



Research Article

Systematic Review: Telehealth in the Patients Management with Heart Failure

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ABSTRACT

A recurrence of heart failure can lead to rehospitalization. Therefore, it is necessary to have a prevention strategy that aims to reduce mortality and the recurrence of heart failure by minimizing physical contact. Telehealth is an alternative for providing health services to heart failure patients by minimizing mobilization and treatment costs. This research aimed to evaluate the effectiveness of implementing telehealth in the management and care of patients with heart failure. This study used the systematic review method. There were four stages in this study, namely identifying sources, determining eligibility, screening, and deciding which to be reviewed. Literature selection used the PRISMA approach from 4 databases such as ScienceDirect, Google Scholar, PubMed, and Scopus, with inclusion criteria including articles with a period of less than 5 years (2018-2023), free full text, article reviews, and articles using English and Indonesia. Searching results from 4 databases found 43,846 articles. After screening based on the specified criteria, there were 9 articles reviewed. Of the 9 articles, there were 3 that stated that telehealth can reduce the cost of treating heart failure. 3 articles stated that the health status of heart failure patients improved when using the telehealth system. 2 articles stated that telehealth can be implemented by telephone or nursing telephone support to monitor the condition of heart failure patients remotely. Another article stated that telehealth can improve the quality of life of patients with heart failure. It is necessary to implement telehealth in health services to reduce the frequency of readmissions and to make it easier for health workers to monitor patients, especially those with heart failure.

Keywords: Heart Failure, recurrence, telehealth

INTRODUCTION

Heart failure is a late-stage manifestation of heart disease (Roger, 2021). Heart failure is a condition of the heart that is experiencing a decrease in its ability to pump blood to the tissues to fulfill the body's metabolic needs in sufficient quantities (Nurkhalis & Adista, 2020). Heart failure is divided into several classifications, including left, right, and combined or congestive heart failure.



In left heart failure, there is pulmonary congestion, hypotension, and peripheral vasoconstriction, resulting in decreased tissue perfusion. Meanwhile, right heart failure is characterized by peripheral edema, ascites, and increased jugular venous pressure. Meanwhile, congestive heart failure is a combination of left and right heart failure conditions. However, left and right heart function abnormalities often occur simultaneously (Fachrunnisa et al., 2018).

A recurrence of heart failure can result in rehospitalization. Patients with CHF have a frequency of rehospitalization of more than 1 time in 12 months (Sari, 2021). Recurrences that occur in heart failure patients are caused by patient non-compliance with therapy and instructions given (Imaligy, 2018). In addition, physical activity that is not appropriate and the patient's lack of knowledge to recognize symptoms of recurrence can also worsen the patient's condition (Prihatiningsih & Sudyasih, 2018). According to the World Health Organization (2020) since the last 20 years, heart disease has been the leading cause of death in the world. Based on data from the Global Health Data Exchange (GHDx) in 2020, the prevalence of congestive heart failure cases in the world reached 64.34 million, with 9.91 million deaths. (Lippi & Gomar, 2020).

Based on the data above, it is necessary to have a prevention strategy that aims to reduce mortality and recurrence rates. The provision of pharmacological therapy and lifestyle modification is increasingly being applied by a number of people. Thus, the mortality and morbidity rates of patients with cardiovascular disease can be reduced (Mols et al., 2019).

Telehealth provides health education and direct guidance regarding conditions provided by nurses to patients with heart failure and their families (Afik et al., 2021). On the other hand, the use of telehealth contributes to empowering nurses to provide nursing care remotely with the ability to monitor, follow up, collect data, and provide multidisciplinary services such as providing remote interventions, pain management, and family support in innovative forms. Telehealth also focuses on patient well-being, self-management, and health (Bashir & Bastola, 2018). When using telenursing, patients can be monitored regarding the condition and complaints experienced by the patient while at home. This will create a sense of trust in the intervention provided so that it will have a positive effect on the plan given to overcome the patient's problems. The sense of safety for nurses and patients can also increase because the patient's condition is always well observed (Pratama et al., 2019).

