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Quality of Life and Physical Exercise Overview in Congestive Heart Failure Patients Using Six-Minute Walk Test

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Upaya untuk meningkatkan kualitas hidup pasien gagal jantung kongestif dapat dilakukan melalui latihan fisik Six Minute Walk Test (6MWT). Penelitian ini mengeksplorasi peran 6MWT, yang tidak hanya digunakan sebagai alat penilaian, tetapi juga sebagai intervensi latihan terstruktur yang dapat membantu meningkatkan kualitas hidup pasien gagal jantung. Tujuan dari penelitian ini adalah untuk mengetahui dampak latihan fisik 6MWT terhadap kualitas hidup pasien gagal jantung kongestif. Desain penelitian yang digunakan adalah kuantitatif dengan pendekatan deskriptif, melibatkan 36 responden yang dipilih menggunakan teknik purposive sampling. Variabel yang diteliti meliputi latihan fisik 6MWT yang diukur dengan Standard Operating Procedure (SOP) yang diterapkan di RS Arifin Achmad Provinsi Riau, serta kualitas hidup pasien yang diukur dengan Minnesota Living with Heart Failure Questionnaire (MLHFQ). Hasil penelitian menunjukkan bahwa mayoritas responden berada pada rentang usia pra-lansia (52,8%), berjenis kelamin laki-laki (63,9%), berpendidikan terakhir SMA (44,4%), dan sebagian besar tidak bekerja (41,7%). Seluruh pasien menjalani latihan fisik 6MWT sesuai SOP (100%). Kualitas hidup pasien sebagian besar berada dalam kategori sedang (86,1%) dan buruk (13,9%). Berdasarkan temuan ini, dapat disimpulkan bahwa penerapan latihan fisik 6MWT sesuai SOP dapat berpotensi meningkatkan kualitas hidup pasien gagal jantung kongestif.

Quality of Life and Physical Exercise Overview in Congestive Heart Failure Patients Using Six-Minute Walk Test

Efforts to improve the quality of life for patients with congestive heart failure can be made through the Six Minute Walk Test (6MWT) physical exercise. This study explores the role of 6MWT, which is not only used as an assessment tool but also as a structured exercise intervention that can help improve the quality of life of heart failure patients. The aim of this study is to determine the impact of 6MWT physical exercise on the quality of life of patients with congestive heart failure. The study design used is quantitative with a descriptive approach, involving 36 respondents selected using purposive sampling technique. The variables studied include 6MWT physical exercise measured by the Standard Operating Procedure (SOP) implemented at RS Arifin Achmad in Riau Province, and the quality of life of patients measured using the Minnesota Living with Heart Failure Questionnaire (MLHFQ). The results showed that the majority of respondents were in the pre-elderly age group (52.8%), male (63.9%), had a high school education (44.4%), and most were unemployed (41.7%). All patients underwent 6MWT physical exercise according to the SOP (100%). The quality of life of the patients was mostly categorized as moderate (86.1%) and poor (13.9%). Based on these findings, it can be concluded that the application of 6MWT physical exercise according to SOP has the potential to improve the quality of life of patients with congestive heart failure.

Introduction

The prognosis for congestive heart failure is poor, and its clinical signs typically indicate advanced stages. The condition has a four-year survival rate of less than 50% and an annual patient mortality rate of 9.91 million. The mortality and rehospitalization rates from cardiovascular disease continue to be the primary worldwide issue. Congestive heart failure is one of the most common recurrent cardiovascular diseases (Cahyani *et al.*, 1998). The relationship between self-care and the quality of life of CHF patients, as well as the importance of self-management in improving treatment outcomes and quality of life (Prihatiningsih & Sudyasih, 2018), which states that adequate self-care ability is positively correlated with improved quality of life for CHF patients. Additionally, another study by Wahyuni & Kurnia (2014) also confirms that good self-care ability has a positive influence on the quality of life and effectiveness of CHF disease management, where improved self-care can improve the physical and emotional aspects of patients.

In developed nations, as people age, the prevalence of congestive heart failure rises by 1% to 2% annually. According to there are approximately 64.34 million congestive heart failure patients worldwide (Daeli et al., 2021). There were 1,017,290 congestive heart failure patients in Indonesia, with Riau Province ranking 10th in the country's total number of patients, with 26,085 (Djamaludin et al., 2018). According to data from 2023, 362 patients with congestive heart failure were treated at the Heart Polyclinic of Arifin Achmad Regional Public Hospital in Riau Province. In 2024, the hospital's medical records showed an average of five monthly rehospitalization cases.

