







Conceptual analysis of telenursing: an integrative review

Análise conceitual da telenfermagem: revisão integrativa

How to cite this article:

Sousa VLP, Dourado Júnior FW, Anjos SJSB, Carvalho REFL, Oliveira SKP, Silva DCA. Conceptual analysis of telenursing: an integrative review. Rev Rene. 2022;23:e81384. DOI: <https://doi.org/10.15253/2175-6783.20222381384>

-  Vitória Lídia Pereira Sousa¹
-  Francisco Wellington Dourado Júnior¹
-  Saiwori de Jesus Silva Bezerra dos Anjos¹
-  Rhanna Emanuela Fontenele Lima de Carvalho¹
-  Sherida Karanini Paz Oliveira¹
-  Daianny Cristina de Almeida Silva¹

¹Universidade Estadual do Ceará.
Fortaleza, CE, Brazil.

Corresponding author:

Vitória Lídia Pereira Sousa
Avenida Doutor Silas Munguba, 1700,
CEP: 60.714.903. Fortaleza, CE, Brazil.
E-mail: vitorialidia05@gmail.com

Conflict of interest: the authors have declared that there is no conflict of interest.

EDITOR IN CHIEF: Ana Fatima Carvalho Fernandes
ASSOCIATE EDITOR: Francisca Diana da Silva Negreiros

ABSTRACT

Objective: to analyze the concept of telenursing. **Methods:** this is an integrative review based on the Concept Analysis model, conducted in the LILACS, CINAHL, SCOPUS, Web of Science and MEDLINE/PubMed databases, using the descriptors Telenursing, Remote Consultation and Nursing. **Results:** 37 studies were analyzed, identifying among the antecedents the scientization of nursing care, advances in health informatics and the dissemination of telehealth and telemedicine. Regarding attributes, the use of Information and Communication Technologies in nursing care, telemonitoring, low cost, reliability and availability stand out. The most common consequences point to better establishment of the link between patient and nurse, expansion of care coverage, health promotion, and better adherence to treatment. **Conclusion:** scientific evidence contributed to the formulation of the concept of telenursing, which consists of the incorporation of Information and Communication Technologies in nursing care through technological products and processes, in order to meet health needs. **Contributions to practice:** it contributes to the innovation of nursing care, since it elucidates the scientific subsidies necessary for understanding and discussing telenursing as an emerging phenomenon, as well as presenting the basic components of the concept.

Descriptors: Telenursing; Remote Consultation; Nursing; Concept Formation; Telemonitoring; Information Technology.

RESUMO

Objetivo: analisar o conceito de telenfermagem. **Métodos:** trata-se de uma revisão integrativa fundamentada no modelo de Análise de Conceito, realizada nas bases de dados LILACS, CINAHL, SCOPUS, *Web of Science* e MEDLINE/PubMed, utilizando os descritores *Telenursing*, *Remote Consultation* e *Nursing*. **Resultados:** foram analisados 37 estudos, sendo identificados, entre os antecedentes, a cientificação do cuidado de enfermagem, avanço da informática em saúde e a disseminação da telessaúde e telemedicina. Com relação aos atributos, destacam-se a utilização das Tecnologias de Informação e Comunicação no cuidado de enfermagem, telemonitoramento, baixo custo, confiabilidade e disponibilidade. Os consequentes mais comuns apontam melhor estabelecimento de vínculo entre paciente e enfermeiro, ampliação da cobertura de cuidados, promoção da saúde e melhor adesão ao tratamento. **Conclusão:** as evidências científicas colaboraram para a formulação do conceito de telenfermagem, que consiste na incorporação de Tecnologias de Informação e Comunicação no cuidado de enfermagem por meio de produtos tecnológicos e processos, a fim de atender às necessidades de saúde. **Contribuições para a prática:** contribui com a inovação do cuidado de enfermagem, visto que elucidada subsídios científicos necessários para compreensão e discussão acerca da telenfermagem enquanto fenômeno emergente bem como apresenta os componentes basilares do conceito.

Descritores: Telenfermagem; Consulta Remota; Enfermagem; Formação de Conceito; Telemonitoramento; Tecnologia da Informação.

Introduction

Telehealth is characterized using Information and Communication Technology (ICT) to offer health services at a distance⁽¹⁾. Based on telehealth, several related concepts have emerged, such as telenursing, which is defined as the use of technological tools to provide remote nursing care⁽²⁾.

Telenursing has been widely used in health services all over the world, due to demographic and epidemiological transformations such as population aging, increase of chronic diseases and infectious and contagious diseases⁽³⁻⁴⁾. Among the advantages of this care modality is the expansion of health coverage to hard-to-reach places and the reduction of costs⁽⁵⁾.

An important measure in the Brazilian scenario, in the field of telenursing was the Resolution of the Federal Council of Nursing, which authorizes nursing teleconsultation during a pandemic caused by the new Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-CoV-2)⁽⁶⁾. Based on the repercussion of the use of technologies for nursing care in the context of a pandemic, the Council decided to regulate the practice of telenursing in Brazil, by means of a new Resolution, establishing rules for digital health⁽⁷⁾.

Thus, it is observed that telenursing has gained prominence in this new scenario, because of technological advances and with the aim of meeting the emerging care needs of the contemporary era. Despite the advances in the use of ICT in nursing practice, professionals still have difficulty in understanding telenursing as a care modality, and sometimes they are unaware of the concept of the term⁽⁸⁾.

In addition, there is confusion about terminology, the use of the term telenursing interchangeably with other similar concepts such as telecare, telemonitoring, telecare, telemedicine, which contributes to the plurality of its definition and may represent barriers to its implementation⁽⁹⁾. Considering the expansion of the use of telenursing, investigations are

necessary to elucidate the concept and standardize the language. It is noteworthy that the construction of knowledge will favor the theoretical basis for nurses' clinical practice, contributing to greater professional empowerment. In addition, the study may contribute to raise discussions within the scope of nursing research and teaching.