Telehealth is an alternative to continuing to provide health services to patients by minimizing the risk of exposure and physical contact. Telehealth that is used, such as smartphones and cellular wireless devices is a medium to support diagnosis and provide therapy (Gensini et al., 2019). The effectiveness of telehealth in the management of heart failure has been assessed in studies conducted by (Savard et al., 2018) and showed good results in the form of a reduction in the causes of mortality by 34% and hospitalization due to heart failure by 30-56%. Telehealth or commonly known as telemedicine is defined as a device supported by the latest technology, containing health content and health services (Dixon et al., 2018).

MATERIAL AND METHODS

This systematic review was written systematically using PRISMA 2020 to ensure transparency and clarity of the articles used and to provide clear guidelines on how to conduct a systematic review. The keywords used were *“heart failure” OR “gagal jantung” AND “nursing telehealth” OR “telehealth” OR “telemedicine” OR “telenursing” OR “heart failure management” OR “telehealth in heart failure”*.

Search results from 4 databases found 43,846 articles. The first screening resulted in 5,296 articles with a time limit of less than 5 years (2018-2023), free full text, article reviews, English, and Indonesian. In the first screening, 1,532 articles were obtained from Science Direct, 981 articles from PubMed, 2,100 articles from Google Scholar, and 683 articles from Scopus. The second screening resulted in 175 articles with title screening criteria that did not match the researcher's questions. In the second screening, 38 articles were obtained from Science Direct, 44 articles from PubMed, 63 articles from Google Scholar, and 30 articles from Scopus. Then the final result is 9 articles that fit the systematic review criteria.

