

Original Article

Health Education Impact on Acute Coronary Syndrome (ACS) Patients' Self-Efficacy & Self-Care

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Received: 20 May 2024
 Revised: 30 May 2024
 Available online: 31 July 2024

Keywords

Acute Coronary Syndrome;
 Health Education; Self Efficacy;
 Self Care

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<https://journal.umtas.ac.id/index.php/healthcare/index>

Doi

10.35568/healthcare.v6i2.4722

ABSTRACT

Acute Coronary Syndrome (ACS) is a life-threatening condition. Health education interventions are needed as secondary prevention efforts. This study aimed to analyze the effect of health education on self-efficacy and self-care for ACS patients. This study used a pre-experimental one-group pre-posttest design. The number of samples was 41 respondents taken by purposive sampling technique. Self-efficacy was measured using the General Self-Efficacy (GSE) questionnaire, Cardiac Diet Self-Efficacy (CDSE), and Cardiac Self-Efficacy (CSE). Self-Care Coronary Heart Disease Inventory (S-C CHDI) was used to measure self-care of the patients. Data were analyzed using a dependent t-test. The results showed an increase in the average score of self-efficacy before health education from 129.12 (SD = 16.65) to 142.49 (SD = 13.34) after health education. The self-care score before health education was 51.78 (SD = 11.51), which increased to 59.90 (SD = 10.25) after health education was performed. There was a significant increase in self-efficacy and self-care after health education was conducted, with a p-value = 0.001 < 0.05. There was a significant influence of health education intervention on self-efficacy and self-care of patients with ACS. Health education can be programmed as a nursing intervention for ACS patients who are receiving treatment in a hospital.

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INTRODUCTION

ACS, a common type of cardiovascular disease, is generally used to describe a constellation of symptoms resulting in ischemic heart disease. Common causes of ACS include the presence of blockages due to lipid buildup developing into atherosclerotic plaques or can be caused by coronary vasospasm (Maria et al., 2014; Santos-Gallego et al., 2014). Risk factors related to atherosclerosis include hypercholesterolemia, hypertension, smoking, hyperlipidemia, diabetes mellitus, low physical activity, obesity, family history of cardiovascular disease, unhealthy diet patterns, and stress factors (Yandrapalli et al., 2019).

Patients experiencing ACS attacks may be in life-threatening conditions, with a risk of recurrent ACS attacks around 21-30% annually, vulnerable to inpatient stress (18.5%), and mortality (12.5%) within 30 days after discharge from the hospital (Brady et al., 2013; Aditya et al., 2018; Chen et al., 2011). Other research findings report that ACS patients mostly experience physical deficiencies and functional limitations, as well as psychological problems such as depression and anxiety, significantly impacting the quality of life of ACS patients (Lee et al., 2017; Rosidawati et al., 2015). Previous studies have stated that ACS patients have low self-efficacy in performing activities (Imam & Jitpanya, 2022), while according to Topaz et al. (2016), ACS patients have poor self-care. Considering the high recurrence of ACS attacks and rehospitalizations, it is crucial for ACS patients to modify their lifestyles to prevent recurrent attacks and rehospitalization (Jin et al., 2016).

Lifestyle modification is one of the secondary prevention methods aimed at reducing the risk of recurrent ACS attacks, including exercise, dietary modifications, smoking cessation, activity restriction, stress and anxiety management, and medication adherence (Nuraeni, Mirwanti &

Anna, 2019). There are several interventions that nurses can perform regarding lifestyle modifications in ACS patients, including group meetings, counseling, health education on lifestyle and behavior modifications, and cardiac rehabilitation programs (Anchah et al., 2017; Hwang & Kim, 2015). Health education is crucial for ACS patients as social support from family and healthcare providers to enhance self-efficacy, leading to higher adherence to self-care (Hwang & Kim, 2015). According to Shin et al. (2013), self-efficacy can influence self-care, while self-efficacy itself is influenced by health information or knowledge (Shim & Hwang, 2017). Therefore, one way to improve knowledge is through health education (Wahyuni & Rezkiki, 2015).

The current issue in hospitals in Kuningan District is the suboptimal provision of health education to ACS patients. Based on interviews with nurses in two hospitals in Kuningan District, nurses stated that education provision to ACS patients is not supported by media and standard operating procedures (SOP) for education provision to ACS patients. In addition, education provision does not meet the patients' learning needs, due to the high workload of nurses, resulting in limited time for health education to ACS patients. This causes the information provided regarding patients' confidence in recognizing ACS symptoms and patient care at home to be less effective, potentially leading to patient rehospitalization with ACS (Romalina et al., 2017). Strategies such as early education provision can prevent rehospitalization, recurrent ACS attacks, and heart failure (Jin et al., 2016).