Given this situation, the following question was raised: What are the attributes, antecedents, and consequences of the concept of telenursing? Thus, the development of this study will provide evidence that can broaden the understanding of telenursing and clarify specific characteristics of the concept, which include attributes, antecedents, and consequences. Thus, the study aimed to analyze the concept of telenursing.

Methods

This is an integrative literature review, based on the Concept Analysis model⁽¹⁰⁾. The review was guided by the following steps: construction of the guiding question; definition of inclusion and exclusion criteria; search for studies; evaluation of included studies; categorization; and interpretation of results and synthesis of evidences⁽¹¹⁾.

The study approach was previously defined by the authors based on the following sequence of steps: selection of the concept; determination of the conceptual analysis objectives; identification of the possible uses of the concept; delimitation of the essential attributes; observation of the model case; recognition of the opposite case; identification of the antecedents and consequences; and, finally, definition of the empirical references⁽¹⁰⁾.

To select the concept of telenursing, we considered the emerging transformations that permeate the nursing care based on the incorporation of new information and communication technologies⁽⁸⁾, which demands a greater theoretical deepening and clarification of the knowledge produced on the subject

to understand the concept under analysis as a nursing phenomenon that needs to be consolidated.

In order to investigate the elements that make up the concept, as well as its empirical referents, an integrative literature review was conducted whose bibliographic search was performed in the month of September 2021, independently, by two researchers in the following databases: Latin American Literature in Health Sciences (LILACS), Cumulative Index to Nursing and Allied Health Literature (CINAHL), Web of Science, SCOPUS and Medical Literature Analysis and Retrieval System Online (Medline)/PUBMED accessed by the Periodical Portal of the Coordination for the Improvement of Higher Level Personnel (CAPES).

The inclusion criteria adopted were articles available electronically, in English, Spanish and/or Portuguese, whose research presented the concept of telenursing and its applicability, without restriction as to period of time frame. We excluded editorials, letters to the editor, reflections, papers published in event annuals and repeated articles.

Considering that the study aims to identify definitions and concepts about the phenomenon studied, the inclusion of methodological and review articles was admitted identifying the greatest possible variety of applications of the concept. In addition, the implicit and explicit uses of the concept should be considered, and it is recommended to go beyond the medical and nursing literature to avoid biases in the understanding of its nature, or limitation in the usefulness of the analysis results⁽¹⁰⁾.

To search the international databases, the descriptors Medical Subject Headings (MeSH) with the respective Boolean operators were used: "Telenursing" OR "Remote Consultation" AND "Nursing". In LILACS, the Health Sciences Descriptors (DECS) combined with Boolean operators were used, namely: "Telenursing" OR "Remote Consultation" AND "Nursing".

Then, the articles were read in depth to organize the data. After the survey phase of scientific pro-

ductions, the full texts were read to determine the attributes, antecedents, and consequences of the concept of telenursing. For data extraction, information about the definitions of the concept presented in the literature was considered, as well as its specific characteristics, the events that contribute to the formation of the concept, and the results of its application.

The instrument used in data collection was previously prepared by the authors with the characterization of the studies (title, country, year, language, and design) and the empirical data of the articles (definition of the concept and applicability, antecedents, essential attributes, and consequences). Then, the empirical references were compiled to favor the elaboration of an operational definition of the concept.

The evidence classification hierarchy was used to evaluate the studies⁽¹²⁾. The classification used has seven levels: level I- evidence from systematic reviews or meta-analyses of multiple randomized controlled clinical trials; level II- evidence from at least one well-designed randomized controlled trial; level III- evidence from well-designed clinical trials without randomization; level IV- evidence from well-designed cohort and case-control research; level V- evidence from systematic reviews using descriptive and qualitative methodologies; level VI- evidence from a single descriptive or qualitative study; level VII- evidence from authority concepts and/or expert committee reports.

Finally, the information was organized and synthesized in figures to facilitate the analysis and comparability of the studies and discussed considering references that converge with the theme in question for a more adequate theoretical deepening.

Results

A total of 3,651 publications were found. After identifying the studies, the inclusion criteria were applied, and the titles and abstracts were read.

Following this step, 148 potentially eligible articles were selected to be analyzed in full. Of this total, only 45 articles were considered eligible, from which duplicate studies were excluded. The Preferred

Reporting Items for Systematic Review and Meta-Analyses (PRISMA)⁽¹³⁾ was used to describe the search and select the studies (Figure 1).

