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Nursing and the use of technologies in brazilian antineoplastic therapy services

ABSTRACT | Objective: to describe the main technologies used by the nursing staff in antineoplastic therapy services in Brazil. Method: research of narrative literature review, searching LILACS (Latin American and Caribbean Literature in Health Sciences) and MEDLINE (Medical Literature Analysis and Retrieval System Online) databases via Virtual Health Library (VHL). The inclusion criteria were studies in Portuguese published in a national journal, with a timeless cut and approach on the use of technologies in antineoplastic therapy services. Results and Discussion: the studies found in the literature were published in the years 2004, 2007, 2008, 2010, 2011, 2013, 2014, 2015 and 2016. The technologies used by nursing were light, light-hard and hard, materialized in educational video, therapeutic toy, software, device for continuous infusion, nursing process, music, communication, welcoming and interpersonal relationship. It was possible to observe many benefits from the use of assistive technologies. Conclusion: nursing uses several types of technologies in providing care to patients undergoing antineoplastic therapy, they bring great benefits to the patient and the profession that goes hand in hand with the technological advances of humanity.

Keywords: Biomedical Technology; Health Technology; Antineoplastics; Nursing Professionals.

RESUMEN | Objetivo: describir las principales tecnologías utilizadas por el personal de enfermería en los servicios de terapia antineoplásica en Brasil. Método: investigación de revisión de literatura narrativa, búsqueda en bases de datos LILACS (Literatura Latinoamericana y del Caribe en Ciencias de la Salud) y MEDLINE (Sistema de Análisis y Recuperación de Literatura Médica en línea) a través de la Biblioteca Virtual en Salud (BVS). Los criterios de inclusión fueron estudios en portugués publicados en una revista nacional, con un corte y un enfoque intemporal sobre el uso de tecnologías en los servicios de terapia antineoplásica. Resultados y discusión: los estudios encontrados en la literatura se publicaron en los años 2004, 2007, 2008, 2010, 2011, 2013, 2014, 2015 y 2016. Las tecnologías utilizadas por la enfermería fueron ligeras, duras y duras, materializadas en video educativo, juguete terapéutico, software, dispositivo para infusión continua, proceso de enfermería, música, comunicación, bienvenida y relación interpersonal. Fue posible observar muchos beneficios del uso de tecnologías de asistencia. Conclusión: la enfermería utiliza varios tipos de tecnologías para brindar atención a los pacientes que reciben terapia antineoplásica, aportan grandes beneficios para el paciente y la profesión que van de la mano con los avances tecnológicos de la humanidad.

Palabras claves: Tecnología Biomédica; Tecnología de Salud; Antineoplásticos; Profesionales de Enfermería.

RESUMO | Objetivo: descrever as principais tecnologias utilizadas pela equipe de enfermagem nos serviços de terapia antineoplásica do Brasil. Método: pesquisa de revisão narrativa da literatura, com busca nas bases de dados LILACS (Literatura Latino-Americana e do Caribe em Ciências da Saúde) e MEDLINE (Medical Literature Analysis and Retrieval System On-line) via Biblioteca Virtual de Saúde (BVS). Os critérios de inclusão foram estudos em português publicados em periódico nacional, com recorte atemporal e abordagem sobre o uso de tecnologias em serviços de terapia antineoplásicas. Resultados e Discussão: os estudos encontrados na literatura foram publicados nos anos de 2004, 2007, 2008, 2010, 2011, 2013, 2014, 2015 e 2016. As Tecnologias utilizadas pela enfermagem foram do tipo leves, leve-duras e duras, materializadas em video educativo, brinquedo terapêutico, software, dispositivo para infusão contínua, processo de enfermagem, música, comunicação, acolhimento e relação interpessoal. Foi possível observar muitos benefícios advindos do uso das tecnologias assistenciais. Conclusão: a enfermagem utiliza diversos tipos de tecnologias na prestação da assistência ao paciente submetido à terapia antineoplásica, as mesmas trazem grandes benefícios ao paciente e a profissão que caminha lado a lado dos avanços tecnológicos da humanidade.

Palavras-chaves: Tecnologia Biomédica; Tecnologia em Saúde; Antineoplásticos; Profissionais de Enfermagem.