Health education will be more effective if supported by theories that support behavioral changes, one of which is the Social Cognitive Theory (SCT). The concept of this theory emphasizes that learning occurs in a social context with dynamic interactions between people, the environment, and behavior (Manjarres-

Posada et al., 2020; Lamorte, 2019). Health education media used in this study are booklets, diary books, and animated videos, which are expected to address the current issues in implementing health education programs. Furthermore, research on self-care in ACS patients using a combination of animated videos and diary books in Indonesia has never been studied.

The animated video in this study is tailored to the content found in the booklet related to disease information and lifestyle modifications for ACS patients compiled by the researchers and reviewed by two cardiovascular specialists. Therefore, the researchers designed individually based health education based on the Social Cognitive Theory using booklets, diary books, and animated videos for ACS patients. This study aims to identify the influence of health education on self-efficacy and self-care in ACS patients in hospitals in Kuningan District

METHOD

This study employed a pre-experimental design with a one-group pre-posttest approach, aiming to identify the influence of health education on self-efficacy and self-care in ACS patients. The research was conducted at two hospitals in Kuningan District (RSUD 45 Kuningan and Hasna Medika Kuningan Heart Hospital). The sampling method used in this study was purposive sampling, resulting in a sample of 41 respondents.

The inclusion criteria for respondents in this study included ACS patients admitted to the ICU/CCU and inpatient wards, aged 40-65 years, without chest pain complaints within 24 hours as stated by the attending physician and responsible nurse, hemodynamically stable, able to communicate well, without visual and hearing impairments, able to read and write, and willing to participate in the study. Meanwhile, exclusion criteria were ACS patients unable to understand educational materials, ACS patients with underlying

diseases that can cause cognitive impairment such as dementia, patients with heart failure and kidney failure complications, and lung disorders.

Self-efficacy was measured using the General Self Efficacy (GSE) questionnaire by Born in 1995, Cardiac Self Efficacy (CSE) by Sullivan in 1998, and Cardiac Diet Self Efficacy (CDSE) developed by Hickey in 1992. These questionnaires have been used in Indonesia by Wantiyah in 2010 and have been declared valid and reliable with Cronbach's Alpha values for GSE at 0.88, CDSE at 0.86, and 0.77 for CSE. The questionnaire consists of 45 statements with a scale ranging from 45-180.

The self-care of ACS patients was measured using the Self-Care of Coronary Heart Disease Inventory (SC-CHDI) questionnaire developed by Dickson et al. (2016). This scale consists of 22 question items. This questionnaire has never been used in ACS patients in Indonesia; therefore, the researchers conducted validity and reliability tests on ACS patients aged 40-65 years. The Cronbach's Alpha values obtained were 0.913 for self-care maintenance, 0.899 for self-care management, and 0.921 for self-care confidence. In this study, the SC-CHDI questionnaire was modified with scores ranging from 22-88.

The media used in this study were booklets, diary books, and animated videos based on health education prepared as educational media. The animated video in this study was tailored to the content found in the booklet related to disease information and lifestyle modifications for ACS patients compiled by the researchers and reviewed by two cardiovascular specialists. Meanwhile, the diary book contained notes for patients, serving as a reminder and also monitoring the lifestyle activities performed by patients at home.

Data collection was conducted in the intensive care unit and inpatient wards from March to May 2020. Initially, the researchers assessed the status of patients

diagnosed with ACS according to the inclusion and exclusion criteria. After selecting the patients, the researchers provided informed consent regarding the study to be conducted. The researchers first measured the self-efficacy and self-care of patients (pretest), then conducted health education based on social cognitive theory, using lecture and question-and-answer discussion methods using booklets, diary books, and animated videos in a single meeting while the patients were hospitalized. The researchers re-measured the self-efficacy and self-care of patients (posttest) four weeks after health education using telephone/WhatsApp. Data analysis in this study was divided into univariate and bivariate. Univariate analysis was used to describe the self-efficacy and self-care of ACS patients, while bivariate analysis was used to identify the influence of health education on self-efficacy and self-care of ACS patients using paired numerical comparative tests, namely dependent t-tests.