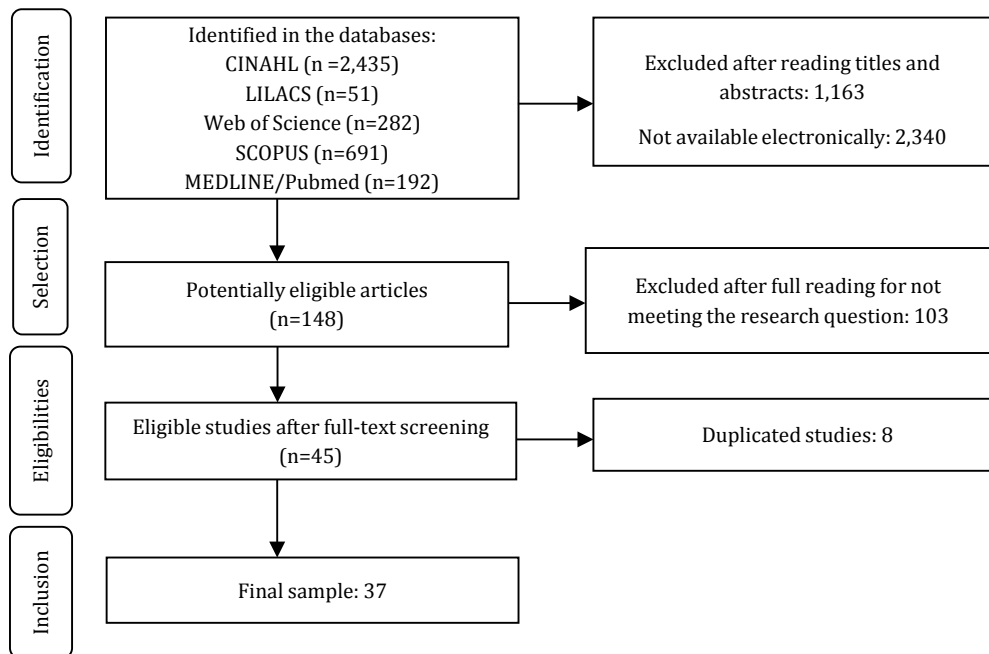


Figure 1 – Flowchart of the database search. Fortaleza, CE, Brazil, 2021

The identified studies belonged mostly to the American countries (n=13), specifically Brazil (n=8), United States (n=4) and Chile (n=1) and Asia (n=13), specifically Iran (n=12) and China (n=1). In addition, there were productions from Europe (n=10), from Sweden (n=2), Spain (n=1), Germany (n=2), France (n=1), Norway (n=1), Poland (n=1), England (n=1) and Holland (n=1) as well as from Oceania (n=1), from Australia (n=1).

Regarding the period of publication, these are recent articles. There was a predominance of studies published in the last five years (2017-2021), which totaled 22 articles. Between 2012 and 2016, 12 articles were published. The others were from 2004 (n=2) and 2010 (n=1).

Regarding the level of evidence, most studies had level VI (n=14) and II (n=11) followed by level III (n=7). The rest of the studies were classified as level IV (n=3) and V (n=2). No productions with level of evidence I and VII were identified.

As for the design of the studies, most had quantitative approaches of the following types: randomized clinical trial (n=11); quasi-experimental (n=7); exploratory (n=4); cohort (n=2); prospective (n=1); and cross-sectional (n=1). The remaining productions were of qualitative approach and consisted of integrative reviews (n=6); descriptive research (n=2); systematic reviews (n=2); and methodological study (n=1). The synthesis of the identified articles is described in Figure 2.

Nº	Country/Language	Level of Evidence	Designing
A1 ⁽¹⁴⁾	Iran/English	III	Quasi-experimental
A2 ⁽¹⁵⁾	Brazil/Portuguese	II	Randomized clinical trial
A3 ⁽¹⁶⁾	Spain/English	V	Systematic review
A4 ⁽¹⁷⁾	Iran/English	II	Randomized clinical trial
A5 ⁽¹⁸⁾	Sweden/English	VI	Exploratory study with quantitative approach
A6 ⁽¹⁹⁾	Australia/English	IV	Cohort study
A7 ⁽²⁰⁾	Norway/English	VI	Exploratory study with qualitative approach
A8 ⁽²¹⁾	Poland/English	VI	Exploratory study with quantitative approach
A9 ⁽²²⁾	Iran/English	III	Almost experimental
A10 ⁽²³⁾	Iran/English	III	Almost experimental
A11 ⁽²⁴⁾	Iran/English	III	Quasi-experimental
A12 ⁽²⁵⁾	United States/English	VI	Integrative review
A13 ⁽²⁶⁾	Brazil/Portuguese	VI	Integrative review
A14 ⁽²⁷⁾	Sweden/English	IV	Cohort study
A15 ⁽²⁸⁾	Brazil/Brazil/Portuguese	VI	Integrative review
A16 ⁽²⁹⁾	Brazil/Brazilian/Portuguese	VI	Descriptive, with qualitative approach
A17 ⁽³⁰⁾	Netherlands/English	III	Quasi-experimental
A18 ⁽³¹⁾	Iran/English	II	Randomized controlled clinical trial
A19 ⁽³²⁾	Brazil/Portuguese	II	Randomized clinical trial
A20 ⁽³³⁾	China/English	II	Randomized clinical trial
A21 ⁽³⁴⁾	Chile/English	VI	Integrative review
A22 ⁽³⁵⁾	France/English	II	Randomized clinical trial
A23 ⁽³⁶⁾	Brazil/Portuguese	VI	Methodological article
A24 ⁽³⁷⁾	Germany/English	VI	Cross-sectional study with a quantitative approach
A25 ⁽³⁸⁾	Brazil/Portuguese	V	Systematic review
A26 ⁽³⁹⁾	United States/English	III	Quasi-experimental
A27 ⁽⁴⁰⁾	United States/English	II	Randomized clinical trial
A28 ⁽⁴¹⁾	England/English	IV	Prospective study with quantitative approach
A29 ⁽⁴²⁾	Iran/English	II	Randomized controlled clinical trial
A30 ⁽⁴³⁾	Brazil/Brazil/Portuguese	VI	Integrative review
A31 ⁽⁴⁴⁾	United States/English	VI	Integrative review
A32 ⁽⁴⁵⁾	Iran/English	VI	Exploratory study with quantitative approach
A33 ⁽⁴⁶⁾	Iran/English	III	Quasi-experimental
A34 ⁽⁴⁷⁾	Iran/English	VI	Qualitative, descriptive study
A35 ⁽⁴⁸⁾	Iran/English	II	Randomized controlled trial
A36 ⁽⁴⁹⁾	Iran/English	II	Double-blind randomized clinical trial
A37 ⁽⁵⁰⁾	Germany/English	II	Randomized controlled clinical trial

Figure 2 – Summary of the articles identified. Fortaleza, CE, Brazil, 2021

The antecedents are events that usually arise from the identification of the phenomenon and contribute to its consolidation. Attributes, on the other hand, are components that elucidate the concept, that is, those characteristics that will determine telenursing. It is noteworthy that the consequences are reco-

gnized or even predicted when there is a connection of factors concerning the various natures in the presence of the phenomenon, once developed, and not treated⁽¹⁰⁾. The attributes, antecedents and consequences related to telenursing are presented in Figure 3.

