Healthcare in Low-resource Settings

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Enhancing self-care in elderly patients: the impact of WhatsApp reminder messages at the Heart and Vascular Center

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Abstract

The importance of reminder messages lies in improving self-care among heart disease patients. At the Heart and Vascular Center, many patients, both those under ongoing care and those recently treated, do not consistently engage in self-care activities. Reminder messages can

encourage adherence to medication regimens. This study aimed to investigate the effectiveness of WhatsApp reminder messages on the self-care of elderly patients at the Heart and Vascular Center. The research employed a quasi-experimental design with a two-group pre- and post-test control design. Using a probability sampling technique with simple random sampling, the study required 16 new patients in each group. The instrument used was the Self-Care Heart Failure Index (SCHFI) questionnaire, consisting of 22 questions. Data analysis was performed using the Mann-Whitney test. The results indicated that WhatsApp reminder messages are effective in enhancing patient self-care at the Heart and Vascular Center at Premier Hospital Surabaya (p-value<0.001). The Mann-Whitney test results post-intervention showed a p-value of 0.013, confirming the effectiveness of WhatsApp reminder messages in improving self-care among patients. This study demonstrated a significant positive influence of WhatsApp reminder messages on the self-care of elderly patients at the Heart and Vascular Center. These messages are an effective tool for improving patient self-care practices at Premier Hospital Surabaya.

Introduction

Heart disease is a condition that requires attention and recognition of the existing risk factors in individuals. Immediate action can be taken to prevent complications that may lead to undesirable consequences.[1] Heart disease is defined as a physiological condition wherein the heart fails to adequately pump blood to meet metabolic needs. It is marked by symptoms such as shortness of breath, intolerance to physical activity, and fatigue, which can impact daily activities.[2] Patients with heart disease require specialized care and attention. Self-care for these patients involves recognizing signs and symptoms, adhering to prescribed treatments,

monitoring body weight, taking medications regularly, maintaining proper fluid intake, and engaging in physical exercise.[3,4] However, many patients at the Heart and Vascular Center fail to adhere to independent care practices. They may not regularly monitor their medication, take prescribed medications consistently, or follow dietary recommendations and daily consumption habits.[5,6]

Heart disease is a non-communicable disease and remains a significant global health concern. It represents one of the fastest-growing cardiovascular diagnoses worldwide. According to data from the American Heart Association (2022),[7] approximately 5.3 million Americans are affected by heart disease, with 660,000 new cases diagnosed annually. The incidence of heart disease approaches 10 per 1,000 people over the age of 65. Results from the Basic Health Research (2018),[8] indicate that the prevalence of heart disease in all provinces of Indonesia increases with age, with the highest prevalence observed among individuals aged 65-74 years (0.5%). The prevalence of heart disease diagnosed by doctors in Indonesia is 0.13%. At Premier Surabaya Hospital's Heart and Vascular Center, there were 4,572 patients treated for heart disease from January to October 2021, including both control patients and those recently treated. Based on a preliminary study conducted by researchers, which involved interviewing 10 respondents, it was found that many respondents expressed a lack of understanding regarding post-treatment care upon returning home.

Heart disease occurs when the heart is unable to effectively pump blood to meet metabolic needs, often due to malfunctioning chambers caused by arrhythmias or excess fluid accumulation, leading to changes in heart function.[9] Individuals with heart disease commonly experience fatigue, orthopnea, and edema. A lack of understanding about self-care among heart disease patients can exacerbate their symptoms. For patients with heart disease experiencing health disturbances, increasing care and dependency on life support is crucial to identifying those at risk of deteriorating health.[10] This can prevent patients from feeling like a burden to

their families and reduce social isolation, ultimately improving their overall perception of health. Adherence to treatment is paramount for the success of therapy in heart disease patients. It plays a significant role in managing symptoms, improving functional capacity, enhancing quality of life, reducing morbidity, and positively affecting prognosis.[11,12]

The primary management approach for patients with heart disease involves consistent adherence to independent care practices, including medication management, dietary adjustments, engagement in physical activity, fluid restriction, and participation in psychosocial activities.[13,14] Poor self-care management can increase the likelihood of heart disease recurrence. Self-care practices significantly impact medical outcomes, particularly for patients with cardiovascular disease. Studies have shown that patients who effectively adhere to self-care regimens experience better quality of life, lower mortality rates, and fewer hospital admissions compared to those with poor self-care habits.[13,15]

