



The Effectiveness of Telenursing-Based Homecare Services in Palliative Care of Patients with Terminal Illness in the Industrial Revolution Era 4.0

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Abstract

Patients with terminal illnesses often require intensive long-term care and support. In the era of the Industrial Revolution 4.0, information and communication technology has changed the way health services are made more efficient and easy to reach. One of the emerging innovations is telenursing-based home care services. The aim of the study was to find out the effectiveness of implementing telenursing-based home care palliative care services in patients with terminal illnesses. This study used a literature review research method. This method is carried out by searching the results of scientific publications which are passed in 3 stages using the PRISMA flowchart (figure 1). The first stage is identification, this stage is in the form of searching the results of scientific publications in 5 electronic databases including Science Direct, PubMed, Sage, BMJ, and Google Scholar with predefined keywords. The second stage is screening, namely searching for journals by applying several inclusion criteria and focusing on searching for scientific articles. The inclusion criteria in this study were searching for journals based on their title, abstract and appropriate article content, using journals published in the last 5 years, namely in 2018-2023, journals that are free, full open access. The use of telenursing-based palliative care has proven to be very effective in improving the patient's health status. Telenursing-based palliative home care services offer many conveniences for patients and their families, including facilitating consultations, and are considered more comfortable and able to provide appropriate and effective care. In order to advance the health care system in Indonesia, a development and refinement is needed in which nursing students must have positive views and expectations of the use of telenursing in the future.

Keywords: Palliative Care, Terminal Illness, Telenursing

Introduction

Terminal illness is a chronic disease (advanced stage) that cannot be cured and causes dying to death (Sinaga, Dameria and Bratanata, 2021). In addition, treatment for terminal illnesses is considered not optimal because there are still very few sufferers who can recover completely (Fadila and Naufal, 2021). Patients with terminal illness often face symptoms that are bothersome and unbearable pain, which can significantly impair their quality of life. Apart from that, they also struggle with emotional aspects, such as anxiety, depression, and uncertainty about the future (Digdowirogo, Husein and Zulfiyah, 2021).

Although the need for palliative care is increasing in the presence of terminal illness, it is sadly still unmet by at least half of the global population (Connor et al., 2020). Only about 14% of the world's population currently receive palliative care services at the most optimal level, and the majority of these services are concentrated in European countries.

However, it is estimated that in 2060 there will be an increase of 87% of patients who experience serious illness and can be treated through palliative care. According to the American Nurses Association (ANA) in 2018, data shows that around 75% of patients with terminal illnesses require home care services (Rensini, Fawzi and Saifulah, 2023). In addition, according to Anita, every year there are an estimated 40 million people who need palliative care, but only 14% of them receive this type of care (Dahniar, Juliani Ibrahim, 2023). This shows a significant gap between the need for and availability of adequate palliative care worldwide.

With these problems and in line with technological developments in the 4.0 era, information has required nurses to become more professional and prioritize the use of information technology in the practice of nursing services. (Hilfida, Miftahussurur and Nihayati, 2023). In this context, therapy or palliative care is very important and must be considered in the implementation of telenursing-based home care (Shatri et al., 2020). Patients diagnosed with a terminal illness also need palliative care to maintain or improve their quality of life (Twin Hosea Widodo Kristyanto, 2022). Through the telenursing approach, terminal patients can receive comprehensive palliative care services that can reduce physical and emotional symptoms, provide comfort, improve quality of life and prevent and reduce suffering.

Telenursing itself is a component of telehealth which includes various types of remote health services, such as telemedicine, telepharmacy, and others. (Widiastuti, 2021). The use of telenursing has been shown to be effective in reducing the number of visits and length of stay of patients in hospital, improving quality of life, reducing treatment costs, and for individuals living in rural and remote areas, telenursing provides increased support and access to specialized care. (Kamei, 2022). However, the results of other studies show that most nursing care requires direct interaction. Although the majority of nurses support telenursing, the fact is that nursing care generally involves direct contact with patients, and nurses only show 35.3% to carry out telenursing activities (Marco-Franco et al., 2023). This shows that there are pros and cons regarding telenursing. With the above phenomenon, the researcher realizes the importance of a literature review to identify the effectiveness of telenursing-based home care services in palliative care of patients with terminal illnesses in the current Industrial Revolution 4.0 Era.