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INTRODUCTION

Technologies can be defined as products that involve a set of instruments, methods and techniques that aim to solve people's everyday problems⁽¹⁾. It is also constituted by the practical application of scientific knowledge in different areas of health⁽²⁾. For authors^(3;98), the word technology means etymologically the "know how to do", that is, the reason for knowing how to do in health. Author⁽⁴⁾ it classifies technolo-

gies in three categories: "hard" when it involves equipment, "light-hard", typical of structured knowledge, standards, protocols and knowledge, and light, of relationships.

In the various care processes involving oncology nursing, technologies are directly related to care, they involve patients and health professionals at different levels of care, especially in antineoplastic therapy services, through investigations, theories and everyday experience contributing to scientific technical development, with systematic, procedural and instrumental actions to provide qualified assistance to human beings⁽⁵⁾.

Therefore, technology is present in the activities inherent to nursing professionals, it is currently known that the incidence of cancer is growing every day in Brazil and worldwide. It is estimated that, in 2020, the number of annual cases will be in the order of 15 million. Chemotherapy (QT) is one of the most popular modalities for cancer treatment. According to its purpose, QT can be classified as: curative, which aims to eradicate evidence of cancer cells; palliative care, which aims to minimize symptoms resulting from tumor proliferation by increasing survival. It can also be classified according to the period of treatment in which it is performed, and can be adjuvant, that is, performed after a main treatment, such as surgery and; neoadjuvant, when performed prior to the main treatment^(6,7).

In this context, Resolution of the Federal Nursing Council (COFEN) No. 210/1998 presents important contributions to regulate the performance of nurses in antineoplastic therapy services, stating that it is the duty of this professional to "act actively using therapeutic resources of nursing in prevention, treatment and minimization of side effects in



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clients undergoing antineoplastic treatment"⁽⁸⁾. In fact, the use of assistive technologies is essential for the continuity of care with the patient undergoing chemotherapy, being at the same time process and product improving the quality of life during treatment⁽⁹⁾.

Given the above, the following question arose: What is the evidence in the Brazilian literature on the use of technologies in nursing care for patients undergoing antineoplastic therapy? In this perspective, the present study aimed to describe the main technologies used by the nursing team in antineoplastic therapy services in Brazil.

METHODOLOGY

Narrative literature review research, this method allows the synthesis of multiple published studies and allows general conclusions about a particular area of study⁽¹⁰⁾.

The research was built from the following steps: development of the guiding question, search for studies in the databases, extraction of data from the evaluated studies, analysis and synthesis of results, as proposed by authors⁽¹¹⁾.

Initially, to guide this study, the following guiding question was elaborated: "What is the evidence in the Brazilian literature on the use of technologies in nursing care in patients undergoing antineoplastic therapy?". Data collection was performed electronically using the internet in October 2017, using the following LILACS (Latin American and Caribbean Literature in Health Sciences) and MEDLINE (Medical Literature Analysis and Retrieval System Online) databases via Virtual Health Library (VHL). The descriptors used were: "biomedical technology", "health technology", "antineoplastics" and "nursing professionals", were

combined in different ways to ensure a broader search of the literature as shown in Table 1.

The inclusion criteria for pre-selection of studies were studies in Portuguese published in a national journal with a timeless cut and with an approach on the use of technologies in antineoplastic therapy services. Studies that did not respond to the research objective were excluded. The selection of studies was carried out by sequentially reading the titles, abstracts, and last reading in full. The initial search allowed obtaining a total

of 4,912 articles that, after reading the titles, abstracts and subsequent analysis in full of the texts, 4,897 were excluded and selected from 15 articles that were related to the topic in question.

RESULTS AND DISCUSSION

Considering the analysis and synthesis of the results of the present research, it was possible to identify the use of light, light, hard and hard technologies in the practice of nursing professionals applied to patients

undergoing chemotherapy treatment. The technologies found were materialized through educational video, therapeutic toy, software, device for continuous infusion, nursing process, music therapy, communication, reception, and interpersonal relationship. According to the criteria of Merhy(4) and based on the findings of the present research, a graph was elaborated with the main classifications of the technologies by year of publication as shown below:

The studies were published between 2004, 2007, 2008, 2010, 2011, 2013, 2014, 2015 and 2016, making it possible to identify the use of hard, light-hard and light technologies in antineoplastic therapy services by the nursing team.

