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INTEGRATIVE REVIEW ARTICLE

THE USE OF TECHNOLOGIES ON PATIENT CARE IN HAEMODIALYSIS: INTEGRATIVE REVIEW

O USO DAS TECNOLOGIAS NA ASSISTÊNCIA AO PACIENTE EM HEMODIÁLISE: REVISÃO INTEGRATIVA

EL USO DE LAS TECNOLOGÍAS EN LA ATENCIÓN AL PACIENTE EN HEMODIÁLISIS: REVISIÓN INTEGRATIVA

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ABSTRACT

Objective: to analyze the national content produced on hemodialysis technologies, highlighting the extent of nursing care to these patients and the use of these technologies to prevent potential complications of therapy. **Method:** integrative review in order to respond to questioning << *which technologies are being involved in nursing care to patients on hemodialysis in the Brazilian scenario?* >>, in the databases BDENF, LILACS, MEDLINE and SciELO virtual library, of national publications available in full text, published between 2007 to 2012. **Results:** of the nine productions, characterized as the number of articles found, selected and deleted, were educated discussions, confronting the ideas shown by the authors, using the classification of light technologies, light-hard and hard. **Conclusion:** it was noted the relevance of the topic, emphasizing the interaction between the members of the nursing staff and customers, the focus on educational activities, the use of complementary therapies and the use of telemedicine as innovations in nursing care. **Descriptors:** Technology; Kidney Dialysis; Nursing.

RESUMO

Objetivo: analisar o conteúdo nacional produzido sobre tecnologias em hemodiálise, destacando a dimensão do cuidado de enfermagem frente a estes pacientes e a utilização destas tecnologias para evitar possíveis complicações decorrentes da terapia. **Método:** revisão integrativa com vista a responder ao questionamento << *Quais tecnologias vêm sendo envolvidas no cuidado de enfermagem a pacientes em hemodiálise no cenário brasileiro?* >>, nas bases de dados BDENF, LILACS, MEDLINE e na biblioteca virtual SciELO, de publicações nacionais disponíveis em texto completo, publicados entre 2007 a 2012. **Resultados:** das nove produções, caracterizadas quanto ao número de artigos encontrados, excluídos e selecionados, foram elucidadas discussões, confrontando as ideias mostradas pelos autores, utilizando-se a classificação de tecnologias leves, leve-duras e duras. **Conclusão:** observou-se a relevância da temática, enfatizando a interação entre os integrantes da equipe de enfermagem e clientes, o enfoque nas ações educativas, o uso de terapias complementares e o uso da telemedicina como inovações no cuidado de enfermagem. **Descritores:** Tecnologia; Diálise Renal; Enfermagem.

RESUMEN

Objetivo: analizar el contenido nacional producido sobre tecnologías en hemodiálisis, destacando la dimensión del cuidado de enfermería frente a estos pacientes y la utilización de estas tecnologías para evitar posibles complicaciones decurrentes de la terapia. **Método:** revisión integrativa con vista a responder al cuestionamiento << *¿Cuáles tecnologías vienen siendo envueltas en el cuidado de enfermería a pacientes en hemodiálisis en el escenario brasileño?* >>, en las bases de datos BDENF, LILACS, MEDLINE y en la biblioteca virtual SciELO, de publicaciones nacionales disponibles en texto completo, publicados entre 2007 a 2012. **Resultados:** de las nueve producciones, caracterizadas cuanto al número de artículos encontrados, excluidos y seleccionados, fueron elucidadas discusiones, confrontando las ideas mostradas por los autores, utilizándose la clasificación de tecnologías leves, leve-duras y duras. **Conclusión:** se observó la relevancia de la temática, enfatizando la interacción entre los integrantes del equipo de enfermería y clientes, el enfoque en las acciones educativas, el uso de terapias complementares y el uso de la telemedicina como innovaciones en el cuidado de enfermería. **Descriptores:** Tecnología; Diálisis Renal; Enfermería.