Method

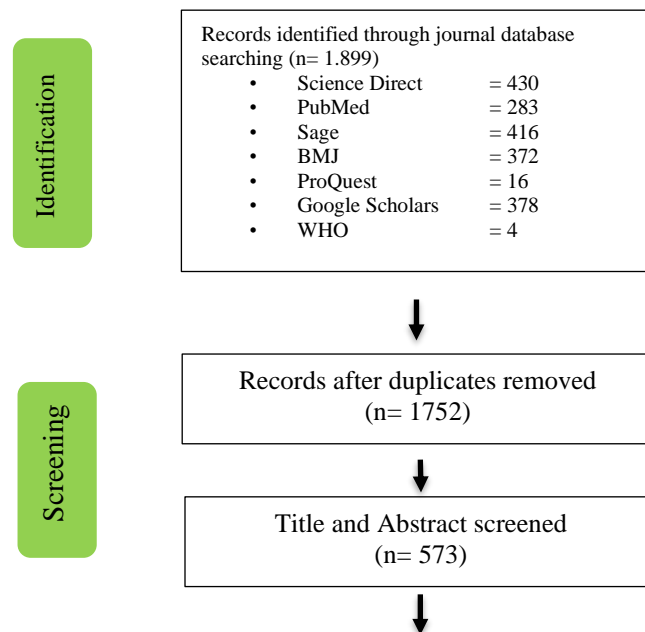
This study used a literature review research method. This method is carried out by searching the results of scientific publications which are passed in 3 stages using the PRISMA flowchart (figure 1). The first stage is identification, this stage is in the form of searching the results of scientific publications in 6 electronic databases including Science Direct, PubMed, Sage, BMJ, ProQuest and Google Scholar with predefined keywords listed in the following table.

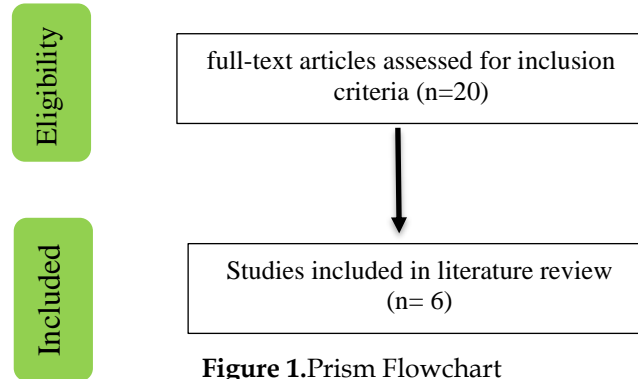
Table 1. Keywords

Keyword List
1. Telenursing Homecare in Terminal Illness
2. Telenursing Ineffectiveness
3. Palliative Care and Technology
4. Palliative Care Telenursing
5. Terminal Illness and Telenursing
6. WHO Global Atlas of Palliative Care
7. Prevalence of need for palliative care in patients with terminal illness
8. Effectiveness of Telenursing in Palliative Care
9. Telenursing-based palliative care for terminal patients
10. Barriers to the Implementation of Telenursing-based Palliative HomeCare

The search strategy used was (P) participants in this study were patients with terminal illnesses such as non-communicable diseases (cancer, degenerative diseases, stroke, heart failure), chronic obstructive pulmonary disease, cystic fibrosis, Parkinson's, genetic diseases and infectious diseases such as HIV/AIDS who need telenursing-based home care palliative care interventions or digital health interventions with goals or outcomes (O) identifying the effectiveness of home care services on telenursing-based palliative care.

The second stage is screening, namely searching for journals by applying several inclusion criteria and focusing on searching for scientific articles. Inclusion criteria in this study were looking for journals based on their title, abstract and appropriate article content, using journals published in the last 5 years, namely in 2018-2023, journals that are free, fully open access, and in the form of original articles in English or Indonesian. .