The researchers obtained ethical clearance for this study from the Research Ethics Committee of Universitas Padjadjaran No. 220/UN6.KEP/EC/2020. All respondents were informed and signed informed consent before data collection. To protect respondents from unforeseen conditions, considering they were patients in the post-acute phase, health education was only provided to those permitted by the doctor or nurse.

RESULTS

The characteristics of respondents in this study consisted of age, gender, education level, occupation, marital status, experience of ACS attacks, exposure to previous disease information, type of ACS, and ACS risk factors, which can be seen in Table 1.

Table 1. Frequency Distribution of Respondent Characteristics (n=41)

Variable	f (n=41)	%
Age		
• 6-45 (Late Adult)	8	19.5
• 46-55 (Early Elderly)	24	58.5
• 56-65 (Late Elderly)	9	22.0
Gender		
• Male	31	75.6
• Female	10	24.4
Education		
• Elementary School (SD)	14	34.1
• Junior High School (SMP)	6	14.6
• Senior High School (SMA)	12	29.3
• Higher Education	9	22.0
Occupation		
• Unemployed	12	29.3
• Farmer/Trader/Laborer	11	26.8
• Civil	5	12.2
• Servant/Military/Police		
• Others	13	31.7
Marital status		
• Married	40	97.6
• Widower/Widow	1	2.4
Experience of ACS attacks		
• Once	29	70.7
• ≥ 2 times	12	29.3
exposure to previous disease information		
• No	32	78.0
• Yes	9	22.0
Type of ACS		
• UA	18	43.9
• NSTEMI	14	34.1
• STEMI	9	22.0
ACS risk factors		
• Hypertension	20	48.8
• Diabetes Mellitus	5	12.2
• Hyperlipidemia	16	39.0
Filling in the Diary Book		
• Incomplete	14	34.1
• Complete	27	65.9

Source: Authors' own research

The table shows that out of 41 respondents, the majority of ACS patients were aged 46-55 years (58.5%), and most respondents were male, accounting for 75.6%. The highest education level among respondents was Elementary School (SD), with 14 individuals (34.1%). The most common occupation distribution was other/self-employed, with 13 individuals

(31.7%), and the majority of respondents were married, with 40 individuals (97.6%). Most respondents had experienced ACS attacks once, totaling 29 individuals (70.7%), while 32 individuals (78.0%) had never received previous health education. The majority of respondents had the type of ACS as UA, with 18 individuals (43.9%), and the most common ACS risk factor was hypertension, with 20 individuals (48.8%).

Table 2. Self-Efficacy and Self-Care Before and After Health Education

	Before Health Education		After Health Education	
	Mean	SD	Mean	SD
Total self-efficacy	129,12	16,65	142,49	13,34
GSE	28,85	3,53	32,44	2,84
CDSE	40,98	7,34	45,98	5,61
CSE	59,29	8,13	64,07	6,72
Total Self-care	51,78	11,51	59,90	10,25
S-C Maintenance	24,44	5,57	28,46	4,67
S-C Management	13,93	3,46	15,95	3,03
S-C Confidence	13,41	3,02	15,49	3,00

Source: Authors' own research

The univariate results in this study are presented in Table 2. In Table 2, the average scores of self-efficacy and self-care for ACS patients before health education were found to be 129.12 (SD=16.65) and 51.78 (SD=11.51), respectively. Meanwhile, the average scores of self-efficacy and self-care after health education were 142.49

(SD=13.34) and 59.90 (SD=10.25), respectively. Bivariate analysis in this study indicates a significant influence of health education based on social cognitive theory using booklet, diary book, and animated video media on self-efficacy and self-care of ACS patients, respectively ($p < 0.05$; p -value = 0.001), as described in Table 3.

