REPERCUSSIONS OF CARE TECHNOLOGIES IN INTENSIVE CARE UNITS
REPERCUSSÕES DAS TECNOLOGIAS DO CUIDAR NAS UNIDADES DE TERAPIA INTENSIVA
REPERCUSIONES DE LAS TECNOLOGÍAS DEL CUIDADO EN LAS UNIDADES DE TERAPIA INTENSIVA

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ABSTRACT

Objective: to elucidate the repercussions of the use of health care technologies in the process of nursing care in intensive care units. **Method:** it is an integrative review in the databases LILACS, BDNF, MEDLINE and IBECs, in which articles were published in Portuguese, English and Spanish, available in full between 2006 and October 2016. Descriptors were used "Nursing Care", "Technology" and "Intensive Care Units". The descriptive analysis of the studies was used. **Results:** Thirteen articles were selected for the analysis that showed some perspectives related to the use of care technologies involving distancing versus customer approach, machinery dependence and humanization. **Conclusion:** it was considered that the use of health care technologies should be articulated to achieve better patient care. The positive and negative repercussions attributed to these technologies are generated due to the meaning and meaning attributed by each professional in their environment, influenced by their daily life. **Descriptors:** Nursing Care; Technology; Delivery of Health Care; Intensive Care Units; Humanization of Assistance, Critical Care.

RESUMO

Objetivo: elucidar as repercussões do uso das tecnologias do cuidar em saúde no processo do cuidado pela Enfermagem nas unidades de terapia intensiva. **Método:** trata-se de revisão integrativa, nas bases de dados LILACS, BDNF, MEDLINE e IBECs, em que se selecionaram artigos publicados em português, inglês e espanhol, disponíveis na íntegra, entre 2006 a outubro de 2016. Empregaram-se os descritores "Cuidados de Enfermagem", "Tecnologia" e "Unidades de Terapia Intensiva". Empregou-se a análise descritiva dos estudos. **Resultados:** selecionaram-se treze artigos para a análise que mostraram algumas perspectivas relacionadas ao uso das tecnologias do cuidar envolvendo o distanciamento *versus* a aproximação do cliente, a dependência do maquinário e a humanização. **Conclusão:** considerou-se que o uso das tecnologias do cuidar em saúde, deve estar articulado para se atingir uma melhor assistência aos pacientes. As repercussões positivas e negativas atribuídas a essas tecnologias são geradas em razão do significado e do sentido atribuídos por cada profissional, em seu meio, influenciado pelo seu cotidiano. **Descritores:** Cuidados de Enfermagem; Tecnologia; Assistência à Saúde; Unidades de Terapia Intensiva; Humanização da Assistência; Cuidado Intensivo.

RESUMEN

Objetivo: elucidar las repercusiones del uso de las tecnologías del cuidar en salud en el proceso del cuidado por la enfermería en las unidades de terapia intensiva. **Método:** se trata de una revisión integradora, en las bases de datos LILACS, BDNF, MEDLINE y IBECs, en el que una selección de artículos publicados en portugués, Inglés y Español, disponible en su totalidad a partir de 2006 a octubre el año 2016. Se emplearon los descriptores "Cuidados de Enfermería", "Tecnología" y "Unidades de Terapia Intensiva". Se empleó el análisis descriptivo de los estudios. **Resultados:** se seleccionaron trece artículos para el análisis que mostraron algunas perspectivas relacionadas al uso de las tecnologías del cuidar envolviendo el distanciamiento *versus* la aproximación del cliente, la dependencia de la maquinaria y la humanización. **Conclusión:** se consideró que el uso de las tecnologías del cuidar en salud, debe estar articulado para alcanzar una mejor asistencia a los pacientes. Las repercusiones positivas y negativas atribuidas a esas tecnologías se generan en razón del significado y del sentido atribuidos por cada profesional, en su medio, influenciado por su cotidiano. **Descriptores:** Atención de Enfermería; Tecnología; Prestación de Atención de Salud; Unidades de Cuidados Intensivos; Humanización de la Atención, Cuidados Críticos.