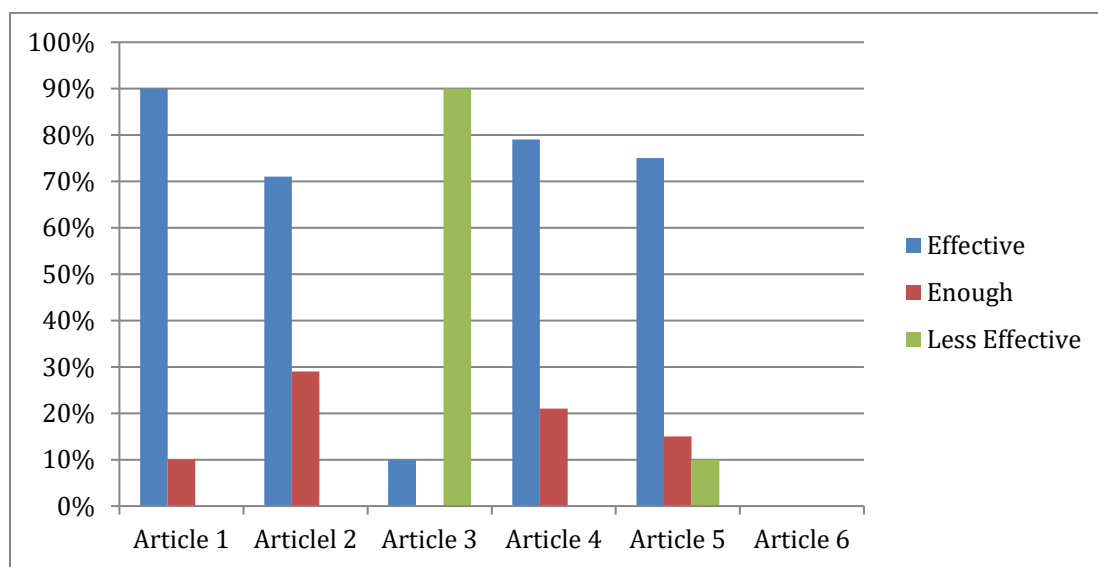
Result and Discussion

Based on the search results for journals from the Science Direct, Pubmed, Sage, BMJ, ProQuest and Google Scholar sites, it was found 6 articles that fit the inclusion criteria. The year of publication used is the time span from 2018 to 2023. So the summary results are obtained in the table as follows:

Table 2.Previous Research Regarding the Effectiveness of Using Telenursing in Palliative Home Care

No.	Title of Research Article	Research Design and Sample	Research sites	Findings/Results
1	Efforts to Increase Family Support for Type 2 Diabetes Mellitus Patients in Carrying Out Therapy Through Telenursing	Biological analysis and sample size of 15 patients with Type 2 DM	Indralaya Health Center	The implications of telenursing have an influence on family support for ilia enhancement therapy in type 2 DM patients in the working area of the Indralaya Health Center
2	Family Telenursing Methods to Improve Palliative Care for Advanced Stage Cancer Patients during the Covid-19 Pandemic	Qualitative and number research sample of 6 families of patients with advanced cancer	Jakarta, Indonesia	Families' ability to use telenursing methods to improve palliative care for cancer patients needs to be improved
3	Family Support in Telenursing to Undergo Palliative Care for Cancer Patients	The research was conducted with a qualitative design with a model phenomenological approach, to 6 participants namely families of patients with cancer	West Jakarta, Indonesia	The online health services provided are services that utilize audio and video technology which can be accessed via telephone, Whatsapp, or other social media. However, very few people took advantage of the option of using telenursing, where out of 6 participants only 1 participant used it.

4	Detection of early-stage changes in people with chronic diseases: A telehome monitoring-based telenursing feasibility study	Non-experimental pretest posttest, longitudinal design and sample size of 43 CAD patients	Tokyo, Japan	The use of telenursing-based telehome monitoring has a positive impact on patient satisfaction because nurses can monitor the patient's mental and physical condition thereby improving the patient's quality of life
5	Oncology nurses lived experiences of video communication in follow-up care of home-living patients: A phenomenological study in rural Norway	Descriptive phenomenological study and a sample size of 4 oncology nurses	Norway	The use of video communication makes a quality contribution to the remote care of oncology patients. Because it is easily accessible and saves time
6	Efforts to Improve Families' Capacity in Palliative Patient Care by Utilizing Technology Through Group Discussions (FGD) at the IZI Foundation Semarang	Descriptive method and sample size of 11 families of palliative patients	Semarang, Indonesia	Some respondents have been able to use technology to access disease information, join terminal illness volunteers, and can use this for palliative patient care.