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INTRODUCTION

Hemodialysis is the most common method of dialysis. It consists in removing the excess water and nitrogenous toxic substances from the blood, which is diverted to an appliance, a dialyzer to remove toxins and the blood is returned to the patient's body. The dialyzer functions as an artificial kidney, acting as a semi-permeable membrane to replace the glomeruli and renal tubules, as a filter to the kidneys due to bankruptcy renal excretory mechanisms in patients with chronic and acute kidney disease.¹

Although prolong life even indefinite, hemodialysis does not replace entirely the function of the kidneys and the patient continuously is subject to different problems and complications, among which: hypotension; painful muscle cramp, belatedly to dialysis; exsanguination; arrhythmias; air embolism; chest pain in patients with anemia or arterio-sclerotic heart disease.¹ In addition, dialysis results in changes in the lifestyle of the patient and his family, and may generate conflict, frustration, guilt and depression. Vascular access care is also a key element being the educational process of fundamental importance for the prevention of complications.²

On this basis, the nursing staff has the monitoring function, support, assessment, and patient education, maximizing their potential vocations, functional status and quality of life. To this end, it is important to provide patients with an environment in which they can express their feelings and their reactions.¹

Nursing care, the essence of the profession, belongs to two spheres: an objective which corresponds to techniques and procedures, and a subjective, based on feelings, such as sensitivity, creativity and intuition. Thus, there is only caution when both are used appropriately and combined with the technology.³

The nurse has great acting and autonomy and to manage and provide quality care to patients, is required constant updating and preparation, to ensure safety and psychological comfort procedure, due to the changed quality of life. Furthermore, scientific research in the area is an essential instrument for systematization of nursing care in haemodialysis.⁴

In the meantime, the idea of technology is associated with not only the technological equipment but also to knowledge, which give meaning to the *instrumental reason* of equipment. With this, the technologies involved in health work as light are classified,

which consists in establishing relationships as: autonomy, reception and management of services; light-hard when it comes to structured knowledge as theories or models of care, the medical clinic, the psychoanalytic clinic and epidemiology; and hard, when they involve instruments and technological equipment as machines and standards.^{3,5}

On this basis, technology can act as a mediator of objectivity and subjectivity of care, ensuring that sense and sensibility to act together as strengtheners instruments of nursing actions based on the needs of the patients of hemodialysis, as support, evaluation, emotional support and education. Care therefore requires combining processes, products and technological expressions of knowledge.³

On the relevance of the topic and the scarcity of studies that show the application of different modes of light technologies and light-hard in the nursing care to patients in hemodialysis, it was delimited as subject of this integrative review the use of the technologies on patient care in hemodialysis.

OBJETIVE

- To analyze the domestic content produced on hemodialysis technologies, highlighting the dimension of nursing care to these patients and the use of these technologies to prevent potential complications of therapy.

METHOD

Integrative review of literature about the knowledge produced about hemodialysis care technologies, seeking to answer the following research question << which technologies have been involved in nursing care to patients on hemodialysis in the Brazilian scenario?>>

The integrative literature review consists of a search, which allows the synthesis of knowledge from analysis of published studies, supporting the elaboration of general conclusions of knowledge in a particular area of study.⁶

Data collection was conducted in the databases in nursing (BDENF), Latin American System and of the Caribbean of Information in Health Sciences (LILACS), Medical Literature Analysis and Retrieval System Online (MEDLINE) and virtual library Scientific Electronic Library Online (SciELO).

The survey was conducted during the months of January to April 2012, being structured in three stages: first, the controlled descriptors were identified by the Virtual Health Library (BIREME) through the

health sciences descriptors (DeCS), selecting those considered relevant to the achievement of the research - Tecnologia/Technology/Tecnología, Dialysis renal / Renal Dialysis / Diálisis Renal, Enfermagem/Nursing/Emfermería, being used two combinations - technology/ renal dialysis and nursing/renal dialysis; in the second stage, the research was made in pairs, through these descriptors in the databases mentioned previously; and, finally, was made a critical analysis of the studies, also in pairs, excluding duplicate texts and those who do not fit the criteria for inclusion.

For data collection, research protocol was used, including sampling criteria, search strategies and indicators. As sampling criteria, were included: national publications available in full text, relevant to the topic of hemodialysis care technologies, published between the years 2007 to 2012, excluding the studies only available in summary form or not available electronically, those dissonant thematic studies and duplicates studies.