Mehry(4) was a pioneer in classifying technologies as light, light-hard or hard, being: hard technology represented by concrete material as technological equipment, permanent or consumer furniture, and light-hard technology, represented by structured knowledge and disciplines that operate in health, like the medical, dental, epidemiological clinic, theories, care models, nursing process, among others, and the light technology that expresses itself as the production process of communication, of relationships, of links that lead to the encounter of the users with needs for health actions such as bonding, service management and reception.

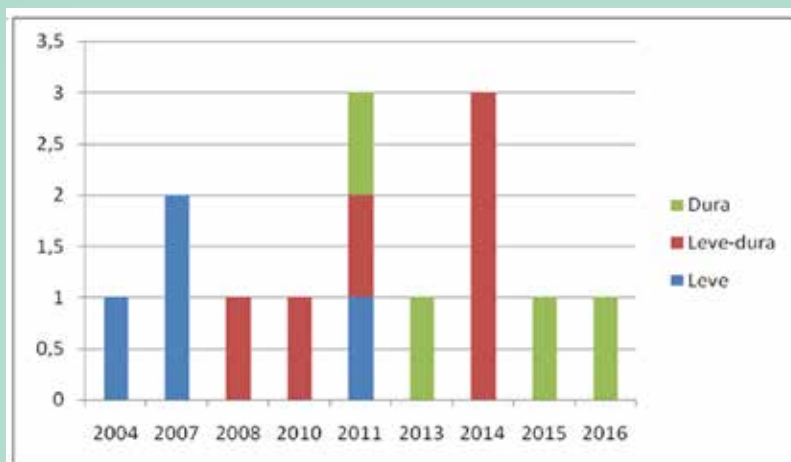
The three classifications outlined are closely interconnected and present in the nursing practice, although not always transparently described as nursing technology. For both health and nursing, the accelerated production of science and technology is essential for innovations; directly influence the organization of the service, the way of caring, innovating and supporting care practice^(4,12).

Although these three categories are interrelated, the human being needs the

Tabela 1. Cruzamento dos descritores e seleção dos artigos do estudo. Vitória, ES, Brasil, 2017

BIBLIOTECA VIRTUAL DE SAÚDE (BVS)	CRUZAMENTO ENTRE OS DESCRITORES	NÚMERO DE ARTIGOS	TOTAL
	"Tecnologia biomédica" x "Antineoplásicos".	103	4.912 ARTIGOS
	"Tecnologia biomédica" x "Tecnologia em Saúde	551	
	"Tecnologia biomédica" x "Profissionais de Enfermagem"	459	
	"Tecnologia em saúde" x "Antineoplásicos"	2.526	EXCLUIDOS 4.897 ARTIGOS
	"Tecnologia em saúde" x "Profissionais de Enfermagem"	784	
	"Antineoplásicos" x "Profissionais de Enfermagem"	489	

Gráfico 1. Classificação das tecnologias apresentadas por ano de publicação. Vitória, ES, Brasil, 2017



technologies of relationships, defined as 'light'. They are able to provide the necessary reception so that the client and health professional can benefit from this moment, considering the complexity of the human being, the subject is contextualized, his health status being dependent on the environmental, biological, psychological conditions, his style of life. life and the institutions in which care takes place. The combination of these factors interferes in the technologies incorporated to health^(4,13). Considering the main light-type technologies found in this study, Table 2 shows the light technologies used by nursing professionals in care aimed at cancer patients in antineoplastic therapy services.

In the present research, it was possible to identify the light type technologies materialized in therapeutic relationship, verbal and non-verbal communication, exercise of faith and sperm and welcoming. The studies were published in the years 2005, 2007, 2011 and 2014. Light technologies use attributes that are specific to human relationships, fundamental in the construction of bonds between nursing professionals and the client in the space of care provided to cancer patients⁽¹⁴⁾.