Antecedents	Attributes	Consequents
<ul style="list-style-type: none"> - Advances in health informatics^(16,18-20,26,30,43,44-45) - Spread of telehealth and telemedicine^(21,25,28,30,34-40,43-45) - Professional qualification of nurses in the use of technologies in care^(30,41) 	<ul style="list-style-type: none"> - Information and Communication Technology use in nursing care^(18,26,28-40,43-47) - Teleconsultation^(33,35,36) - Telephone follow-up^(14-15,17-19,22-26,28-33,35-43,46) - Telemonitoring^(22,29,32,38,48-49) - Use of videoconferencing⁽⁴¹⁾ - Use of text messaging by nurses on social media^(25,29-30,32-33,35,38,43) - Synchronous and asynchronous teleconsulting^(29,32,38) - Reliability and availability^(14,19-22,30-35,46) - Low cost^(14-15,18-20, 22,25-26,28-30,38,41-43,49) - Electronic medical records^(26,30-35) - Subset of telenursing^(30,34-40) 	<ul style="list-style-type: none"> - Establishing the link between patient and nurse^(30,34-40) - Improving access^(15-16,18-19,21-22,25-28,30-35,43-44,46-48) - Expanding care coverage^(15,28,30-35,41,46-47) - Time and resource management^(18,22,28-30,38-41) - Health education^(21,28-43,46-50) - Health promotion^(16,18,20,22-25,28-43,47-48) - Self-care promotion^(14-15,17,22,24,27-43,48) - Coping with risk factors^(15,29-31,33,37) - Enhancing treatment efficacy^(14,22,29-31,33,37) - Self-management^(17,22-25,28-43,48) - Adherence to treatment^(18,15,28-43) - Meeting current health and social demands⁽³⁴⁾ - Patient and professional satisfaction^(21,30,34-40,48,50) - Diagnosis and early intervention^(21,29-31,33,37,49) - Information sharing^(19,21,28-43,47-50) - Continuing education⁽³⁰⁻³⁸⁾ - Innovation in care⁽²⁸⁻⁴⁴⁾ - Best clinical practice^(21-22,28-44,49)

Figure 3 – Antecedents, attributes and consequences of the concept “Telenursing” as demonstrated in the literature analyzed. Fortaleza, CE, Brazil, 2021

During the analysis, for the concept of telenursing, it was possible to identify two thematic axes. The first axis revealed the concept of telenursing as a form of distance care in which nurses communicate with patients by telephone (Voice call, video, and voice messages) to perform health counseling, screening, and monitoring^(14-16,39-41,43). It is defined as call centers with registered nurses who perform patient counseling and screening as a means of increasing self-care support and regulating patient access to medical services⁽¹⁷⁾.

In the second axis, telenursing is defined as a subset of telehealth that focuses on the provision, management and coordination of care and services that use telecommunications technology in the nursing domain^(18-27,29-39,42,44-50). It is a strategy that provides an innovation in nursing practice as they expand the scope of professional practice beyond the physical reach based on the development of specific skills and knowledge to apply this form of care⁽²⁸⁾. To explain the application of the concept, a model-type case was developed with the defining attributes and an additional

one of the opposite types, opposing the concept.

Model case: J.P.D., 30 years old, male, nurse, graduated from University Z, specialist in the Use of Communication and Information Technology in Health Care, works in a Primary Health Care Unit in Municipality Y. In his territory, many residents have difficulty accessing the health service due to geographical barriers and because they are configured as a population at risk for COVID-19 infection. To overcome these problems, J.P.D. provides remote nursing care through phone calls, videoconferencing, messages on social networks, and telemonitoring to ensure the continuity of care to the population, targeting its actions to various age groups.

Case-counter: M.F.S., 54 years old, female, nurse, graduated from University B 30 years ago, works in an infectious disease center that serves patients from several neighboring cities. Many patients need to travel about three hours to get to the unit to receive care, and this is a factor that interferes with adherence to periodic follow-up. During the COVID-19 pandemic, due to the risk of contamination, the manager

of the infectious disease center suggested the use of telenursing care; however, there was resistance from the nurse in accepting this modality of care, since she reported not having skills with Information and Communication Technology, and she does not believe that remote care is effective in promoting the health of patients.

Discussion

Regarding the definitions of telenursing presented by the selected studies, we observed the prevalence of two thematic axes: one that relates the term to a subset of telehealth, considering the breadth of the concept and its applications; another that reduces telenursing to the use of the telephone in nursing care, restricting its operationalization. This study aims to overcome such duality, since it contributes to the theoretical clarification and understanding of the phenomenon studied, which favors the unification of language and the consolidation of the concept.

The antecedents of the concept studied are determining elements that occur prior to the event⁽¹⁰⁾. Based on the literature analysis, it was verified that the concept of telenursing is the result of different contexts and practices, which have developed throughout history and propitiated the innovation of nursing care based on the incorporation of scientific and technological elements^(18,26,30,43-45).

Continuous scientific advances have led to the emergence of a set of technologies supported by foundations in microelectronics, telecommunications, and information technology, which contributed to the emergence of revolutionary dimensions, which allowed the differentiation of nursing from the devotional practices of the past, thus constituting a new form of care permeated by scientific thinking and doing⁽⁴⁴⁾. Thus, as occurred in relation to the discussions about the computerization of health that have gained prominence, the contributions of the implementation of new technological resources related to communication and information contributed to the expansion of

new perspectives related to health information systems⁽³⁴⁾.