The researchers followed a systematic analysis of the studies, according to the phases of an integrative review: identification of the theme and selection of chance;

sampling; categorization of studies; evaluation of studies; interpretation of results; and, finally, the synthesis of knowledge. ⁶

For better analysis of data collected in the survey, tables were built describing the properties of articles.

Thus, following the established protocol for gathering and analysis of investigations included in final sampling integrative review component, the studies were characterized as the number of articles found, selected and deleted, as the magazine, to the type of study and the year of publication, and also known and theoretical discussions achieved, confronting the ideas brought by the authors. For this analysis, we used the classification of light, light-hard and hard technologies. ⁵

RESULTS

Initially, for a better demonstration of analysis of selected scientific productions, the studies were characterized, considering the databases searched, as the number of articles found, deleted and selected (table 1).

Table 1. Distribution of articles by result of literary review, 2012.

Database	Combination 1* n (%)	Combination 2** n (%)	Deleted n (%)	Repeated n (%)	Selected n (%)
BDENF	2 (0,9)	98 (6,3)	98 (5,5)	-	2 (22,3)
LILACS	14 (6,2)	84 (5,4)	91 (5,2)	3 (42,9)	4 (44,4)
SCIELO	6 (2,6)	51 (3,2)	51 (2,8)	3 (42,9)	3 (33,3)
MEDLINE	205 (90,3)	1330 (85,1)	1534 (86,5)	1 (14,2)	-
Total	227 (100)	1563 (100)	1774 (100)	7 (100)	9 (100)

*Combination 1- technology/ renal dialysis / **Combination 2- nursing/renal dialysis

The research studies (100%) amounted to 1790, of which 1556 (86.7%) were excluded because they are not national publications, 90 (5%) articles were not found in full-text form, one of the criteria for inclusion of research, leaving 144 (8.3%), of whom in another selection 125 were excluded (7%), for not fitting in the thematic proposed and three (0.1%), because they are not in the temporal dimension established, leaving 16 (0.7%) articles, which seven (0.2%) were duplicated, being selected, finally, nine articles (0.5%).

From this quantitative analysis it can highlight how much is still little large Brazilian production about technologies in hemodialysis, which contrasts to the fact that the prevalence of patients on dialysis have introduced progressive increase in the country. ⁶ Therefore, it is imperative the need for further theoretical production to cover the practice of care to these patients.

In table 2, is presented and characterized the studies for later analysis.

Table 2. Characterization of the articles analyzed in literary review, 2012.

Magazine		Year	Type of Study	Name of the article
Texto Contexto Enfermagem		2008	Original Article	Chronic renal Patient care technology: educational therapeutic approach based on the needs of the subject.
Revista Enfermagem UERJ		2008	Qualitative research	Therapeutic effect of music in chronic renal disease on hemodialysis.
Jornal Brasileiro de Nefrologia		2009	Review article	Information technology in Nephrology.
Revista Brasileira de Enfermagem		2010	Reflection Article	Permanent care: 24 hours nursing, our way of caring.
Revista Gaúcha de Enfermagem		2009	Original Article	Complications of the procedure under hemodialysis in patients with acute renal disease: nursing interventions.
Revista Eletrônica de enfermagem		2009	Original Article	Nursing care to clients in hemodialysis: instrumental and expressive dimensions.
Jornal Brasileiro de Nefrologia		2010	Original Article	Effect of intradialytic aerobic exercise on BTV and on left ventricular function
Acta Paulista de Enfermagem		2008	Retrospective Study	Survey on infection on double lumen catheter insertion.
Revista da Escola de Enfermagem da USP		2009	Original Article	The influence of musical rhythms on the perception of subjective states of adult patients on hemodialysis

The studies were characterized regarding the magazine, to the type of study and the year of publication. The research presents a diversity of magazines dealing with the theme, so for the most part, the articles were found in different magazines, excepting the Brazilian Journal of Nephrology, which repeats that characterization with two publications.

It should be noted, too, the great participation of nursing journals dealing with the subject. This is relevant because, over the years, these nurses went on to join actively in the treatment of renal replacement therapy, being responsible for all technical and part of the patient's relationship with the environment. Today, this procedure is performed, almost exclusively, by the nursing staff.⁸

DISCUSSION

With regard to the various approaches on hemodialysis technologies found in studies, it can be seen the great importance given to the integration between health staff and customers submitted to treatment and the use of educative actions in caring for these patients.