Table 3. Results of the Analysis of Differences in Self-Efficacy and Self-Care (March-May) 2020

	Before Health Education		After Health Education		Δ Mean	t	p-value
	Mean	SD	Mean	SD			
Total self-efficacy	129,12	16,65	142,49	13,34	13,37	10,99	0,001
GSE	28,85	3,53	32,44	2,84	3,59	10,59	0,001
CDSE	40,98	7,34	45,98	5,61	5,00	8,13	0,001
CSE	59,29	8,13	64,07	6,72	4,78	9,20	0,001

Total Self-care	51,78	11,51	59,90	10,25	8,12	11,53	0,001
S-C Maintenance	24,44	5,57	28,46	4,67	4,02	10,72	0,001
S-C Management	13,93	3,46	15,95	3,03	2,02	8,41	0,001
S-C Confidence	13,41	3,02	15,49	3,00	2,08	9,12	0,001

Source: Authors' own research

DISCUSSION

The sample characteristics in this study are described in Table 1. The table indicates that the majority of respondents were male (75.6%). The findings of this study are consistent with previous research, indicating that the majority of ACS patients are male, with 38 individuals (74.51%) out of 51 respondents (Muhibbah et al., 2019). The respondents in this study fall within the age range of 46-55 years. On average, the age of the participants categorizes them as early elderly, a vulnerable age group prone to various diseases, including Coronary Heart Disease (Wahyuni & Rezkiki, 2015).

The highest level of education among respondents was primary school (SD) education, with 14 individuals (34.1%), and the most common occupation was self-employed, comprising 31.7%. This differs from Widiastuti's research (2012) conducted at Pondok Indah Hospital, where the majority of respondents had tertiary education and worked as entrepreneurs. Education level is a parameter indicating one's formal educational attainment and generally affects a person's ability to process information (Widiastuti, 2012). According to Wahyuni & Rezkiki (2015), education is closely related to knowledge, which in turn affects lifestyle. Higher knowledge levels can lead to improved healthy lifestyle behaviors, and it is hoped that providing health information can motivate respondents to adopt healthy behaviors.

In this study, the majority of respondents were married, with 40 individuals (97.6%). This is consistent with Widiastuti's research (2012), where 70.8% of respondents were married, likely because coronary heart disease patients are typically

in the adult to elderly age range and thus often married (Widiastuti, 2012). The most common type of ACS was UA, with 18 individuals (43.9%), and the most common risk factor for ACS was hypertension, with 20 individuals (48.8%). This aligns with previous research indicating that patients with NSTEMI and UA have higher hypertension rates and tend to have a history of ACS compared to STEMI patients, with rates of 47.8% for NSTEMI and 51.8% for UA (Sanchis-gomar et al., 2016). This is also consistent with research by Khatri & Simkhada (2016), indicating that hypertension is the most common risk factor for ACS, affecting approximately 68% of ACS patients, followed by 62% with dyslipidemia, and 19% with diabetes mellitus.

Based on the diary book evaluation during the intervention, it was found that 14 individuals (34.1%) did not complete the diary book entries, while 27 individuals (65.9%) completed them. These results indicate that respondents tend to have good compliance with completing the diary book, which is one component of health education based on social cognitive theory. Moreover, from the diary book analysis, most patients did not engage in exercise as recommended, i.e., at least 30 minutes, 5 times a week (Notara et al., 2014). These results are supported by several previous studies reporting that ACS patients post-education experience difficulties in lifestyle modification, including exercise and diet, which can be a contributing factor to post-hospitalization depression and increased cardiac workload (Steca et al., 2017).

Self-Efficacy

Based on this study, the self-efficacy score among ACS patients before health

education was an average of 129.12 (SD = 16.65), with 31 respondents (75.6%) categorized as having poor self-efficacy. This indicates that ACS patients are in an acute phase. This aligns with Wantiyah's statement (2010) that ACS patients are vulnerable to stress due to their condition, and those with low self-efficacy tend to experience emotional reactions such as denial, fear, anxiety, anger, dependency, depression, and difficulty accepting reality (Mejía et al., 2023). The GSE domain had the lowest average score, at 28.85 (SD = 3.53), possibly because most ACS patients in this study experienced their first attack, with 29 respondents (70.7%).

After one month of measurement, the average self-efficacy score was 142.49 (SD = 13.34), with 30 respondents (73.2%) categorized as having good self-efficacy. The increase in scores occurred after patients received social cognitive theory-based health education interventions using booklets, diary books, and animated videos, indicating that respondents' knowledge likely increased with the education provided. This is consistent with Singh et al.'s research (2018), stating that providing education to ACS patients can improve their knowledge (Singh et al., 2018). This is also in line with Alavi et al.'s statement (2016) that knowledge can affect self-efficacy (Alavi et al., 2016). Thus, ACS patients with high self-efficacy will increase their confidence in performing self-care (Mejía et al., 2023).