The study clearly states its objective to evaluate the quality of life of CHF patients undergoing 6MWT, highlighting both physical and psychosocial benefits. This is important, as quality of life is a key outcome in CHF management. However, the objective could be strengthened by clarifying the mechanisms of change—whether improvements are driven primarily by physical exercise or also by other components such as education and social support. Explicitly outlining this causal pathway would enhance the study’s framework and clinical relevance. Additionally, the patient's quality of life is disrupted by psychological issues like anxiety and depression, chest pain, shortness of breath, and rapid fatigue. Long-term health maintenance for patients with congestive heart failure depends on improving their quality of life

(Groenewegen et al., 2020). Quality of life changes indicate a connection between clinical events and the successful management of patients with congestive heart failure (Izzuddin et al., 2020).

Cardiac rehabilitation is one way to try to improve the quality of life status of patients with congestive heart failure (Jumayanti et al., 2020). Managing physical factors, accelerating mental and physical recovery, assisting with psychological adjustments during the healing process, expanding knowledge, and promoting beneficial lifestyle changes and healthy habits are the goals of cardiac rehabilitation services. The cardiac rehabilitation program was divided into three phases: maintenance (risk factor management), outpatient (intervention following treatment), and inpatient (treatment while the patient is in the hospital) (PERKI, 2019).

The effectiveness of the cardiac physical exercise rehabilitation program has been assessed by changes in mental aspects, such as the patient's apparent calmness, improved functional capacity, decreased angina complaints, and changes in knowledge aspects, such as the patient's compliance with the exercise program (Ramadhana & Meitasari, 2023). Acute coronary syndrome patients' heart rates and blood pressure are impacted by physical activity, which has implications for cardiac rehabilitation. The polyclinic room of the Arifin Achmad Regional Public Hospital in Riau Province has introduced a physical exercise cardiac rehabilitation program for patients with congestive heart failure; however, some patients continue to experience chest pain, are unable to work typically, and have not received comprehensive information from medical professionals about cardiac rehabilitation programs I, II, and III.

The Six Minutes Walk Test (6MWT) is an exercise test that is part of the phase II cardiac rehabilitation program. This test measures how far a person can run on a 100-foot (30-meter) flat, hard track in 6 minutes to assess their physical capacity (Regitz-Zagrosek, 2020). The 6MWT test offers valuable information about the patient's prognosis in day-to-day activities and helps evaluate functional capacity. Nurses gave ten patients with congestive heart failure at Polyclinic in Arifin Achmad Regional Public Hospital in Riau Province 6MWT physical exercise activities. The patients' pain and anxiety levels decreased, they were able to resume their regular activities, and they expressed satisfaction with the information provided by medical professionals regarding cardiac rehabilitation programs I, II, and III.

The underlying mechanisms connecting physical rehabilitation processes, particularly the Six-Minute Walk Test (6MWT), with improved mental health, such as reduced anxiety and depression, involve several key factors. First, increasing physical capacity thru exercise that increases the distance covered in 6 minutes can strengthen self-confidence and fall efficacy, thereby reducing fear of falling and increasing confidence in daily activities. Second, the physical activity during rehabilitation triggers the release of endorphins and other neurotransmitters that play a role in improving mood and reducing symptoms of depression and anxiety. Third, improving physical function and the ability to perform activities directly improves patients' social and psychological aspects, such as strengthening social relationships and reducing social isolation, which contributes to depression (Boxer et al., 2021; Celano et al., 2022; Soysal et al., 2023).

This study aims to determine the quality of life of congestive heart failure patients who undergo 6MWT physical exercise. The implementation of the 6MWT not only contributes to physical improvements but also plays a crucial role in enhancing patients' emotional well-being and independence, reinforcing its significance in comprehensive cardiac care. However, the study has several limitations that should be acknowledged. The small sample size (n=10) restricts the statistical power of the analysis and limits the generalizability of the findings to a broader population of CHF patients. Moreover, the absence of long-term follow-up raises uncertainty about the sustainability of the observed improvements in physical capacity and emotional well-being. Without longitudinal data, it remains unclear whether these benefits persist or diminish over time. Future research with larger, more diverse samples and extended follow-up periods would provide stronger evidence and enhance the robustness of the conclusions.