Currently, Premier Surabaya Hospital lacks specialized interventions aimed at promoting independent care for patients' post-treatment. Therefore, developing a health promotion model to enhance patient self-care within the Heart and Vascular Center is crucial. One effective strategy to enhance patient care is to encourage patients to ask specific questions that can lead to improvements in their self-care practices.[16,17] Urgent efforts by healthcare professionals are needed to increase patient engagement in self-care at the Heart and Vascular Center, along with the implementation of a promotion model to boost patient visits. Various intervention methods, such as telephone reminders, SMS reminders, social media (such as WhatsApp) message reminders, and mobile app reminders, have been utilized successfully in several countries.[18,19] Nurses, as professional healthcare providers, play a significant role in supporting patients with heart disease. However, it's essential for nurses to empower patients to become independent in their self-care, rather than fostering dependency.[20,21]

Other studies also demonstrate that reminder messages are effective not only between different groups but also within the same group. This underscores the importance of reminder messages not only in enhancing patient self-care but also in sustaining it. Research indicates that reminder messages effectively prompt participants to take their medication, decrease instances of non-adherence due to reasons other than forgetfulness, and reduce medication interruptions or discontinuations. Reminder messages can motivate patients to adhere to their medication regimen. These findings align with a study by Khonsari and Subramanian, which revealed that two-thirds of patients perceived reminders positively.[22] The purpose of this study was to investigate the effectiveness of WhatsApp reminder messages on the self-care of elderly patients at the Heart and Vascular Center.

Materials and Methods

This research utilized a quasi-experimental design with a two-group pre- and post-test control design. The study sampled patients registered at the Heart and Vascular Center of Premier Hospital Surabaya who met specific inclusion criteria: being new patients registered at the center and possessing mobile phones with WhatsApp applications. All new patients meeting these criteria were included as respondents. Based on sample size calculations using the Federer formula, 16 new patients were required in each group. The study employed a probability sampling technique with simple random sampling.

Participants were initially divided into two groups: the intervention group, which received WhatsApp message reminders, and the control group, which did not. Baseline measurements of patient self-care were taken for both groups, covering various aspects such as medication adherence, dietary habits, and physical activity levels. Subsequently, the intervention group commenced receiving standardized WhatsApp reminders promoting self-care behaviors, including medication prompts and dietary recommendations, for a duration of two weeks.

Meanwhile, the control group maintained their regular care routine at the Heart and Vascular Center without receiving any reminders. After this period, post-intervention measurements of patient self-care were conducted for both groups, mirroring the pre-test assessments. Statistical analysis then compared pre- and post-test measurements within and between groups to assess the impact of WhatsApp reminders on patient self-care efficacy at the Heart and Vascular Center.

The independent variable in this study was the WhatsApp message reminder, while the dependent variable was patient self-care at the Heart and Vascular Center of Premier Hospital Surabaya. Self-care was assessed using the Self-Care Heart Failure Index (SCHFI), comprising 22 questions related to nutritional diet rules, medication adherence, activity levels, understanding of the disease, fluid restrictions, timely treatment, and emergency education. The analysis utilized the Wilcoxon test and the Mann-Whitney test with a significance level of $p \leq 0.05$.

Results

Before the intervention (Table 1), the majority of the control group, consisting of 10 respondents (62.5%), were aged 65 or older, while in the treatment group, the majority, comprising 9 respondents (56.3%), were in the same age category. Concerning education, in the control group, most respondents (56.25%) had senior high school education, and in the treatment group, the majority (62.5%) also had senior high school education. Regarding gender distribution, the control group included an equal number of female (50%) and male (50%) respondents, while in the treatment group, there were slightly fewer female respondents (37.5%) compared to male respondents (62.5%).

Table 2 reveals the self-care categories before and after the intervention in both groups. In the treatment group, the pre-test showed that 87.5% of respondents had poor self-care, which

decreased to 12.5% post-test. Similarly, the control group exhibited a high proportion of poor self-care (81.25% pre-test), shifting to 62.5% post-test. Statistical analysis demonstrated a significant improvement in self-care following WhatsApp reminders, with the majority experiencing enhanced self-care in both groups. The Wilcoxon and Mann-Whitney tests confirmed the effectiveness of WhatsApp reminders in enhancing patient self-care.

The table also highlights the effectiveness of WhatsApp reminder messages on patient self-care. The post-test control group showed a decrease in poor self-care from 81.25% to 62.5%, while the intervention group exhibited improved self-care, increasing from 12.5% to 81.25% in good self-care. The p-value of 0.013 indicates a statistically significant difference in self-care improvement between the treatment and control groups post-intervention. This confirms that the WhatsApp reminder messages were more effective in enhancing self-care behaviors compared to the control group that did not receive the reminders.