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INTRODUCTION

It was verified the importance of the intensive care unit (ICU) in the health care of the individuals who need a more specialized and complex care. The ICU is formed by specialized and qualified professionals to work in this area that requires special and humanized attention to the patient due to the fragility of their health, the humanization with the customer service, together with the existing hospital technologies, which result in a improvement of the physical well-being of the user.¹ Thus, "humanizing is offering quality care, articulating technological advances with reception and improvement of care environments and working conditions of professionals".²

It is known that ICUs are environments for the treatment of critically ill patients who require complex care and continuous monitoring. This environment, which is increasingly loaded with technological advances, allows healthcare professionals to control risk situations and guarantees the quality of care to the patient. It is seen that critical patient care requires the use of a specific technological arsenal and, for its use, the nurse must have knowledge and skills regarding the operation of the machine and the adequacy of the needs of those who need it.³

The technologies used can be divided into three types: light technologies, which are based on communication and reception that can happen anywhere and at any time aiming at the quality of care and aiming at establishing links and empowerment; the light-hard technologies, which refer to the structured knowledge that operates in the area of health such as epidemiology, clinical, among others; the hard technologies represented by the equipment and machines, the concrete materials that occupy the hospital environment for the act of health care and Nursing.³

This environment is provided with advanced technologies, in which there is the predominance of hard technology, which provides greater possibility to rescue the patient in critical condition. It contributes to immediate care, as well as providing health professionals with security. However, this technology takes away the professional from the patient making the mechanistic care.⁴

It is understood how care practices of ICU nurses, in detriment of the technologies applied to the hospitalized patient, have been developed contributing to (re) thinking about

the care processes in the ICU in order to focus on the quality of Nursing care in this case.

OBJECTIVE

- To elucidate the repercussions of the use of health care technologies in the process of nursing care in intensive care units.

METHOD

The integrative literature review method was used.⁵ To do this, the following steps were followed: establishing the objectives of the integrative review; establishment of criteria for inclusion and exclusion of articles (sample selection); definition of the information to be extracted from the selected articles; analysis of results; interpretation of the results and, finally, the presentation of the knowledge review / synthesis.⁵

The following guiding question was formulated to guide the integrative review: What scientific evidence reports on the repercussions of the use of health care technologies in the process of nursing care in intensive care units?

The following databases were selected for the selection of articles: Latin American Literature / LILACS, Nursing Databases / BDENF, Medical Literature Analysis and Online Retrieval System / MEDLINE and Spanish Bibliographical Index in Sciences of the Health / IBECS. In this way, one tried to minimize possible biases in this stage of the process of elaborating the integrative review.

The following inclusion criteria were adopted: papers published in Portuguese, English and Spanish, with the complete texts available in the selected databases, between 2006 and October 2016. Articles were included as exclusion criteria: articles in which it was not possible to identify relationship with the subject by means of the reading of title and abstract and that were repeated between the databases, editorials and review articles. The following cross-descriptors were used with the Boolean marker "and": Nursing Care, Technology, Intensive Care Units, which are part of the Descriptors in Health Sciences - DeCS and MeSH, and a total of 101 references were found. It should be emphasized that the search was carried out by two reviewers, independently, until a consensus was obtained after the comparison of the divergent results.

For the selection of articles, a thorough reading of the titles and abstracts was carried out, identifying whether they included the objectives of the study and / or answered the guiding question of the research. For the

collection and subsequent descriptive analysis of the scientific papers that met the inclusion criteria, the instrument was used to collect data in scientific articles, ⁶ in an adapted form, elaborated through the program Microsoft Office Word, version 2010, of which the following aspects considered relevant were considered: database, article title, author's name, year of publication, methods and results / discussion of the researches.

The flowchart of the article selection process (Figure 1) originated by the search

strategies used: inclusion of descriptors; identification of databases and articles with related themes; sorting (repeated titles, unrelated themes, excluded after reading); eligibility criteria and inclusion and exclusion criteria. For the descriptive and careful analysis of the studies, the reading was performed in its entirety. The instrument was then completed by highlighting the relevant information in the article.

Figure 1. Flowchart of the selection of the articles found and selected for the integrative revision adapted from the prism. Caruaru (PE), Brazil, 2017.

RESULTS

25 articles present in the BDENF were identified, of which four were selected. Six articles of the 39 present were selected from the LILACS database, of the 35 identified articles were selected in the MEDLINE database and one article was selected from the two found in the IBICS. Therefore, in this integrative review, thirteen articles that met the inclusion criteria previously established

and because they are related to the theme and purpose of this study.

It is observed, in relation to the journals in which the articles included in the review were published, that two were published in the journal Anna Nery Nursing Magazine; two, in the Brazilian Journal of Nursing, in the Journal of the Nursing School of the University of São Paulo and in the Revista de Pesquisa Cuidado é Fundamental Online; one in the magazine Texto & contexto Nursing, in the Paulista

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Nursing Act, in the Nursing Index, in Nursing in Critical Care and in Nursing Ethics. Regarding the type of research design of the articles evaluated, the following were evidenced in the sample: six field surveys; three

descriptive studies; three narrative studies; eight studies that used the qualitative approach and one, the quanti-qualitative, as presented in figure 2.