From then on, the need for a National Policy on Health Information and Informatics to implement information and communication technology (ICT) actions in the Brazilian health system was realized^(42,46,49-50). Such policy contributed to the integration of telecommunications and informatics to the health needs of the population, originating the concept of telehealth.

Given the dissemination of telehealth in different professional fields, it was in Medicine that the principles of this practice were first incorporated. Thus, telemedicine emerged as a non-face-to-face medical practice that uses ICT for its execution, requiring structures such as a central station with physicians to meet the health demands of patients remotely⁽⁴³⁾.

Therefore, the application of ICT as a form of health promotion and education has been extended to other professional categories, including nursing. The role of promoter and educator in health, played by nurses, highlights the need for empowerment before the technological resources to reduce health costs, more appropriate use of time and greater effectiveness in care, management and teaching based on the development of a nursing practice subsidized by the incorporation of ICT in care⁽³⁶⁾.

With the expansion of the field of action of health professionals, the need has emerged for the training of human resources qualified to use the most diverse information and communication technologies in care, to meet the demands and health needs presented by modern society, especially in the nursing field, which deals more intimately with patients and their personal needs.

Regarding the essential attributes of telenursing, it was found that the use of Information and Communication Technologies in nursing care is the fundamental characteristic for the adoption of the concept. This finding was evidenced by all articles identified in this study, which related the analyzed concept to the use of at least one ICT in the promotion

of individualized and person-centered care and their disease-related needs^(18,14-50).

Among the ICT presented by the productions, the telephone stands out, used among the studies for monitoring health conditions, constituting an accessible and economically viable alternative through which the nursing professional promotes a therapeutic relationship with the patient and guides him/her about relevant aspects such as acceptance, coping, and clinical management of the disease^(28-33,35-41,43).

Thus, with these continuous technological advances in nursing care and added to the restrictions imposed by the COVID-19 pandemic, the use of teleconsultation by nurses was also authorized in Brazil⁽⁶⁾. For teleconsultation in nursing care to be effective, it is necessary to use ICT as strategies for health promotion and education, based on informative websites, social networks, telephones, e-mails, text messages, videoconferences, virtual platforms, educational videos, and software^(18,31,34-35,42,49-50).

In addition to new and emerging modalities of nursing care, there is also a continuous instrumentalization of professional practice through technological resources to ensure patient safety and provide quality care, of which some examples of these resources are the electronic medical records and monitoring records. Strategies such as these computerize the service and enhance the Systematization of Nursing Care (SAE – in Portuguese), in addition to reducing the risks of failure of processes and results in the assistance provided as well as favoring safety, the record of fundamental information for the development of effective interventions and reduce the time spent on administrative activities⁽⁴⁶⁾.

From this perspective, the case model formulated based on the components of the concept of telenursing elucidates that the use of this care practice requires nurses to be prepared in their professional training to apply ICT in care to the most varied age groups and in different health/illness contexts, identified in individual and/or collective settings. Moreover, telenursing is not only a strategy to meet the demands of health services, but also to contribute to the long-

-term care and easier access to different populations.

Based on careful reading, it was found that the main consequences of telenursing are facilitations for access, time management and health promotion. These outcomes are the consequences of the analyzed concept that occur after the construct occurrence⁽¹⁰⁾.

Telenursing has been configured as an efficient strategy to overcome geographical barriers. International studies point to its potential in improving access, contributing to the expansion of care coverage, especially in remote areas^(14-16,18-19,21-22,25-28,30-35,41-44,46-48).

Through telenursing, nurses provide immediate and continuous care, even at a distance, which results in more appropriate care, since it is possible to monitor the patient and prevent possible illnesses and/or worsening^(21-22,28-44,49). It is worth emphasizing the importance of this care modality during the pandemic of COVID-19, because while it enables patients to be screened and have access to care more efficiently, it also protects health professionals and the community⁽⁴⁷⁾.

Regarding time management, it has been observed that the time spent by professionals and patients in telenursing care is significantly less when compared to face-to-face care. An obesity prevention telenursing program found that in addition to weight management benefits, participants also saved an average of five hours of time by accessing nurses by phone rather than going in person to their primary care provider⁽²⁵⁾. Given the importance of time, cost, and accessibility in determining whether patients seek and maintain health care, telenursing offers promising benefits in this regard.

Regarding health promotion, it was evidenced that telenursing is an efficient strategy. A study conducted with patients with non-alcoholic fatty liver disease showed, by means of a randomized clinical trial, that after a telenursing program, the state of fatty infiltration of the liver tissue was significantly reduced⁽¹⁷⁾. Thus, this new professional practice enables more satisfactory communication between professionals and patient/family, support for therapeutic adherence, and appropriate and rapid handling of possible

side effects, especially for populations in more distant geographical locations.

Despite the relevance and applicability of telenursing, it is necessary to understand it as a complementary resource for health care since direct patient care cannot be replaced. In addition, one of the limitations of this type of care is the unequal access to the Internet and communication technologies around the world, a factor that hinders the use of telenursing, especially in underdeveloped and developing countries.

Furthermore, it is suggested that new investigations be carried out with a view to expanding and disseminating the concept formulated, as well as the need to insert it into the clinical practice of nurses at the various levels of care and in different health/disease contexts.

Study limitations

Among the limitations of this study, we highlight the fact that only controlled descriptors were used without the adoption of keywords, as well as the lack of concept validation by specialists. However, these limitations do not compromise the reach of the objective, once a broad search was made in the databases with the necessary methodological rigor; besides the individual and collective critical analysis of the findings. Experimental research should be conducted to contribute to the development of the concept.