Graph 1. Effectiveness of Telenursing in Palliative Care of Patients with Terminal Illness

Telenursing, as a result of advances and developments in health technology, is a form of home-care services related to nursing. According to a study conducted by Idha Nurfallah, nurses must continuously improve their digital knowledge. The rapid development of technology, as evidenced by telenursing, has a significant impact on nurses and patients. According to Idha, the benefits of telenursing for nurses include

increased income, flexibility in working hours, reduced care costs due to remote services, new job opportunities, and quick responses. Not only that, telenursing also provides benefits to patients, such as high quality nursing services at lower costs because they do not require travel costs to get to the location.

However, there are several problems related to telenursing that need attention and improvement, such as the difficulty in using technology due to a lack of instructions, education and outreach regarding telenursing. Meanwhile, in developed countries such as the United States, Australia, Canada and the United Kingdom, telenursing applications are already available at home, hospital-based telemedicine centers and rehabilitation centers. However, in developing countries, the potential of telenursing has not been fully and maximally applied (Idha Nurfallah, 2021).

Based on the results of research conducted by Fuji Rahmawati (2018) it shows that the application of telenursing in the Indralaya Health Center area is effective in increasing patient compliance with type 2 Diabetes Mellitus through family support in undergoing therapy. Fuji Rahmawati also stated that through telenursing, nurses can carry out various activities such as monitoring, education, follow-up, assessment and data collection, intervention, as well as providing support to families and collaboration with innovative multidisciplinary care teams. (Rahmawati, 2018; Antarini Idriansari and Muharyani, 2018).

Further research conducted by (Mariam Dasat, Uswatul Khasanah, Sigit Mulyono, 2022) revealed that treatment with the telenursing method aims to optimize long-distance palliative services, especially during a pandemic. In cases of terminal illness such as advanced cancer, there is a high potential for infection with the COVID-19 virus. Therefore, care via telenursing is urgently needed to improve the quality of life, mood, and survival of patients with terminal illnesses. The telenursing method used is that the family does not come directly to the health service but instead contacts palliative care cadres via phone call or WhatsApp. Based on this study, it was found that the effectiveness of online consultations and video conferencing is the same as face-to-face visits. In addition, this method can significantly save patient and family time (Mariam Dasat, Uswatul Khasanah, Sigit Mulyono, 2022).

In an article written by Dasat & Anggraini, 2023, obtained results in telenursing-based palliative care services, online services provided are services utilizing audio and video technology. In this study, it was stated that the DKI Jakarta Provincial Government facilitated online applications and consultations via telephone, Whatsapp and other social media for patients and their families. However, on the other hand very few people took advantage of this option, because only one in six participants used it. One in six respondents stated that with telenursing the families of patients with cancer feel very satisfied and assisted in caring for patients. In addition to making it easier to carry out treatment, families also feel helped because the costs used for treatment are relatively more affordable. The patient's family also stated that with this telenursing-based palliative care they could also save more time, so that family members could carry out their daily work without feeling disturbed. And the other five stated that on the contrary,

this is a problem for families who have not been able to use technology properly and for families who prefer face-to-face methods. In addition, the COVID-19 pandemic has become very significant in affecting the economic conditions of families. Participants stated that the cost of purchasing data and credit is sometimes an obstacle even for those who don't use it. Other obstacles encountered were usually during consultations for inaccurate camera positioning, inadequate human resources and technicians, connection problems, and so on.(Dasat & Anggraini, 2023).

Furthermore, according to research from (Kamei et al., 2018) entitled "*Detection of early-stage changes in people with chronic diseases : A telehome monitoring-based telenursing feasibility study*" shows that 7.2 out of 10 respondents' ratings accept and are satisfied with telenursing. The indications that are the reason they accept the telenursing system are that respondents feel safe, can understand their own condition, can control themselves, can feel self-efficacy, and make respondents much healthier than before. The method used in telenursing found in research is that respondents send their health data regularly using telemonitoring provided by nurses, then if poor health data is obtained, the telenursing will give a warning and immediately connect respondents with nurses to carry out telephone consultations and assess symptoms, as well as identify the needs of respondents. with this, it can be concluded that the telenursing-based telemonitoring method is very effective for the treatment of patients with terminal illnesses. Because it makes it easier for patients and their families to carry out consultations without having to come to a health service(Kamei et al., 2018).