Data base	Title	Authors	Year	Methods		Results
LILACS	<i>Practices of intensive care nurses in the face of technologies: analysis in the light of social representations</i>	Silva RC, Ferreira MA, Apostolidis T.	2014	Qualitative Research.	Field	It was evidenced the conformation of a caring ritual that expresses the symbolic dimension of RS about IT practice in which there is a kind of care that values evidence and objective data, as well as all activities aimed directly at client recovery, as is the case with bureaucratic tasks, especially those referring to drug therapy.
LILACS	<i>Technology in nursing care: an analysis from the conceptual framework of Fundamental Nursing</i>	Silva RC, Ferreira MA.	2014	Descriptive, qualitative and ethnographic field research		Technology, from the domain of a technological language, provides conditions so that the fundamentals of Nursing care can be effectively incorporated into the nurses' practice. The idea of dehumanization linked to technology can be explained by the way in which the nurse means the things related to their daily life that will guide their action.
LILACS	Nursing care clinic in intensive care: alliance between technique, technology and humanization	Silva RC, Ferreira MA.	2013	Descriptive qualitative research.	and field	It was evidenced that the characteristics of the Nursing clinic in clinical Intensive Therapy encompass both subjectivity and objectivity. Because of this clinic, subjectivity is not always clearly expressed and objectivity requires the qualification of nurses to care in intensive care.
LILACS	<i>Hard technology in the intensive care unit and the subjectivity of nursing workers</i>	Tavares et al.	2013	Descriptive qualitative research.	and	Positive and negative aspects related to the use of hard technology in the context of the ICU were found. It was verified that this variability of issues affects the subjective dimension of Nursing workers, sometimes having positive repercussions and sometimes negative consequences, which also generate alterations in the health-illness process of these workers, especially in mental health.
LILACS	The dimension of action in social representations of technology in nursing care	Silva RC, Ferreira MA.	2011	Qualitative research.	field	The nurses' ability to deal with the technological devices was evidenced in view of the need of the user.
BDENF	Philosophical perspectives on the use of technology in intensive care nursing care	Schwonke et al.	2011	Narrative research.		The reflection of the use of technology in Nursing care to the critical patient in intensive care was evidenced.
LILACS	Technology in an intensive care setting: outlining a nurse-type figure	Silva RC, Ferreira MA.	2011	Qualitative research.	field	The skills that the nurse must have at the head of the technological apparatuses in the search for the frequent updating of the knowledge and reflections on the practice of the nurse in the ICU were evidenced.
BDENF	Technologies in intensive care and its influence on nurses' actions	Silva RC, Ferreira MA.	2011	Descriptive qualitative research.	and field	The necessity and importance of the training of new nurses in the field of technology in the ICUs was evidenced.
BDENF	<i>The technology in health: a psychossociological applied perspective to the care of nursing</i>	Silva RC, Ferreira MA.	2009	Descriptive theoretical-conceptual study.		It has been shown that technology has a way of influencing the way of life and can establish influences in different areas. And that their integration has brought many changes in the care provided by the nurse. Therefore, it can often cause fear and distress in the professional. In contrast, it can mean advancement, encouragement to professional improvement, establishing the ambivalence of distance or proximity to the user.
BDENF	Intensive therapy and technologies as a trademark	Louro TQ, Silva RCL, Moura LF.	2012	Study descriptive, exploratory, quantitative-qualitative	with	It was observed the use of machines and equipment and their implications in attending Nursing in the ICUs as instruments of care and not as a focus of attention. It is also evidenced that the use of hard technologies in intensive care nursing have implications, especially in the way professionals understand these intensive care units.

IBECS	El cuidado y la tecnologia em las unidades de cuidados intensivos	Rocha PK, Prado ML, Cabral PFA, Souza AIJ, Anders JC	2013	approach. Narrative research	It is believed with the technological advances and the ways of caring that the care received in the ICU will undergo major changes in the coming decades, affecting the management of health care.
MEDLINE	Caring and technology in an intensive care unit: an ethnographic	Price AM	2013	Ethnographic study, with qualitative approach	A comprehensive theme of the "elaboration process" was developed with subtopics of "vigilance," "focus of attention," "being present," and "expectations" with the ultimate goal of achieving the best interests of the individual patient.
MEDLINE	Technologically-Mediated nursing care: the impact on moral agency	O'Keefe-McCarthy S	2009	Narrative research	It was found that non-critical use of technology has a negative impact on patient care and nurses' view of patients, thus limiting moral agency.