Contributions to practice

This research has the potential to contribute to the innovation of contemporary nursing care, since it elucidates scientific subsidies necessary for understanding and discussion about telenursing as an emerging phenomenon, as well as presents the basic components of the concept, which was not disseminated and applied thoroughly in research on the subject and in the nursing care context. Moreover, based on this research, it will be possible to unify the language about the concept in question and expand it to contribute to the development of new health policies

and nursing programs aimed at health promotion and disease and illness prevention using information and communication technologies.

Conclusion

Based on the results of the concept analysis of telenursing care, it was possible to identify the most frequent attributes, antecedents, and consequences. It is noteworthy that divergences in the definition of the term were found in the literature, thus, understanding the scope of telenursing is necessary to adequately support nurses in nursing practice, teaching, and research.

The analysis of the evidence allowed the formulation of a proposed concept of telenursing that consists of the incorporation of Information and Communication Technologies in nursing care through the use of technological products (cell phones, computers, software, applications) and processes (text messages via social networks, telephone calls, videoconferencing, educational videos, and teleconsultation synchronously and asynchronously), in order to meet individual and collective health needs, as well as the demands of health services, and can be applied as a strategy for prevention, promotion, maintenance, and rehabilitation of the state of health.

Authors' contribution

Conception and design or analysis and interpretation of data; writing the manuscript or relevant critical review of the intellectual content; final approval of the version to be published; responsibility for all aspects of the text in relation to ensuring the accuracy and integrity of any part of the manuscript: Sousa VLP, Dourado Júnior FW.

Writing of the manuscript or relevant critical review of the intellectual content; Final approval of the version to be published; Responsibility for all aspects of the text in relation to ensuring the accuracy and integrity of any part of the manuscript. Anjos SJSB, Carvalho REFL, Oliveira SKP, Silva DCA.

References

1. Celes RS, Rossi TRA, Barros SG, Santos CML, Cardoso C. Telehealth as state response strategy: systematic review. *Rev Panam Salud Publica*. 2018;42:e84. doi: <https://dx.doi.org/10.26633/RPSP.2018.84>
2. Fathizadeh P, Heidari H, Masoudi R, Sedehi M, Khajeali F. Telenursing strategies in Iran: a narrative literature review. *Int J Epidemiol Health Sci*. 2020;1(3):e03. doi: <https://dx.doi.org/10.51757/IJEHS.1.3.2020.46189>
3. Barbosa IA, Silva MJP. Nursing care by telehealth: what is the influence of distance on communication? *Rev Bras Enferm*. 2017;70(5):928-34. doi: <http://dx.doi.org/10.1590/0034-7167-2016-0142>
4. Pourbalouch O, Navidian A, Askari H. Assessing the impact of telenursing on self-care in hemodialysis patients: a clinical trial study. *Med Surg Nurs J*. 2019;8(4):e101292. doi: <https://dx.doi.org/10.5812/msnj.101292>
5. Palmeira CS, Mussi FC, Ramos GA, Jesus NV, Macedo TTS, Dal STM. Nursing protocol for remote monitoring of women with excessive weight. *Texto Contexto Enferm*. 2019;28:e20170400. doi: <https://dx.doi.org/10.1590/1980-265X-TCE-2017-0400>
6. Rodrigues MA, Hercules ABS, Gnatta JR, Coelho JC, Mota ANB, Pierin AMG. Teleconsultation as an advanced practice nursing during the COVID-19 pandemic based on Roy and Chick-Meleis. *Rev Esc Enferm USP*. 2022;56(spe):e20210438. doi: <https://doi.org/10.1590/1980-220X-REEUSP-2021-0438en>
7. Nascimento PA, Silva SAV, Lima GSCR, Caldas BDL, Viviane NV, Bispo BFR. Nursing process for patients with neuropsychiatric sequels of covid-19: an experience report. *Rev Enferm Atual In Derme*. 2022;96(39):e021296. doi: <https://doi.org/10.31011/reaid-2022-v.96-n.39-art.1410>
8. Rutledge CM, Gustin T. Preparing nurses for roles in telehealth: now is the time. *Online J Issues Nurs*. 2021;26(1):824-932. doi: <https://doi.org/10.3912/OJIN.Vol26No01Man03>
9. Yliluoma P, Palonen M. Telenurses' experiences of interaction with patients and family members: nurse-caller interaction via telephone. *Scand J Caring Sci*. 2020;34(3):675-83. doi: <https://doi.org/10.1111/scs.12770>
10. Walker LO, Avant KC. *Strategies for theory construction in nursing*. Norwalk, CT: Appleton & Lange; 2005.
11. Mendes KDS, Silveira RCCP, Galvão CM. Use of the bibliographic reference manager in the selection of primary studies in integrative reviews. *Texto Contexto Enferm*. 2019;28:e20170204. doi: <https://doi.org/10.1590/1980-265X-TCE-2017-0204>
12. Melnyk B, Fineout-Overholt E. *Evidence-based practice in nursing & healthcare: a guide to best practice*. Philadelphia: Wolters Kluwer; 2019.
13. Galvão TF, Pansani TSA, Harrad D. Main items to report systematic reviews and meta-analyses: the PRISMA recommendation. *Epidemiol Serv Saúde*. 2015;24(2):335-42. doi: <http://doi.org/10.5123/S1679-49742015000200017>
14. Keshavaraz N, Naderifar M, Firouzkohi M, Abdollahimohammad A, Akbarizadeh MR. Effect of telenursing on the self-efficacy of patients with myocardial infarction: a quasi-experimental study. *Signa Vitae*. 2020;16(2):92-6. doi: <https://dx.doi.org/10.22514/sv.2020.16.0039>
15. França AC, Rodrigues AB, Aguiar MIF, Silva RA, Freitas FMC, Melo GAA. Telenursing for the control of chemotherapy-induced nausea and vomiting: a randomized clinical trial. *Texto Contexto Enferm*. 2019;28:e20180404. doi: <https://dx.doi.org/10.1590/1980-265X-TCE-2018-0404>
16. Alcázar B, Ambrosio L. Tele-enfermería en pacientes crónicos: revisión sistemática. *An Sis San Navarra*. 2019;42(2):187-97. doi: <https://dx.doi.org/10.23938/assn.0645>
17. Ghodsbin F, Javanmardifard S, Javad Kaviani M, Jahanbin I. Effect of tele-nursing in the improving of the ultrasound findings in patients with nonalcoholic fatty liver diseases: a randomized clinical trial study. *Invest Educ Enferm*. 2018;36(3). doi: <https://doi.org/10.17533/udea.iee.v36n3e09>
18. Najafi SS, Shaabani M, Momennassab M, Aghasadeghi K. The nurse-led telephone follow-up on medication and dietary adherence among patients after myocardial infarction: a randomized controlled clinical trial. *Int J Community Based Nurs Midwifery [Internet]*. 2016 [cited Sep 12, 2022];4(3):199-208. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4925999/>