Methods

This study employed a descriptive research design using quantitative methods. The rationale for selecting this design was to describe and quantify the quality of life among congestive heart failure patients who performed physical exercise through the Six-Minute Walk Test (6MWT). Descriptive quantitative research is appropriate for understanding patterns, frequencies, and distributions of variables within a defined population. The population in this

study consisted of patients with congestive heart failure undergoing treatment at the Heart Polyclinic of Arifin Achmad Regional Public Hospital, Riau Province, Indonesia. The inclusion criteria were: (1) diagnosed with congestive heart failure, (2) already received education on 6MWT prior to discharge, and (3) willing and able to participate in follow-up assessments. A purposive sampling technique was used to recruit participants, focusing on patients who had received initial 6MWT training by the inpatient nursing staff and returned for outpatient follow-up. A total of 36 respondents were selected to participate. The sample size was determined based on the number of patients meeting the inclusion criteria during the study period, and the response rate was 100%, as all selected patients completed the study.

Standard Operating Procedure (SOP) checklist for 6MWT physical exercise: This was used to assess whether patients performed the 6MWT correctly based on established hospital guidelines. Minnesota Living with Heart Failure Questionnaire (MLHFQ): A standardized and widely used instrument to assess the quality of life in heart failure patients. It contains 21 items covering physical, emotional, and social dimensions. The MLHFQ has demonstrated good validity and reliability, with previous studies reporting Cronbach's alpha values above 0.8, indicating high internal consistency. The study began with the reinforcement of 6MWT instructions during the outpatient visit, after patients had been initially introduced to the exercise before hospital discharge by inpatient nurses. Researchers re-educated the patients about the 6MWT following the SOP and then observed the implementation during follow-up control schedules. After the 6MWT was performed, researchers administered the MLHFQ to measure the patients' quality of life based on their experience after completing the physical exercise regimen. The data collection period lasted for approximately four weeks, ensuring that each participant had time to complete the 6MWT and respond to the questionnaire under consistent conditions.

Data were analyzed using descriptive statistical analysis. The information was tabulated in frequency distributions and percentages, covering variables such as age, gender, education level, employment status, quality of life categories, and adherence to 6MWT SOPs. Before analysis, the data were reviewed for completeness and consistency. The statistical software used for the analysis was SPSS (version not specified). No inferential statistics were applied, as the objective of the study was descriptive. This study received ethical approval from the Nursing

and Health Research Ethics Committee (KEPK) of the Faculty of Nursing, Riau University, under the reference number: 980/UN19.5.1.8/KEPK.FKp/2024. All procedures involving human participants were conducted in accordance with the Declaration of Helsinki. Informed consent was obtained from all participants, and confidentiality and anonymity were maintained throughout the study process.

Research Results

According to the findings of the study on the quality of life of patients with congestive heart failure who participated in 6MWT physical exercise at the Arifin Achmad Regional Public Hospital in Riau Province, these patients have the following traits:

Table 1. Characteristics of Congestive Heart Failure Patients at the Arifin Achmad Regional Public Hospital in Riau Province (n=36)

Congestive Heart Failure Patient's Characteristics	Frequency	Percentage (%)
Age		
a. Adult (19-44 years)	7	19,4
b. Pre-Elderly (45-59 years)	19	52,8
c. Elderly (>60 years)	10	27,8
Total	36	100
Gender		
a. Man	23	63,9
b. Woman	13	36,1
Total	36	100
Education		
a. Elementary School	4	11,1
b. Junior High School	9	25,0
c. Senior High School	16	44,4
d. Bachelor degree	6	16,7
e. Master's degree	1	2,8
Total	36	100
Job		
a. Jobless	15	41,7
b. Employee	6	16,7
c. Self-Employed	8	22,2
d. Civil Servants	1	2,8
e. Farmer	1	2,8
f. Merchant	1	2,8
g. Labor	1	2,8
h. Retired Civil Servants	3	8,2

Total	36	100

Table.1 indicates that the majority of respondents are pre-elderly, with 19 (52.8%) being male, 23 (63.9%) being middle-aged, 16 (44.4%) having completed high school, and 15 (41.7%) having a job.

Table 2. Distribution of 6MWT Physical Exercise for Congestive Heart Failure Patients at the Arifin Achmad Regional Public Hospital in Riau Province (n=36)

***6MWT* Physical Exercise**	**Frequency**	**Percentage (%)**
According to SOP	36	100
Total	36	100

Table.2 shows that 36 respondents (100%) completed the 6MWT physical exercise required of patients with congestive heart failure following SOP.