Discussion

Self-care of patients in the Surabaya treatment group before and after being given a WhatsApp reminder message

The self-care evaluation before and after the intervention in the Surabaya Treatment Group reveals noteworthy trends. Respondents aged over 65 years tend to exhibit poor self-care practices. This aligns with findings by Ponikowski *et al.* (2014),[23] which associate increased age with a higher risk of heart disease and heart failure. Adequate self-care adherence is pivotal for successful therapy. However, it's noteworthy that caregivers often rely more on familial or hospital care than engaging in independent care practices themselves.[24] Moreover, the results indicate that respondents of male gender tend to have poorer self-care practices. This could be attributed to men's tendency to lack self-confidence and to not prioritize self-care practices. This observation aligns with research conducted by Riegel, Dickson, and Vaulkner (2015),

which suggests that self-care behavior is influenced by various individual characteristics, including age, gender, and education level.[25]

Self-care of patients in the control group before and after being given a WhatsApp reminder message

In the control group data, 10 out of 13 respondents, or 62.5%, maintained poor self-care, while in the treatment group, 11 out of 14 respondents, or 68.8%, improved to good self-care from their initial status of poor self-care. These findings suggest that after receiving WhatsApp reminder messages, the majority of respondents exhibited a positive behavioral change, specifically in the form of improved self-care. This aligns with the findings of Pool *et al*. (2017)[26] who highlighted the effectiveness of reminding clients to ask specific questions that lead to changes in their care as an intervention strategy. Several studies have observed the efficacy of this approach in improving preventive services such as immunization.

The information-motivation-behavioral skills model suggests that interventions based on this framework can effectively influence behavioral change across various clinical applications.[27] The researcher posits that providing WhatsApp reminder messages to the treatment group of patient respondents at the Heart and Vascular Center at Premier Surabaya Hospital contributed to their increased awareness and motivation to engage in independent self-care practices. The persistence of poor self-care among many respondents in the control group may be attributed to a lack of information or forgetfulness regarding self-care practices, leading to a lack of motivation.[28] Since the control group did not receive WhatsApp reminder messages, there was no significant change observed in this group.

Effectiveness of WhatsApp reminder messages on patient self-care

Studies indicate that WhatsApp reminder messages are effective in reducing forgetfulness and instances of missed care, thereby promoting the resumption of care routines. These messages can also encourage patients to take more initiative in their self-care practices. These findings align with the study conducted by Khonsari and Subramanian, which revealed that two-thirds of patients perceived WhatsApp reminder messages as helpful in reducing forgetfulness.[22] In an article discussing the long-term effects of WhatsApp reminder services, it is suggested that these reminders assist patients in recalling the steps necessary for independent care amidst their busy schedules, leading to a sense of being cared for by healthcare providers or hospitals, thereby motivating them to prioritize self-care.[29]

Several respondents expressed gratitude for the WhatsApp reminder messages, stating that they found them particularly helpful during busy or reluctant moments. Some even requested for the continuation of WhatsApp reminder messages within the hospital setting.

Conclusions

Based on the research findings, it can be concluded that before receiving WhatsApp reminder messages, patient self-care at the Heart and Vascular Center at Premier Surabaya Hospital was predominantly categorized as poor. However, after the implementation of WhatsApp reminder messages, there was a notable increase in self-care, with the majority transitioning from poor to good self-care. This indicates a significant improvement in patient self-care following the intervention of WhatsApp reminders. Therefore, it can be concluded that WhatsApp reminder messages are effective in enhancing patient self-care at the Heart and Vascular center at Premier Surabaya Hospital.

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Table 1. Characteristics of respondents before intervention in both control and treatment groups (N=32).

	Control group		Treatment group	
Characteristics	**Number of respondents**	**Percentage (%)**	**Number of respondents**	**Percentage (%)**
Age				
<65 years	6	37.5	7	43.7
≥65 years	10	62.5	9	56.3
Self-care categories				
Good	3	18.7	2	12.5
Bad	13	81.3	14	87.5
Education				
Elementary-junior high school	3	18.75	2	12.5
Senior high school	9	56.25	10	62.5
Bachelor/diploma degree	4	25	4	25
Gender				
Female	8	50	6	37.5
Male	8	50	10	62.5
Total	16	100	16	100

Table 2. Self-care evaluation before and after WhatsApp reminder messages.

Group	Test	Self-care category	Number of respondents	Percentage (%)	p-value
Treatment	Pre-test	Poor	14	87.5	0.001*
		Good	2	12.5	
	Post-test	Poor	3	18.75	
		Good	13	81.25	
Control	Pre-test	Poor	13	81.25	0.083*
		Good	3	18.75	
	Post-test	Poor	10	62.5	
		Good	6	37.5	
p-value	0.013**				

*Wilcoxon test; **Mann Whitney Test; p-value<0.05