RESULTS AND DISCUSSION

Result

Chart 1. Article Search with PRISMA Approach

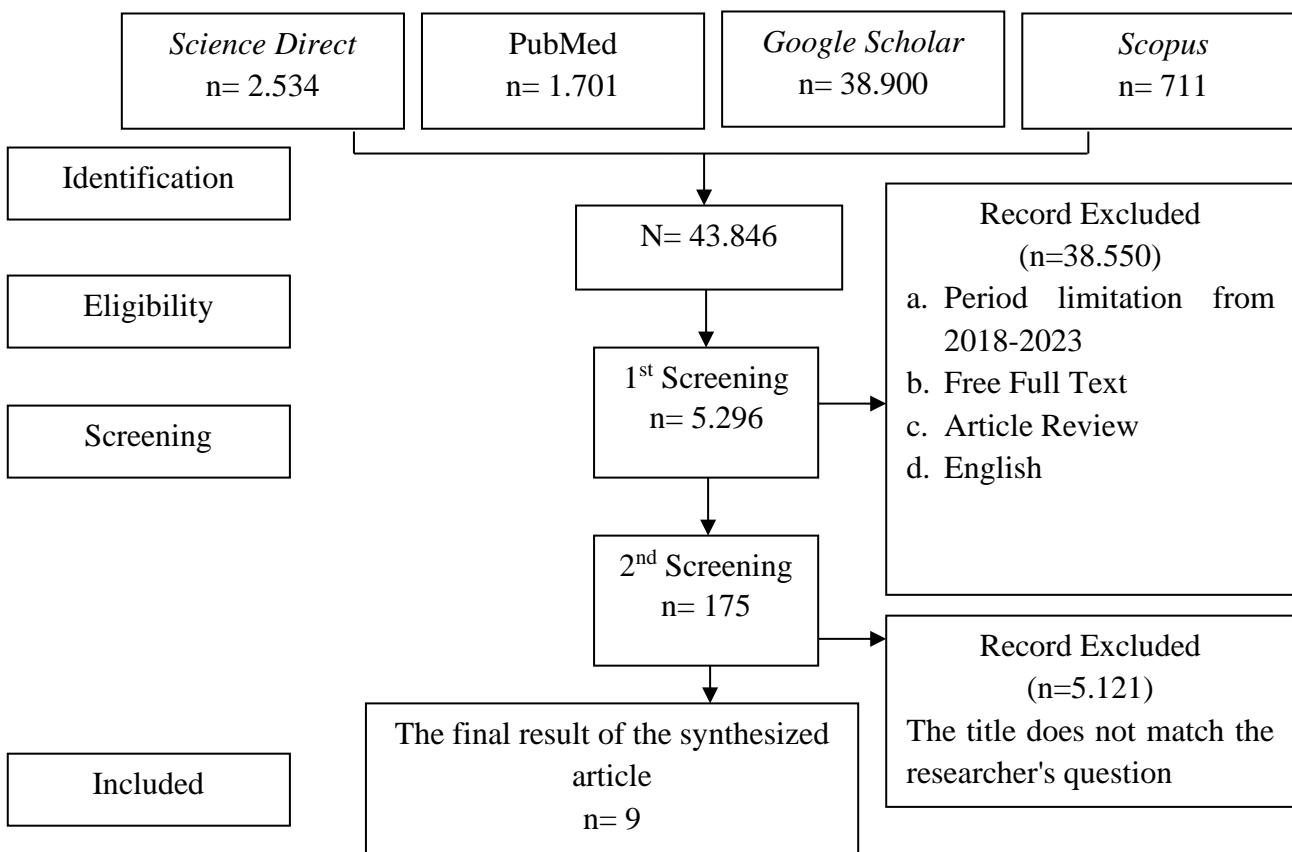


Table 1. Analysis Synthesis

Title	Author	Objective	Method	Result
Cost-Effectiveness Analysis in Telehealth: A Comparison between Home Telemonitoring, Nurse Telephone Support, and Usual Care in Chronic Heart Failure Management	(Grustam et al., 2018)	Assessing the cost-effectiveness of home telemonitoring and telephone nurse support compared to usual care in the management of patients with chronic heart failure	Kohort Markov Model	Home telemonitoring and Nursing Telephone Support are great solutions to support patients with chronic heart failure. Nursing Telephone Support can reduce costs compared to regular care. Like Nursing Telephone Support, Home telemonitoring can improve patient survival in all classes of the New York Heart Association
HerzMobil, an Integrated and Collaborative Telemonitoring-Based Disease Management Program for Patients With Heart Failure: A Feasibility Study Paving the Way to Routine Care	(Ammenwerth et al., 2018)	Evaluate the feasibility of HerzMobil Tirol by analyzing changes in health status and behavior and satisfaction of telemonitoring-based patient self-care for heart failure	Single Arm Study	Health status improves markedly in the most vulnerable phase of heart failure. Patients reported high levels of satisfaction and good self-care behavior after 3 months. In particular, elderly patients appear to be quite capable of using cell phones for data acquisition and data transmission. So while age is often seen as a barrier to technology use, it can be overcome with patient education, good support from relatives, and dedicated helplines.
The Cost-Effectiveness of Digital Health	(Jiang et al., 2019)	Conducted a systematic review of analytical	Literature Review	All the articles analyzed show that Digital Health Intervention can

Title	Author	Objective	Method	Result
Interventions on the Management of Cardiovascular Diseases: Systematic Review		model-based studies evaluating the cost-effectiveness of Digital Health Intervention in the management of cardiovascular disease		reduce costs in the management and care of patients with cardiovascular disease
Systematic Review: Telemedicine Dalam Manajemen Pasien Gagal Jantung Semasa Pandemi	(Laksono et al., 2021)	Evaluating the impact of telemedicine in the care of heart failure patients	Systematic Review	There were 2 randomized controlled trials and 2 prospective cohort studies reviewed. Three studies have shown a reduction in the rate of hospitalization in heart failure patients. Meanwhile, 1 study demonstrated a significant reduction in mortality in the group of heart failure patients undergoing telemedicine. However, in 1 other study there was no significant difference. As for costs, 1 study showed a decrease in costs incurred since using telemedicine
Outpatient Management of Heart Failure During the COVID-19 Pandemic After Adoption of a Telehealth	(Sammour et al., 2021)	Determine whether increased use of telehealth is associated with differences in outcomes for outpatients	Systematic Review	The application of the telehealth model during the COVID-19 pandemic in patients with heart failure greatly supports patient care by reducing face-to-face