The research showed that one of the most relevant technologies was the therapeutic interaction between the nursing professional and the patient. A research⁽¹⁵⁾ evaluated the benefits of

therapeutic interaction between nursing professionals and cancer patients, concluding that such practice favors the proposed treatment for patients, helping them to adapt better to chemotherapy, in addition to transmitting confidence and safety, decreasing the fear and anxiety. Authors⁽¹⁴⁾ mention that therapeutic interaction is fundamental for humanized care in the demonstration of respect on the part of nurses, and it is imperative for this professional to develop an adequate and effective communication, using technical procedures, listening and adequate attention to cancer patients.

Contributing to the aforementioned findings, a study⁽¹⁶⁾ used therapeutic communication in 39 palliative care pa-

Tabela 2. Análise dos Artigos selecionados segundo classificação das Tecnologias – “Leve”. Vitória, ES, Brasil, 2017

Referências	Nome do Artigo	Característica da Amostra/ População	Tecnologia estudada	Papel da Enfermagem	Resultados / Expectativas
Marques, Laranja e Silva. Revista da UFPE Enfermagem Brasil, 2005	Os clientes e os enfermeiros: construção de uma relação	Grupo focal na relação entre 5 enfermeiros e 10 pacientes em tratamento oncológico.	Relacionamento terapêutico na interação com o paciente oncológico	Utilizar ferramentas que favoreçam a interação entre os profissionais e pacientes em tratamento quimioterápico	A enfermagem deve utilizar ferramentas alternativas para gerir o relacionamento terapêutico, além do conceito de “educação terapêutica”.
Araújo e Silva, Revista da Escola de Enfermagem da USP Brasil, 2007	A comunicação com o paciente em cuidados paliativos: valorizando a alegria e o otimismo	Entrevista com 39 pacientes em tratamento oncológico com comunicação verbal preservada, submetidos à quimioterapia paliativa	Técnicas de comunicação terapêutica	Conhecer as principais técnicas de comunicação terapêutica utilizadas com o paciente oncológico	A comunicação (verbal e não-verbal) interpessoal é um importante atributo ao profissional de enfermagem
Peres, et al., Revista de Psiquiatria Clínica Brasil, 2011	A importância da integração da espiritualidade e da religiosidade no manejo da dor e dos cuidados paliativos	Entrevista com 15 pacientes em tratamento paliativo que apresentavam dor crônica.	Interação espiritual (fé, espiritualidade e religiosidade) do profissional de enfermagem no momento da dor oncológica	Praticar a fé e espiritualidade no tratamento dos pacientes paliativos que experimentam a dor crônica	Espiritualidade, fé e a religiosidade são importantes estratégias de enfrentamento no tratamento do câncer
Reis et al., Revista Brasileira de Enfermagem Brasil, 2014	Tecnologia de cuidado para primeira consulta de enfermagem no tratamento quimioterápico	15 enfermeiros assistenciais da unidade ambulatorial de oncologia de um hospital público.	Acolhimento interação e diálogo na primeira consulta de enfermagem	Elaboração de instrumento de coleta de dados para a primeira consulta de enfermagem	O instrumento de coleta de dados facilitou a implementação e a aplicação do processo de enfermagem

tients undergoing antineoplastic therapy and came to the conclusion that verbal and non-verbal communication are important attributes used by nurses in the exercise of care, opening channels of communication promoting joy and optimism to the patients during treatment chemotherapy.

Authors⁽¹⁷⁾ corroborate saying that the nurse must have knowledge and skills operationalized in listening, speaking when necessary, being open to ask questions, being honest, showing respect, giving enough time for conversation and showing interest. They also mention that communication is not simply an exchange of messages between the nurse and the patient, but it is an action that must be planned and individualized, not being carried out only through impulses and in an intuitive way.

The exercise of spirituality, faith, and religiosity were identified as light technologies experienced in the nurse's practice. Study(18) when evaluating 15 chronic pain patients undergoing palliative chemotherapy, he identified that faith, spirituality and religiosity were coping strategies used by patients during treatment, promoting confidence and empowerment regarding the proposed treatment. Such findings corroborate with the study(19) that when assessing the spirituality, religiosity and personal beliefs of adolescents with cancer, he identified that such attributes can emerge as components that generate hope and search for the meaning of life, in addition to being essential for comfort and coping with the stress generated by illness. They also mention that these attributes can bring the following benefits:

increased feelings of strength, tranquility and confidence; promotion of self-care helps recovery and continuous recovery, promoting spiritual, emotional, and even financial support, contributing to feelings of belonging to a social group; giving meaning to life, friends and family.