19. Li L, Lake R, Raban MZ. Medication-related calls received by a national telenursing triage and advice service in Australia: a retrospective cohort study. *BMC Health Serv Res.* 2017;17(197):197. doi: <http://doi.org/10.1186%2Fs12913-017-2135-1>
20. Reiersen IT, Solli H, Bjork IT. Nursing students' perspectives on telenursing in patient care after simulation. *Clin Simul Nurs.* 2015;11(4):244-50. doi: <https://doi.org/10.1016/j.ecns.2015.02.003>
21. Glinkowski W, Pawłowska K, Kozłowska L. Telehealth and telenursing perception and knowledge among university students of nursing in Poland. *Telemed J E Health.* 2013;19(7):523-9. doi: <https://dx.doi.org/10.1089%2Ftmj.2012.0217>
22. Fallahpour S, Nasiri M, Fotokian Z, Alipoor ZJ, Hajiahmadi M. The effects of telephone-based tele-nursing on perceived stressors among older adults receiving hemodialysis. *Nurs Midwifery Stud.* 2020;9(4):201-7. doi: https://doi.org/10.4103/nms.nms_111_19
23. Jafarzadeh Z, Maghsoudi J, Barekattain B, Marofi M. Effect of Telenursing on Attachment and Stress in Mothers of Preterm Infants. *Iran J Pediatr.* 2019;10(1):65-71. doi: <http://doi.org/10.22038/ijn.2018.29890.1406>
24. Shahsavani A, Kiani F. Investigating the effect of telenursing on health promoting behaviours of haemodialysis patients in education hospitals in Zahedan in 2017-2018. *J Evolution Med.* 2019;8(44):3326-31. doi: <https://dx.doi.org/10.14260/jemds/2019/722>
25. Bennett EA, Kolko RP, Chia L, Elliott JP, Kalarachian MA. Treatment of obesity among youth with intellectual and developmental disabilities: an emerging role for telenursing. *West J Nurs Res.* 2017;39(8):1008-27. doi: <https://dx.doi.org/10.1177/0193945917697664>
26. Barbosa IA, Silva KCCD, Silva VA, Silva MJP. The communication process in telenursing: integrative review. *Rev Bras Enferm.* 2016;69(4):718-25. doi: [10.1590/0034-7167.2016690421i](https://doi.org/10.1590/0034-7167.2016690421i)
27. Timpka T, Spreco A, Eriksson O, Dahlström O, Gursky EA, Strömngren M, et al. Predictive performance of telenursing complaints in influenza surveillance: a prospective cohort study in Sweden. *Euro Surveill.* 2014;19(46):20966. doi: <http://doi.org/10.2807/1560-7917.es2014.19.46.20966>
28. Moretto IG, Contim CLV, Espírito Santo FH. Telephone follow up as a nursing intervention for patients receiving outpatient chemotherapy: integrative review. *Rev Gaúcha Enferm.* 2019;40:e20190039. doi: <https://dx.doi.org/10.1590/1983-1447.2019.20190039>
29. Palmeira CS, Ramos GA, Mussi FC. Assessment of the experience of nursing telemonitoring by overweight women. *Esc Anna Nery.* 2021;25(1):e20200090. doi: <https://dx.doi.org/10.1590/2177-9465-ean-2020-0090>
30. Van Houwelingen T, Ettema RGA, Bleijenberg N, Os-Medendorp K, Kort HSM, Cate OT. Educational intervention to increase nurses' knowledge, self-efficacy and usage of telehealth: a multi-setting pretest-posttest study. *Nurse Educ Pract.* 2021;51(1):102924. doi: <https://dx.doi.org/10.1016/j.nepr.2020.102924>
31. Ghodsbin F, Javanmardifard S, Kaviani MJ, Jaanbin I. Effect of tele-nursing in the improving of the ultrasound findings in patients with nonalcoholic fatty liver diseases: a randomized clinical trial study. *Invest Educ Enferm.* 2018;36(3):e09. doi: <https://doi.org/10.17533/udea.iee.v36n3a09>
32. Mussi FC, Palmeira CS, Santos CAST, Guimarães AC, Lima ML, Nascimento TS. Effect of nursing telemonitoring on the knowledge of obese women: clinical trial. *Rev Bras Enferm.* 2019;72(Suppl 3):212-9. doi: <https://dx.doi.org/10.1590/0034-7167-2018-0500>
33. Chiu CW, Wong FKY. Effects of 8 weeks sustained follow-up after a nurse consultation on hypertension: a randomised trial. *Int J Nurs Stud.* 2010;47(11):1374-82. doi: <https://dx.doi.org/10.1016/j.ijnurstu.2010.03.018>
34. Toffoletto MC, Ahumada-Tello JD. Telenursing in care, education and management in Latin America and the Caribbean: an integrative review. *Rev Bras Enferm.* 2020;73(Suppl 5):e20190317. doi: <https://dx.doi.org/10.1590/0034-7167-2019-0317>
35. Georgeton E, Aubert L, Pierrard N, Gaborieau G, Berrut G, Decker L. General practitioners adherence to recommendations from geriatric assessments made during teleconsultations for the elderly living in nursing homes. *Maturitas.* 2015;82(2):184-9. doi: <http://doi.org/10.1016/j.maturitas.2015.06.038>