Nursing care dimensions present in the interaction between the members of the nursing staff and customers are characterized as a technology of the careful, once it configures in the manner of nursing team members position themselves on the care provided to its customers: to quote the changes of behavior on them, to get close during the arteriovenous puncture through their own guidelines held during sessions of the talks, which contribute to the feeling that the time went faster, the caring touch, look in deposited, the words that any belief, they bring stimulus to bolster attendance at sessions and face a chronic kidney disease.⁹

Studies show that care technologies with focus on educational activities are important as they give knowledge responsibility and

autonomy of the person, to live more dignified and humane way; for example, to help the patient to make decisions and to develop abilities to care for themselves, emancipating.⁹⁻¹¹

It stands out, too, in the surveys, the therapeutic use of music as a complementary therapy for the completeness of the care promotion, reporting that the music has the ability to influence feelings, their emotions and sensations, which makes hemodialysis sessions emotionally less aggressive; sounds can calm, let the human being quiet, induce and improve sleeping patterns and the presence of the musical group in the sector makes patients feel welcomed, thus decreasing the feeling of loneliness, which is usually experienced during hemodialysis.¹²⁻³

A study also shows, as technological innovation of care, aerobic exercise during hemodialysis sessions, whereas strategies like the practice of physical activity have been implemented with the aim of reducing, by increasing the heart rate variability (HRV) and improvement of left ventricular function, cardiac mortality in patients with chronic renal disease who are undergoing hemodialysis treatment.¹⁴

It was considered far too much about the so-called light technologies involved in health working³⁻⁵, but also hard technology is present and needed care under hemodialysis treatment.

The use of this technology, as in the application of telemedicine in the use of computers and telecommunications in medical practice, can substantially increase the provision of assistance and education in Nephrology for primary care and thus contribute to the optimization of the model of health on the recent demands that have emerged on the national and worldwide scene.¹⁵

It is important to highlight, too, as the studies analyzed, which facing the complexity

of factors, involving care in hemodialysis, effective training and continued professional to be able to intervene in potential complications of treatment, such as: hypotension, hypertension, muscle cramps, nausea and vomiting, headache, thoracic and lumbar pain, itching, fever, and chills.¹ It was found that the clinical evaluation and the assessment of the level of consciousness of nursing interventions were most prevalent during the episodes of complications.¹⁶

In addition, it is essential to the care of catheters used by patients, because the infection rate in health services is one of the main indicators of quality of care. In this context, the nursing actions include participation in the deployment, surveillance, control and verification of the catheter maintenance, as well as promoting educational actions with the nursing staff of guidelines for the patient, including the need to document the actions deployed and observations on contact with the patient, through notes to its evolution.¹⁷

It is evidenced, in front of such reflections, that technological innovations constitute a reality beneficial to users of hemodialysis, both with regard to incorporation of hard technologies - such as the fulfillment of its own who are undergoing hemodialysis procedure, as light technologies, which allow solidification of integral and humanistic care users and their families.

It seizes, in this manner that “technology is not a harmless device, very complex relations with society”.^{18:6} It is therefore a tool capable of contributing to the improvement of nursing care, enabling actions based on science, on effectiveness and on exchange.

CONCLUSION

It was noted how much still is little large Brazilian production about the technologies in hemodialysis. And, within that sample, it is possible to check the relevance of nursing journals dealing with the topic. It is cited limiting the search to the national scene, which is consistent with the research question and the objective established, clarifying the need for the development of a thematic international panorama, making comparisons with the results obtained in the research on screen.

Current technologies covered - the treatment and care - in that it goes to patients in hemodialysis involve: the interaction between the members of the nursing staff and customers; the focus on educational activities; the use of complementary therapies such as music

therapy; the practice of physical activity, such as aerobic exercise. In addition, it was considered in the studies the use of telemedicine, namely, telecommunications in the service of medical practice, as a means to provide better assistance to chronic renal patients.

There is also, through studies, the development of nursing interventions in the main potential complications of the treatment and the use of intravenous catheters for patients, requiring, in these cases, a joint action of the whole team, to provide effective assistance, to ensure the safety of the process that are undergoing hemodialysis.

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