Based on the dependent t-test analysis, it is concluded that there is a significant influence of health education on self-efficacy (p-value < 0.05; p-value = 0.001). In theory, self-efficacy can be defined as an individual's assessment of their confidence in their ability to perform actions to achieve specific goals and can affect their lives, including responding to difficulties faced in changing health behaviors (Maddux, 2016). According to Maddux, (2016), self-efficacy is a strategy that plays a vital role in overcoming problems and the impact of one's illness.

This is reinforced by Kang and Yang's statement (2013) that self-efficacy is a vital factor in initiating and maintaining health behaviors (Kang & Yang, 2013).

Patients experiencing ACS can be in life-threatening conditions, and ACS can have physical, psychological, and social implications (Brady et al., 2013; Gomes & Reis, 2016). ACS patients require self-efficacy to help restore their physical and psychosocial functions (Lee et al., 2017). ACS patients with high self-efficacy will increase their confidence and adherence to self-care (Mejía et al., 2023), which is an essential component of ACS patient strategies to prevent recurrent heart attacks and complications (Hwang & Kim, 2015).

The results of this study are consistent with Shim and Hwang's research (2017), which states that health education using multimedia videos and counseling with periodic text messages to ACS patients is effective in increasing self-efficacy (Shim & Hwang, 2017). Another study by Wahyuni and Rezkiki (2016) found that structured health education using booklets, measured over two weeks, effectively increased PJK patients' self-efficacy (Wahyuni & Rezkiki, 2016). This is also consistent with Hwang & Kim's research (2012), which found that health education delivered through individual multimedia videos accompanied by counseling in the form of periodic text messages was effective in increasing self-efficacy to modify unhealthy lifestyles and engage in healthy behaviors (Hwang & Kim, 2012).

Self-Care

Based on this study, it is known that the self-care score for ACS patients before health education was an average of 51.78 (SD = 11.51), with 32 respondents (78.0%) categorized as having poor self-care. The self-care confidence domain had the lowest average score, at 13.41 (SD = 3.02). This could be because ACS patients have poor self-efficacy in dealing with the disease and coping with its effects, consistent with

Zaben and Khalil (2019) indicating that ACS patients have poor self-care, leading to high readmission rates.

After one month of measurement, the average self-care score was 59.90 (SD = 10.25), with 27 respondents (65.9%) categorized as having good self-care. Respondents received health education based on social cognitive theory through booklets and videos related to their illness during their treatment. Additionally, as respondents underwent the recovery process, they gained experience related to the disease and how to perform self-care at home through the diary book. This is considered a reason for the increase in ACS patients' self-care.

Self-care, or self-care management, is defined as a naturalistic decision-making process that influences actions to maintain physiological stability, facilitate symptom perception, and guide symptom management (Riegel, Dickson, & Faulkner, 2016). Based on statistical testing using the dependent t-test, a p-value of 0.001 ($p < 0.05$) was obtained for the self-care score, indicating a significant influence of health education on ACS patient self-care in hospitals in Kuningan Regency. This occurred due to the influence of health education provided using booklets, diary books, and animated videos.

This is consistent with previous research by Hwang & Kim (2015), stating that health education programs provided to ACS patients using multimedia videos and periodic counseling via telephone can improve self-efficacy and adherence to self-care (Hwang & Kim, 2015). Another study by Gomes & Reis (2016) also states that systematically structured health education programs using interviews and educational videos are effective in improving self-care skills in ACS patients post-attack (Gomes & Reis, 2016). A study by Shim & Hwang (2017) concluded that health education through counseling and multimedia video education individually to ACS patients is effective in increasing self-efficacy, adherence to self-

care, and improving the quality of life of ACS patients (Shim & Hwang, 2017).

This study has limitations, such as not having a control group. Additionally, the study's use of the SCT theory lacked continuous monitoring and feedback. Therefore, future research should conduct experiments with control groups using SCT theory and conduct weekly follow-ups for continuous monitoring and feedback.

CONCLUSIONS AND RECOMMENDATION

This study provides an overview that ACS patients treated at two hospitals in Kuningan Regency have an average age of 45-55 years, with the most frequent gender being male, the highest educational frequency being primary school, married status, experienced an attack once, mostly diagnosed with UA, with the most common risk factor being hypertension. Overall, the average scores of self-efficacy and self-care in ACS patients increased after receiving health education. Health education has a significant influence on the self-efficacy and self-care of ACS patients, thus health education based on social cognitive theory using booklets, diary books, and animated videos can be programmed as nursing interventions for ACS patients receiving treatment in hospitals.

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