Title	Author	Objective	Method	Result
Model Clinical Outcomes of Telehealth in Patients With Coronary Artery Disease and Heart Failure During the COVID-19 Pandemic	(Woo et al., 2022)	with heart failure To assess clinical outcomes related to the use of telehealth in patients with coronary artery disease and/or heart failure during the early phase of the COVID-19 pandemic	Retrospective Observational	meetings Telephone telehealth can be safely implemented into outpatient cardiology practice regardless of age
Pengaruh <i>Telenursing</i> terhadap <i>Quality of Life</i> (QoL) Pada Pasien Gagal Jantung: <i>Literature Review</i>	(Amanah & Herawati, 2022)	Describe the effect of telenursing on QoL in heart failure patients	Literature Review	Three of the five studies in the study showed that telenursing had a significant effect on the QoL of heart failure patients, while two other studies stated that there was no significant effect of telenursing on the QoL of heart failure patients. Telenursing that has an influence on QoL includes application-based telenursing, telemonitoring, and telephone reminders. Whereas telenursing which has no effect on QoL in heart failure patients is telephone follow-up.
Using Mobile Integrated Health and telehealth to support transitions of care	(Masterson Creber et al., 2022)	Proving a comparison of the effectiveness of two interventions, namely	Randomised Controlled Trial	When symptoms worsen, Mobile Integrated Health can better manage patients with heart failure

Title	Author	Objective	Method	Result
among patients with heart failure (MIGHTy-Heart): protocol for a pragmatic randomised controlled trial		Mobile Integrated Health and telehealth to support transitions for heart failure patients		in the hospital-to-home transition using optimized care coordination.
Role of Telemedicine in Improving Guideline-Directed Medical Treatment for Patients with Heart Failure During a Pandemic	(Hernandez, 2022)	The role of telemedicine in improving medical care for heart failure patients during a pandemic	Systematic Review	Telemedicine can safely reduce hospitalizations for heart failure, death, and the risk of exposure to COVID-19. Telemedicine allows patients with chronic heart failure to have access to care while reducing the risk of exposure and further spread of the virus.

Discussion

Telehealth, or telemedicine is the use of telecommunications systems to provide health care remotely that improves patient outcomes and minimizes access to remote health care (Flodgren et al., 2018). In addition, Whittaker & Wade (2019) also stated that telehealth can reduce health care costs. This is in line with the systematic review conducted by Laksono et al. (2021) which stated that there is a decrease in the rate of hospitalization in patients with heart failure after the use of telehealth or telemedicine. As well as decreased costs incurred in the treatment of heart failure. The same review was also carried out by (Riley et al., 2018) also showed that heart failure patients spend lower treatment costs, which is equal to 67%.

Telehealth interventions have been proven to be used as a type of treatment that can be offered to heart failure patients as secondary prevention (Kirchberger et al., 2019). Telemonitoring intervention by telephone can be a solution to support patients with heart failure because it can improve the patient's quality of life at a lower cost (Grustam et al., 2018). Improved quality of life after using the telemonitoring system is caused by the patient's condition being monitored regularly by nurses and nurses being able to provide appropriate recommendations according to the results of patient filling in the telemonitoring system (Amanah & Herawati, 2022). As well as being cost-effective, telephone-based telehealth can be safely implemented into outpatient cardiology practices at all ages (Woo et al., 2022).

Management of patients without face-to-face meetings with telemedicine technology is certainly expected to have a positive impact, one of which is reducing the duration of treatment for patients who need to be hospitalized. This is also in accordance with the systematic review conducted by Sammour et al. (2021) who stated that the application of the telehealth model in patients with heart failure greatly supports patient care by reducing face-to-face meetings, so that the duration of hospital care can also be reduced. In addition to reducing the duration of hospital treatment, the use of telehealth also allows heart failure patients to have access to health facilities while reducing the risk of exposure and further spread of the virus. (Hernandez, 2022).

CONCLUSION AND SUGGESTION

Telehealth is the use of telecommunications systems to provide health care remotely, which can improve patient outcomes, increase access to health care, and reduce health care costs. Telehealth interventions can be implemented via messages or telephone so that patients do not need to come to health services or hospitals face-to-face to carry out monitoring and treatment. In addition, telehealth has been proven to be an effective secondary prevention tool to significantly reduce readmission rates, improve quality of life, reduce treatment costs, and increase medication adherence. Thus, it can reduce morbidity and mortality from heart failure. Intervention through telehealth needs to be implemented in health care facilities to monitor patient adherence to treatment and to encourage patients to adopt a healthy lifestyle.

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