The soft-hard technologies were also found during the analysis and synthesis of the studies found, it was possible to identify seven studies published in the years 2008 (1), 2010 (1), 2011 (1) and 2014 (4). The types of technologies used were nursing process, information booklet, data collection instruments, music therapy and analysis of the quality of life of patients undergoing antineoplastic therapy. Table 3 shows the main publications that used "light-hard" technologies in the care provided to cancer patients in antineoplastic therapy services.

Tabela 3. Análise dos Artigos selecionados segundo classificação das Tecnologias – "Leve-dura". Vitória, ES, Brasil, 2017

Referências	Nome do Artigo	Característica da Amostra/População	Tecnologia estudada	Papel da Enfermagem	Resultados / Expectativas
Anjos et al. Revista da Escola de Enfermagem da USP Brasil, 2011	Sistematização da assistência de enfermagem ao paciente em tratamento quimioterápico: relato de experiência	Estudantes de enfermagem e pacientes em tratamento oncológico	Processo de Enfermagem	Contribuir para a divulgação e desenvolvimento do processo de enfermagem	O Processo de Enfermagem foi relevante na prestação da assistência individual do paciente.
Salles e Castro, Revista da Escola de Enfermagem da USP Brasil, 2010	Validação de material informativo a pacientes em tratamento quimioterápico e aos seus familiares	Pesquisa com 23 cuidadores principais de crianças em tratamento quimioterápico	Cartilha informativa sobre câncer e quimioterapia	Comunicação efetiva, promovendo informação adequada e atendendo as necessidades dos pacientes.	Esclarecimento de informações seguras sobre o câncer e o tratamento de quimioterapia
Santos et al. Revista do Conselho Federal de Enfermagem Brasil, 2014	Processo de enfermagem aplicado ao paciente oncológico	12 enfermeiros que trabalham em ambulatórios de tratamento para oncologia e 20 pacientes em tratamento quimioterápico.	Elaboração e implantação de instrumento de coleta de dados em enfermagem	Emponderamento do processo de enfermagem	Aumento da visibilidade do enfermeiro e da qualidade da assistência prestada
Silva, Marcon e Sales, Revista Brasileira de Enfermagem Brasil, 2014	Percepções de familiares de pessoas portadoras de câncer sobre encontros musicais durante o tratamento antineoplásico	Encontros musicais com 5 familiares	Utilização da musicoterapia	Utilizar a musicoterapia como recurso terapêutico alternativo	Promover a abertura do ser para o diálogo e o vínculo entre enfermeiro, cliente e família

Salvadori, Lamas e Zanon, Escola Anna Nery Revista de Enfermagem Brasil, 2008	Desenvolvimento de instrumento de coleta de dados de enfermagem para pacientes com câncer de pulmão em quimioterapia ambulatorial	A população foi composta por 20 adultos de ambos os sexos, portadores de câncer de pulmão	Instrumentos de coleta de dados	Utilizar o instrumento de coleta de dados como parte integrante do processo de enfermagem	Teste de confiabilidade mostrou-se eficaz para conhecer o paciente, o tipo de tratamento e os requisitos de autocuidado
Silva et al., Revista Brasileira de Enfermagem Brasil, 2014	Utilização de experiências musicais como terapia para sintomas de náusea e vômito em quimioterapia	Amostragem por conveniência composta por 13 pacientes admitidos no ambulatório de quimioterapia com moderado e auto potencial emetogênico	Musicoterapia	Utilizar tecnologias alternativas na diminuição do potencial emetogênico dos pacientes submetidos a quimioterapia	A música influenciou minimamente nos sinais vitais, no entanto foi eficaz na diminuição de náuseas e vômitos
Chaves e Gorini, Revista Gaúcha de Enfermagem Brasil, 2011	Qualidade de vida do paciente com câncer colorretal em quimioterapia ambulatorial	Amostra intencional e teve no total 48 participantes que, no período da coleta, estavam fazendo o tratamento com o Protocolo 5FU.	Análise da qualidade de vida dos pacientes através do questionário (WHOQOL-Bref)	Promover a qualidade de vida do paciente durante o tratamento oncológico	A qualidade de vida é resultado da combinação de fatores subjetivos e objetivos

Light-hard technologies can be understood as the use of knowledge through structured knowledge (theories, models of care, nursing care), and do not need a high-tech resource for its realization. Among them, the Nursing Process has reaffirmed the role of nurses, making them more autonomous, scientific, visible, and weighted from their care role with the oncological patient using chemotherapy⁽²⁰⁾.