Then, based on the results of research from (Rygg, Brataas and Nordtug, 2021) entitled "*Oncology nurses lived experiences of video communication in follow-up care of home-living patients : A phenomenological study in rural Norway*" suggested that internet-based video conferencing or communication (VC) methods make a positive contribution to the task of oncology nurses in improving the quality of life of cancer patients by promoting self-management and quality of life of patients, helping to manage the physical and emotional aspects of patients, building and maintaining relationships between nurses and patients, as well as in meeting the needs of patients which include nutritional needs and information on the disease they are experiencing. In this study, it was stated that the use of internet-based video conferencing (VC) was based on consideration of the patient's needs, among others, based on the patient's health condition, expected health decline, and seriously deteriorating disease. With this,(Rygg, Brataas and Nordtug, 2021).

An additional result of this study is that the use of internet-based video conferencing (VC) can provide assurance of the relationship between nurses and patients. VC can foster a sense of security, comfort and convenience for patients because they can contact nurses when needed. In addition, the use of internet-based video conferencing (VC) is useful in information support, so that patients who need repeated information from doctors or services at the hospital can directly contact nurses.(Rygg, Brataas and Nordtug, 2021).

While in research conducted by Emilia Puspitasari Sugiyanto, 2022 which discusses efforts to increase the ability of the patient's family in the use of technology in

palliative care. The results show that many families are already able to use it technology as a means to access information such as joining cancer patient networking communities, accessing treatment information, health services, NGOs, and many more, but there are still some families who are still unable to use and utilize technology to the fullest. Look at the abilities possessed by each family that are different in using technology as well understanding and ability to care for different patients in caring for palliative clients so therefore, need an effort to be able to increase knowledge and skills in using technology in palliative care for the patient's family, one of which is by holding FGDs to increase family knowledge and skills in the use of technology in improve palliative care for patients (Emilia Puspitasari Sugiyanto, 2022).

From several articles that have been reviewed, it can be concluded that more research agrees that the use of telenursing in palliative care is very effective. This is because, most researchers find that the Telenursing method is very practical, easy to access, and the services provided are very satisfying. So that with this method it can make it easier for families of palliative patients to carry out care, save costs, and can also save time, so it doesn't interfere with or hinder daily activities or work. In addition, when applied in palliative care, nurses can remotely monitor the patient's mental and physical condition so that they can improve the patient's quality of life. But there are also articles that say that telenursing is less effective in its application. This can be influenced by a number of things, including the limited level of understanding of technology in patients and their families, unsupportive economic levels, availability of media and other components, and so on. Apart from that, another thing that can affect the effectiveness of the use of telenursing in palliative care is the incompetence of health workers and also other staff in using technology, this also needs to be highlighted and followed up on. Taking into account the conditions above, telenursing can be applied, but a number of things must be paid attention to, including the knowledge and abilities of patients, families and health workers in various aspects. unsupportive economic level, availability of media and other components, and so on. Apart from that, another thing that can affect the effectiveness of the use of telenursing in palliative care is the incompetence of health workers and also other staff in using technology, this also needs to be highlighted and followed up on. Taking into account the conditions above, telenursing can be applied, but a number of things must be paid attention to, including the knowledge and abilities of patients, families and health workers in various aspects. unsupportive economic level, availability of media and other components, and so on. Apart from that, another thing that can affect the effectiveness of the use of telenursing in palliative care is the incompetence of health workers and also other staff in using technology, this also needs to be highlighted and followed up on. Taking into account the conditions above, telenursing can be applied, but a number of things must be paid attention to, including the knowledge and abilities of patients, families and health workers in various aspects. this also needs to be highlighted and followed up. Taking into account the conditions above, telenursing can be applied, but a number of things must be paid attention to, including the knowledge and abilities of patients, families and health workers in various

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Conclusion

Based on this research of the above study it can be concluded that the use of telenursing-based palliative care has proven to be very effective in improving the patient's health status. The availability of telenursing-based palliative home care services offers many conveniences for patients and their families, including facilitating consultations, and being considered more comfortable and able to provide appropriate and effective care. In addition, telenursing-based palliative home care services are considered to be more cost-effective. But there are also those who think that the application of telenursing in palliative home care is still less effective. In view of this phenomenon, it is necessary to evaluate, develop and improve telenursing-based palliative home care services in order to advance the health care system in Indonesia.

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