36. Souza-Junior VD, Mendes IAC, Mazzo A, Santos CA, Andrade EMLR, Godoy S. Telenursing manual for providing care to patients using clean intermittent urinary catheterization. *Esc Anna Nery*. 2017;21(4):e20170188. doi: <https://dx.doi.org/10.1590/2177-9465-ean-2017-0188>
37. Driessen J, Bonhomme A, Chang W, Nace DA, Kavalieratos D, Pereira S, et al. Nursing home provider perceptions of telemedicine for reducing potentially avoidable hospitalizations. *J Am Med Dir Assoc*. 2016;17(6):519-24. doi: <https://dx.doi.org/10.1016/j.jamda.2016.02.004>
38. Delphino TM, Souza PA, Santana RF. Telemonitoring as intervention in the postoperative facetectomy: systematic review of the literature. *Rev Min Enferm*. 2016;20:e937. doi: <https://dx.doi.org/10.5935/1415-2762.20160007>
39. Moyer-Knox D, Mueller TM, Vuckovic K, Mischke L, Wolliams RE. Remote titration of carvedilol for heart failure patients by advanced practice nurses. *J Card Fail*. 2004;10(3):219-24. doi: <http://dx.doi.org/10.1016/j.cardfail.2003.09.009>
40. Dougherty CM, Lewis FM, Thompson EA, Baer JD, Kim W. Short-term efficacy of a telephone intervention by expert nurses after an implantable cardioverter defibrillator. *Pacing Clin Electrophysiol*. 2004;27(12):1594-602. doi: <https://dx.doi.org/10.1111/j.1540-8159.2004.00691.x>
41. Warren M, Mackie D, LEary A. The complexity of non face-to-face work with patients affected by metastatic breast cancer and their carers. The 'hidden consultations' of the clinical nurse specialist. *Eur J Oncol Nurs*. 2012;16(5):460-64. doi: <http://dx.doi.org/10.1016/j.ejon.2011.10.009>
42. Boroumand S, Moeini M. The effect of a text message and telephone follow-up program on cardiac self-efficacy of patients with coronary artery disease: a randomized controlled trial. *Iran J Nurs Midwifery Res*. 2016;21(2):171-6. doi: <http://dx.doi.org/10.4103/1735-9066.178243>
43. Cavallari E, Mello BLD, Oliveira AS, Machi-Alves LM. The use of telenursing for people with chronic diseases: integrative review. *J Health Inform J [Internet]*. 2012 [cited July 12, 2022];4(n.esp):220-5. Available from: <https://jhi.sbis.org.br/index.php/jhi-sbis/article/view/254/157>
44. Abbott PA, Coenem A. Globalization and advances in information and communication technologies: the impact on nursing and health. *Nurs Outlook*. 2020;56(5):238-46. doi: <https://dx.doi.org/10.1016/j.outlook.2008.06.009>
45. Ranjbar H, Bakhshi M, Mahdizadeh F, Glinkowski W. Iranian clinical nurses' and midwives' attitudes and awareness towards telenursing and telehealth: a cross-sectional study. *Sultan Qaboos Univ Med J*. 2021;21(1):e50-e57. doi: <https://dx.doi.org/10.18295%2Fsquj.2021.21.01.007>
46. Chakeri A, Jalali E, Ghadi MR, Mohamadi M. Evaluating the effect of nurse-led telephone follow-ups (tele-nursing) on the anxiety levels in people with coronavirus. *J Family Med Prim Care*. 2020;30(10):5351-4. doi: https://dx.doi.org/10.4103/jfmpc.jfmpc_847_20
47. Kord Z, Fereidouni Z, Mirzaee MS, Alizadeh Z, Behnammoghadam M, Rezaei M, Abdi N, Delfani F, Zaj P. Telenursing home care and COVID-19: a qualitative study. *BMJ Support Palliat Care*. 2021;29(2):1-9. doi: <https://dx.doi.org/10.1136/bmj-spjcare-2021-003001>
48. Javanmardifard S, Ghodsbin F, Kaviani MJ, Jahanbin I. The effect of telenursing on self-efficacy in patients with non-alcoholic fatty liver disease: a randomized controlled clinical trial. *Gastroenterol Hepatol Bed Bench [Internet]*. 2017 [cited July 12, 2022];10(4):263-71. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/pmc5758733/>
49. Kargar JM, Javadpour S, Taheri L, Poorgholami F. Effect of nurse-led telephone follow ups (tele-nursing) on depression, anxiety and stress in hemodialysis patients. *Glob J Health Sci*. 2015;8(3):168-73. doi: <http://dx.doi.org/10.5539/gjhs.v8n3p168>
50. Ramelet AS, Fonjallaz B, Rio L, Zoni S, Ballabeni P, Rapin J, et al. Impact of a nurse led telephone intervention on satisfaction and health outcomes of children with inflammatory rheumatic diseases and their families: a crossover randomized clinical trial. *BMC Pediatrics*. 2017;17(1):168-78. doi: <https://doi.org/10.1186/s12887-017-0926-5>



This is an Open Access article distributed under the terms of the Creative Commons