In this sense, authors⁽²¹⁾ used the Nursing Process with nursing students and patients undergoing chemotherapy, this in turn favored the students' clinical reasoning, increasing their ability to think critically, reason, use information to acquire knowledge, understand the world and make decisions. decision appropriate to an individual undergoing chemotherapy treatment. Other positive aspects of this technology have been described by authors⁽²²⁾ when mentioning that the Nursing Process (NP) consists of a methodological instrument used to favor care, in addition to organi-

zing the necessary conditions for its occurrence.

In the same perspective mentioned above, a study⁽²²⁾ developed and implemented a data collection instrument focused on the nursing process, resulting in an increase in the visibility of the nurse's role and also in the quality of the care provided to patients using chemotherapy, the study included 12 nurses and 20 patients. Similarly, authors⁽²³⁾ developed a data collection instrument to operationalize the Nursing Process in 20 patients with lung cancer undergoing outpatient chemotherapy and concluded that after the reliability test, the instrument proved to be effective in knowing the patient, as well as the type of treatment to be performed. be adopted, in addition to basic requirements for the realization of self-care.

Thus, the technologies are also materialized in educational, playful and enlightening products, as was observed in the research⁽²⁴⁾ by building and validating an informa-

tion booklet for 23 companions of pediatric patients using chemotherapy, bringing clarifications to the companions and increasing the security of the information provided to this type of specific public.

Music was also used as a hard light technology through studies^(25,26). The first used music therapy to analyze the perceptions of family members of people with cancer, while the second used music as therapy for symptoms of nausea and vomiting for patients undergoing chemotherapy. In both cases, music therapy proved to be beneficial in promoting the openness of being to dialogue and the bond between nurse, client and family, but also reducing the symptoms of nausea and vomiting and consequently increasing the quality of life of patients.

Authors⁽²⁷⁾, When studying the quality of life (QOL) of 48 patients with colorectal cancer using outpatient chemotherapy, they realized that QOL is the result of a combination of subjective factors (such as

an individual's overall satisfaction with their own lives) and factors objectives, such as material well-being, good family relationships, willingness to treat cancer, among other factors such as tranquility, trust, security and well-being. For authors⁽²⁸⁾, it is up to the nurse to evaluate the patient systematically in order to develop efficient, authentic and quality care. Thus, it is necessary to consider in their actions aspects essential to the human-human relationship that characterize light technologies, such as: conversation, knowing how to listen, touching, sharing ideas, showing concern and expressing affection, being attentive desires and demands, and also other as-

pects that are valued in the holistic view of care.

Among the hard technologies found in the research carried out, the device for continuous infusion computational software, therapeutic toy and educational video stood out. For authors⁽²⁰⁾, hard technology is exemplified by the use of high technology, such as infusion pumps, mechanical fans and other machinery that requires great technology. In addition, software and videos are also classified as hard technology, as shown in Table 4.

Hard technologies involve technological products and are widely used by nursing professionals in antineoplastic therapy services⁽³⁾.

Authors⁽²⁹⁾, in a research conducted with 130 nursing students, they used an educational video on oral hygiene and realized that there was an improvement in the practice of oral hygiene of patients using chemotherapy, decreasing the proliferation of microorganisms and increasing the quality of food life, providing at the same time increase in the cognition capacity and behavior change of students in the face of the research results. Authors⁽³⁰⁾, when using educational video for prevention and early detection of breast cancer, they concluded that this technology was very useful in providing motivation to patients, increasing the woman's self-esteem and empowering her about her phenomena.

