of consciousness (creative, repetitive, spontaneous or reflexive) before a practical process, with or without the use of technology.

The initial concept of CET brings in its theoretical essence elements that characterize it as facilitator of the care process and training in health, subsidized by the construction of individual and collective knowledge. This provides the individual(s) with effective interaction and exchange of experiences leading to the improvement of competences⁽¹²⁾. CET can be revealed from the transmission of information to minimize doubts, concerns and anxieties of patients and their family, aiming at the change of

behaviors. It can be materialized as educational materials that facilitate the work process in health, such as flyers, booklets and simulators, through the communication and guidance of patients and their families. It happens in the search for (self) learning and autonomy of different subjects⁽¹²⁻¹³⁾.

We must use technologies that transcend technicality and mechanization of work and be anchored in nursing practices in the hospital environment. CET are inserted in the nursing praxis under a pedagogical perspective that aligns care and training in health, aiming to provide individuals with a possibility for the development of criticism, definition and strengthening of knowledge as well as meaningful learning. The insertion of technologies in people's daily lives is seen here as effective tools for the formation of critical, reflective, creative and transformative knowledge, enabling the individuals' understanding and their autonomy before living and health conditions⁽¹⁴⁻¹⁵⁾.

ECT can enhance healthy life and wellbeing, involving an empowering caring-training, allowing those who use it to gain knowledge about themselves and the environment in which they live, and can develop changes in this environment and in their behavior⁽¹³⁻¹⁶⁾. Research has reinforced the importance of developing new strategies that give rise to possibilities that promote behavioral changes adapted to the socio-cultural context and the lifestyle of users of health services, as well as a gradual and permanent responsibility, making them the protagonists of their process of health-disease⁽¹⁵⁾.

The concept, (re)constructed from human praxis, indicates that CET are directly linked to the consciousness involved in the practical process. That is, CET are defined as practice or praxis. The first, concerns a consciousness that permeates the practical process, which governs it or materializes throughout it. The second, qualifies self-aware consciousness, insofar as it is aware of this permeation, and that it is the law that governs –as an end– the modalities of the practical process⁽⁶⁻⁷⁾. It may occur that in a practical process, the first is below the second, i.e., by involving more action than reflection and criticism about this action, to transform this process⁽⁶⁾.

In this context, the participants used both consciousness, intertwined during the practical care-educational process. We found the existence of a reflective process about the context in which they were inserted, which allowed a mapping of care plans that would meet the demands of care and training in nursing⁽⁶⁾. The assistance activities are carried out from a perspective of care completeness, directed to the individuals who need it. These activities should be linked to systematized practices, to make the nursing work process easier⁽¹⁵⁾. In nursing institutions, the action of nursing professionals must be based on theoretical and practical knowledge, aiming to subsidize and strengthen the performance of everyday activities, since they are characterized by different levels of complexity.

Management aspects were also considered, because nurses manage care, either directly or indirectly, aiming to qualify care and train in health (patient, companion and team)⁽⁶⁾. The management process in nursing presents users as objects of their actions, in order to plan a care based on previous planning, direction, supervision and evaluation of the actions performed by nursing professionals. This process is developed by considering the needs of the subjects involved⁽¹³⁻¹⁴⁾.

In this research, Nursing Assistance Systematization, a nurses' management tool, emerges as possible CET because it transcends the limits of disciplinary knowledge and moves in the dialogical and complementary perspective. NAS aims to meet legal principles of the profession and improve care, and this process requires nurses to have professional competence⁽¹⁵⁾. The use of this work strategy requires the critical, reflexive and scientific thinking of nurses, focused on goals with positive results, to meet patients and their families' needs; it also requires constant updating, skills and experience, guided by ethics and standards of conduct.

Therefore, CET are also revealed during the process of construction and reconstruction of professionals, from improving their skills. We can infer that the levels of consciousness involved in the practical process of participants triggered (re)thinking their professionalism, with positive results in the assistance provided⁽⁶⁾.