Table 3. Distribution of Quality of Life in Congestive Heart Failure Patients Undergoing 6MWT Physical Exercise at the Arifin Achmad Regional Public Hospital in Riau Province (n=36)

Quality of Life	**Frequency**	**Percentage (%)**
Poor	5	13,9
Moderate	31	86,1
Total	36	100

According to Table.3, 31 respondents (86.1%) reported moderate quality of life for congestive heart failure patients who received 6MWT physical exercise at the Arifin Achmad Regional Public Hospital in Riau Province.

Discussion

According to the study's findings, the majority of heart failure patients were middle-aged or older, with the largest age group at Arifin Achmad Regional Hospital being those between the ages of 45 and 59. Heart failure can happen at any age, but the risk does rise with age. This conclusion is supported by other research, such as who discovered that heart disease was more common in women, and who found that heart disease was more common in the pre-elderly group, particularly in men who were highly educated and actively employed (Riskesdas, 2020; Sepehrvand et al., 2020). According to research, this dominance is linked to aging, which alters heart function, while risky lifestyle choices like smoking become the primary cause of productive age (Groenewegen et al., 2020). Psychological factors and emotional burden play a role nearly equivalent to physical factors in influencing functional performance and overall well-being in patients with heart failure. A comprehensive understanding of and intervention in

these aspects may contribute to improved physical capacity and overall quality of life among these patients (Zhu J, *et.al.*, 2023).

According to this study, men comprise most of Arifin Achmad Regional Public Hospital's heart failure patients. When it comes to physical productivity, men typically lead better lives. However, women tend to be more emotionally focused, which can have an impact on their quality of life when they have heart failure (Tanziah, 2015). Most patients have secondary education (Senior High School), which is another determining factor. Higher education impacts knowledge of how to prevent and treat diseases, which can aid in treating heart failure (Taylor et al., 2022).

Most patients did not have active employment, so employment status also played a significant role. According to research a similar phenomenon occurred: many heart failure patients ceased working because they were too old or homemakers (Teramatsu et al., 2019). Heart failure conditions may worsen if one's employment status prevents them from accessing the proper care (Wahyuni, 2022). Researchers believe patients' reliance on pension funds or family support impacts their well-being. The expectation that increased adherence will lead to greater improvements in quality of life may also be influenced by individuals' subjective beliefs regarding the effectiveness of treatment and their personal motivation, which can vary across individuals. Thus, although high levels of adherence are often assumed to yield greater benefits, in reality, variations in individual responses and other contextual factors may result in significant differences in outcomes (Zhu J, *et.al.*, 2023).

The high level of patient compliance with the Six Minute Walk Test (6MWT) physical exercise program indicates that the SOP taught by the hospital nurses at Arifin Achmad Regional Public Hospital is being followed. Phase II cardiovascular rehabilitation includes the 6MWT exercise, which attempts to improve the patient's physical, mental, and social state and accurately predicts the likelihood of hospitalization within a year (Regitz-Zagrosek, 2020; Health Organization [WHO], 2017). Researchers believe that family members and medical staff support this high compliance, which boosts mental and physical capacity and deters relapse.

A significant concern is patients' quality of life, as most of them have a moderate quality of life. Several patients report experiencing frequent episodes of dyspnoea and difficulty with physical activities, including working outside the home. Additionally, some patients have

trouble sleeping and are frequently admitted to the hospital. According a quality of life significantly predicts the severity of congestive heart failure (Tanziah, 2015). Exercise like 6MWT can improve physical capacity and lessen symptoms (Zuliani et al., 2023). According to researchers, 6MWT is an easy-to-use and effective test that can significantly enhance heart failure patients' quality of life.

Conclusion

The rehabilitation program significantly enhances the patient's physical capacity and quality of life, which exhibits a high degree of compliance, particularly regarding the 6MWT physical exercise. Even though most patients have a moderate quality of life, exercise improves physical and mental health and lowers symptoms like dyspnoea. Families and healthcare professionals' support is crucial for enhancing heart failure patients' quality of life and rehabilitation results.

The significance of health education in improving patient comprehension of heart failure management, a comprehensive approach that considers the patient's physical, mental, and social needs, and the role of family support in the care process are among the nursing implications of these findings. Patients' quality of life should be regularly monitored by nurses, who should also assess symptoms and encourage healthy lifestyle choices like quitting smoking and getting more exercise.

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Conflict of Interest

The authors declare that there is no conflict of interest in this study.

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