Tabela 4. Análise dos Artigos selecionados segundo classificação das Tecnologias – “Dura”. Vitória, ES, Brasil, 2017

Referências	Nome do Artigo	Característica da Amostra/População	Tecnologia estudada	Papel da Enfermagem	Resultados / Expectativas
Siqueira et al. Revista da Rede de Enfermagem do Nordeste Brasil, 2013	Utilização de dispositivo para infusão contínua de quimioterápico na percepção do paciente oncológico	Avaliou a percepção de 8 pacientes em uso de dispositivo para infusão contínua.	Dispositivo para Infusão Contínua	Identificar nos pacientes a necessidade do uso do dispositivo para infusão contínua.	Diminuição das hospitalizações, desvendando o desconhecido e auxiliando no desempenho das atividades
Lopes e Shmeil, Revista Gaúcha de Enfermagem Brasil, 2016	Avaliação de orientações geradas por sistema computacional a acompanhantes de pacientes pediátricos submetidos à quimioterapia	8 enfermeiros e 50 acompanhantes de paciente pediátricos em uso de terapia antineoplásica	Software computacional	Realizar orientações de enfermagem utilizando a tecnologia de Software computacional	As orientações inseridas em um sistema possibilitaram a tomada de decisão e o julgamento clínico do enfermeiro
Artalheiro, Almeida e Chacon, ACTA paulista de Enfermagem Brasil, 2011	Uso do brinquedo terapêutico no preparo de crianças pré escolares para quimioterapia ambulatorial	Pesquisa realizada com 30 crianças com idade de 3 a 6 anos submetidas a quimioterapia	Brinquedo Terapêutico	Descrever o uso do brinquedo terapêutico identificando as reações das crianças, correlacionando-as com o uso da quimioterapia	As crianças se mostraram mais colaborativas, interagindo com os adultos e cooperando com os procedimentos
Stina, Zamarioli e Carvalho, Escola Anna Nery Revista de Enfermagem Brasil, 2015	Efeito de vídeo educativo no conhecimento do aluno sobre higiene bucal de pacientes em quimioterapia	130 estudantes de enfermagem da escola de Enfermagem de Ribeirão Preto	Video educativo	Verificar a eficácia do vídeo educativo no conhecimento cognitivo e procedimental de alunos de enfermagem.	O vídeo contribuiu para melhorar cognitivo e procedimental dos alunos, proporcionou mudança de comportamento imediata, sendo uma estratégia bem aceita.

The use of therapeutic toys was shown to be relevant in the preparation of preschool children for outpatient chemotherapy, reducing the fear of the unknown and helping in adherence to treatment⁽³¹⁾. Another study showed that after using the same technology mentioned above there was clearly a decrease and overcoming of anxiety on the part of the children, in addition to a decrease in the side effects generated by the antineoplastic treatment⁽³²⁾.

The use of software, also evidenced in the researched literature, was used to guide companions and pediatric patients undergoing chemotherapy, bringing cognitive benefits and increased adherence to treatment by patients using chemotherapy⁽³³⁾, such finding corroborates the results of the research⁽¹⁷⁾ which, when developing and using software for teaching vital signs, identified that technology contributed to interactive, attractive and playful learning, highlighting usa-

bility in a timeless way and without geographical limits.

The use of devices for continuous infusion were also found in the research (hard technology). Authors⁽³⁴⁾ identified that these devices favor patients undergoing chemotherapy, contributing to their well-being and increasing the chances of going home, being able to sleep in their bed, being with family members, which is very positive during the treatment of cancer patients.

CONCLUSION

From the analyzed studies, it was possible to understand the context in which nursing professionals are inserted in the use of new technologies in antineoplastic treatment. It is noticed that these technologies are welcomed by professionals, whether they are hard, light-hard or light, as they are used correctly, they become beneficial and applicable to patients undergoing anthraplastic therapy.

The technologies used by nursing professionals using chemotherapy were educational video, therapeutic toy, software, device for continuous infusion, nursing process, music therapy, communication, reception, and interpersonal relationships. It was possible to identify the relevance attributed to the new treatments, since nursing provides its clients with humanized and differentiated assistance. However, from the results exposed in this research, it appears that the emergence of new technologies for chemotherapy treatment is guided by benefits to patients with the disease and to the entire multidisciplinary team, especially the nurse.

It is emphasized that new studies must be carried out in order to identify the use of new technologies at an international level, as the present study was limited to analyzing the technologies used by nurses in Brazilian antineoplastic therapy services. 🐦

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