Figure 2. Distribution of articles included in the integrative review according to the database, title, authors, year, methods and results. Caruaru (PE), Brazil, 2017.

DISCUSSION

It was evidenced, through the studies included in this research, that the use of the technologies in the context of the ICU is strictly related to the use of hard technologies. The use of technological resources in Nursing care generates positive repercussions insofar as it provides more qualified information to nurses, allowing them to guide their behavior by means of objective data of the reactions of the body.⁷

Nevertheless, it is noticed that the negative effects happen to the detriment of causing the professional's dependence on the information sent by the equipment, which promotes the gradual distance of the customer prioritizing the data provided by the machinery. In the face of this premise, bureaucratic and care lines of action start, especially in the bureaucratic tasks mediated by the clinical knowledge based on evidence and objective data destined to the recovery of the patient, causing the nurse to act in a protocolized way. Therefore, the nurse-client interaction ends up in the background, and the use of light technology is little expected in ICU Nursing care.⁷⁻⁹

On the other hand, other studies support the view that the devices incorporated in care, by providing information about patients' clinical status, enable client observation and enable the planning and organization of care that constitutes knowledge general. Therefore, technology contributes to the fundamental care of Nursing.¹⁰⁻¹

It adds, therefore, in favoring the restoration of the health of the subject and, therefore, its autonomy, that this implies to say that the technology also contributes to the humanization while preserving the human dignity. In addition, the use of hard-to-care technology, in a way, favors communication, since, by facilitating the nurse's work, it provides greater precision and speed in the actions, leaving more time for the team to focus on aspects expressing caring and providing an effective interpersonal relationship.¹⁰⁻²

It is shown by the results of an investigation about the characteristics of the intensive care nursing clinic, that there are repercussions of this clinic to the detriment of the greater handling and attention to the technological apparatuses and related procedures that are inherent to the practice of caring in this environment, making the nurses' ways of acting take on the characteristics of objectivity, but that does not necessarily mean the devaluation of

subjectivity and, rather, the repercussion of their clinic. This characteristic, because it is not clearly expressed, allows the production of discourses on the rescue of humanization in this sector.¹¹

Another point of view that emerged from the research related the use of hard technologies, also focusing on the subjective dimension of Nursing workers, because, although the technology makes the work process simplified, raising the quality of care, if the workers are not empowered to handle the equipment, this type of technology can generate occupational suffering and stress, also affecting the patient care process.¹³⁻⁴

In another study, following this same perspective, the training and updating of these professionals to deal with the technologies, to understand them and to see them as nursing resources, breaking the that the technology is adversary or enemy and validating the importance of knowing the technological manipulation and the interpretation of its information in order to direct the assistance.¹⁵

It is emphasized, in this sense, that care is only directed, without any harm to the client, when it is possible to interpret the technological language since its non-understanding will entail errors that can cause harm to the user or even death. Therefore, it is essential to observe and master the technological language since, in its professional formation, it is not discussed in depth, that is, it is rather superficial. In addition, it is necessary for the professional to see the user holistically, in addition to the technological apparatus, so that the practice of care does not become mechanistic.¹⁵⁻⁶

It is considered, in addition, the inclusion of articles with different designs and methodological rigor as possible limitations of the study. In spite of this limitation, these results can contribute to the construction of knowledge in Nursing, enhancing the knowledge based on scientific evidence and enabling nurses to reflect and transform their practice in a safer, humane and quality way.

CONCLUSION

Based on the scientific evidence, the repercussions of the use of health care technologies in the nursing care process in intensive care units have been elucidated, showing that technological innovations favor the improvement of care since space of the high complexity requires the incorporation and appropriation of technologies, among them, the hard, mainly in the case of ICU,

which is characterized by being a specialized place and technologies for patients who need specific care and continuous surveillance for the restoration of health.

It should be noted, however, that the use of health care technologies, in the Nursing assignments developed in intensive care units, must be articulated in order to achieve better care for patients in this environment. The use of hard technologies alone is not enough, since the equipment cannot replace the affection, the touch and the support, as well as the constant vigil of the team.

It is concluded that subjective and objective care becomes important considering the clinical and personal needs of each individual. The positive and negative repercussions attributed to these care technologies are generated due to the meaning and meaning attributed by each professional in their environment, influenced by their daily lives.

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