CET have *potential empowerment* for people, i.e., patients, companions or nursing professionals. The act of empowering emerges as a programmed activity with planned intentions and allows people to acquire knowledge of themselves and of the context in which they are in. As a result, they become able to change this environment and their own conducts. In addition, it empowers people to define and intervene in their own problems and needs; to understand how to solve these problems with their own resources or with external support, and to promote more appropriate actions for a healthy life and well-being^(6,17-19).

Today, we currently face situations in which technology reigns over social relations, implying impersonality, coldness and devaluation of care. Thus, the dimension of technology comes as a dehumanizing force, depersonalizing and objectifying the ways of caring when it is not used properly. In this context, technology reveals knowledge and ways of caring. However, we must improve and update health professionals so that they can apply knowledge in a responsible and rational way, developing a critical and reflective sense of their actions^(6,20-21).

With changes in context and in nursing performance, there is a need to correlate philosophical aspects in daily praxis. This way, we can foster greater reflexivity, criticality and empowerment in everyday activities. Before this premise, Care-Educational Technologies have the potential to strengthen the autonomy of subjects involved in the health-disease process, based on the empowerment of people under their lives' condition in its multidimensionality⁽⁶⁾.

Empowerment, when applied to health, allows dialogic learning and the development of consciousness, both critical and reflective, in which people find meaning for a healthy way of living, with autonomy and in a personalized way. Information alone, provided through educational processes, will not change behaviors. Nevertheless, knowledge is a necessary condition for a process of change in practice or behavior to occur. In other variables, such as attitude, that must be changed for certain behaviors to be modified^(6-7,18,22).

Following this empowerment approach, the process of caring for and training oneself and the other is seen as an act of cooperation between health professionals, patients and caregivers. This process aimed at the construction and reconstruction of knowledge, by these social actors, about the health-disease

process that they were experiencing, and its consequences, so that they could make informed decisions about care and training in the context of hospitalization and illness⁽⁶⁾.

Study limitations

This study presented some limitations, such as: difficulty of compliance by some participants, with the argument of always being inserted in studies and not receiving feedback of results; complexity of making observations, in the short term, mainly because there were 21 professionals, in different contexts, where each one had his/her singularities and specificities. Regarding giving feedback about this study's results training processes were included in the annual activity schedule of the Permanent Health Education Center of the studied hospital.

Another limitation of the study was working only with journals classified in the *Capes qualis* system, which made us exclude research produced outside Post-Graduate Programs and/or not registered in the Program reports.

Contributions to the nursing field

The concept of Care-Educational Technologies, through caring-training and training-caring processes, demonstrated possibilities to maximize the autonomy and empowerment of those who use and are part of it. Thus, the concept allows self-care and self-management of caring-training in the daily service in hospitals.

As for scientific productions of Brazilian nursing, the benchmarks of praxis and technologies had not yet been explored and confronted. This theoretical union contributed to the insertion of new discussions and reflections about technologies and their use in the praxis of nursing. Furthermore, exploring the philosophy of praxis has contributed to the construction, maturation and concretization of the initial concept of Care-Educational Technologies.

FINAL CONSIDERATIONS

This study proved that knowing the praxis of nurses in hospitals makes it possible to (re)construct concepts. Here, the proposed objective was achieved with the construction of the concept of Care-Educational Technologies, based on the philosophical reference of human praxis.

In existing literature, care and training technologies are addressed separately. Thus, the theoretical elements of studies do not describe an association and interweaving of these two typologies.

For us, conceptualizing CET was a challenge, due to the complexity and theoretical depth in the references used. The interweaving between technology and praxis allowed us to develop the concept of CET supported by philosophical principles that consider level(s) of consciousness involved in the practical process of hospital nurses. CET consider specific values and subjectivities of relations between the subjects involved and these with the environment in which they are inserted.

The care-educational process is relational and progressive, and tends to value the experience of living, the way and the context of life, transforming those involved in human beings with critical, reflexive, autonomous and empowering aspects and agents

of change of their own reality, be it professional or social. That makes them citizens, ethicists and protagonists of their own lives.

We suggest the insertion of a new approach on technologies in Nursing undergraduate courses. It must allow students to develop educational competences in themselves and in others. Therefore, the human praxis approach is proposed in addition to the theoretical-practical approach already underway in the training of nurses.

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