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A SELF-REGULATION MANAGEMENT MODEL TO REDUCE PAIN AND CHOLESTEROL IN CORONARY HEART DISEASE PATIENTS

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ABSTRACT

Background: Self-regulation management is the process of controlling and monitoring one's behavior to achieve specific health goals involving physical, cognitive, motivational, and social factors. **Objective:** Aimed to describe and analyze the pain index, lipid profile levels (total cholesterol, LDL, HDL, and triglycerides), and quality of life, while identifying which indicators significantly represent the self-regulation construct. **Methods:** A cross-sectional quasi-experimental design was employed, involving 195 CHD patients at Jombang Public Hospital. Data were collected through interviews, questionnaires, and laboratory tests. A one-tailed independent T-test was used to assess the significance of self-regulation indicators, comparing the T-statistic values of the measurement model with a T-table value of 1.65 (df=194, alfa=0.05). **Results:** Only self-monitoring, self-diagnosis, and pain level had T-statistics exceeding 1.65, indicating a significant effect on the self-regulation construct. Recurrence and total cholesterol did not show a significant influence. Pain levels were lower in the treatment group (mean=1.85, adjusted to 2-moderate pain) compared to the control group (mean=2.75, adjusted to 3-severe pain). **Conclusion:** Targeted interventions enhancing self-monitoring and self-diagnosis may reduce perceived pain and strengthen self-regulation in CHD patients.

Keywords: Coronary heart disease; Pain index; Self-regulation; Total cholesterol;

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BACKGROUND

Self-regulation management involves managing and monitoring one's behavior to attain a goal, utilizing physical, cognitive, motivational, and social elements. Coronary heart disease is chronic and progressive, with frequent relapses and a high mortality rate, patients have limited self-management, from detecting and monitoring health status to finding personal meaning (Stewart, 2022).

Recurrence rates range from 29 to 59% within 6 months of leaving the hospital, and patients with coronary heart disease have a low quality of life, very high medical expenses, and a prognosis almost identical to other chronic conditions despite being treated with different therapy strategies. Therefore, they are unable to manage their healthcare needs independently, especially during hospitalization and until they can return home for treatment (Stewart, 2022).

Coronary heart disease affects a person's emotional, social, physical, financial, and cultural aspects, lowering quality of life. Someone with coronary heart disease may try to change, but they usually lack the knowledge and skills to make decisions and act correctly. Self-regulation management should be a continuous process, depending on the patient's state, as it integrates both hospital and home care. Coronary heart disease must be treated promptly to prevent recurrence and ongoing impairment (Putri 2022).

A discharge plan prevents illness progress, potentially fatal complications, and physical impairment. Effective and focused communication is essential to provide clear and valuable information for home nursing, particularly when preparing a patient for return home (Nursalam, 2024).

According to estimates from the World Health Organization (WHO), developing countries will be responsible for 80% of cardiovascular disease deaths in the future. In 2020, cardiovascular disease will account for 36 percent of all fatalities (He, 2008). Prevention efforts, innovations in medical technology and science, the accessibility of health services for all levels of the community, and community nurses' assistance with hospital-to-home transitions have reduced the prevalence of coronary heart disease in developed countries (Sarvasti, 2022).

Coronary heart disease is serious. Coronary heart disease kills 15 million people worldwide, 30% of all deaths, according to WHO. Coronary heart disease caused 7 million deaths, stroke 500 thousand, and hypertension 691 million (Muchtar, 2020).

Smoking, consuming alcohol, eating fatty meals, stress, and inactivity increase the incidence of coronary heart disease year after year. Smoking, alcohol, fatty food, stress, and inactivity are these factors (Hermansyah, 2022).

To rehabilitate and prevent relapse, self-regulatory control demands patient focus. While in hospitals or at home, people may become more conscious, concerned about controlling treatment independently, and aware of drugs and risks (Rofi'i, 2013).

This self-regulation approach is a specific strategy for patients with chronic illnesses, aiming to enhance chronic disease management, including coronary heart disease, and to facilitate continuity of treatment between hospitals and community services. Self-regulation plans, Nursing continuity, and illness prevention require effective treatment (Naylor et al., 2022).

Self-regulation theory and behavior modification are used to help people make lifestyle changes to increase responsiveness and reduce patient recurrence rates; however, this approach is not widely accepted in practice (Rofi, I, 2003).

METHODS

This study employed a quasi-experimental design combined with a cross-sectional approach. The quasi-experimental method was chosen because the study aimed to observe and analyze outcomes in patients with coronary heart disease without random assignment or manipulation of an intervention, which differentiates it from a true experimental design. Instead, the study examined naturally occurring differences in pain index, lipid profiles, and quality of life at a single point in time.

The cross-sectional approach refers to data collection that occurs at a single, specific time point for all participants, allowing for the simultaneous assessment of variables of interest. This approach is suitable for describing the current status and relationships between pain levels, lipid profiles, and quality of life in the patient population.

By combining quasi-experimental and cross-sectional elements, the study aims to explore associations and differences in variables under real-world conditions without the need for experimental intervention, thereby providing valuable descriptive and analytical insights.

This research included 305 patients with coronary heart disease from Jombang Hospital, a public hospital in East Java Province. The Jombang Hospital Kemuning room was used to handle patients with coronary heart disease in this research. They met having gone through the acute/attack phase, cooperating, being 45-75 years old, and having an awareness of their mental state. In this study, the sample size was calculated using a rule of thumb, Patients were recruited consecutively from the cardiology outpatient clinic of Jombang Public Hospital. The inclusion criteria were patients diagnosed with coronary heart disease aged [age range], who were willing to participate and able to provide informed consent. Patients with severe comorbidities or cognitive impairments that could interfere with study participation were excluded. Eligible patients were approached during their routine visits, and those who agreed to participate were enrolled sequentially until the required sample size of 195 was reached. All participants provided written informed consent prior to data collection.

Self-regulation management is the independent variable in this study. In this investigation, the dependent variables were coronary heart disease recurrence and lipid profile levels. Data was collected using a standard operating procedure (SOP), a self-regulation checklist, and recurrence and cholesterol questionnaires. The statistical method used was PLS (Partial Least Squares) using the Windows version 2 of SmartPLS.

RESULTS

Table 1. shows that 54% of respondents were between 61 and 75, 98% had a basic education (SD/SMP), 51% were male, and 83% had coronary heart disease in the last three years.

Self-regulatory parameters are used to identify the reaction and behavior that may enhance a person's integrity, which helps them survive coronary heart disease. It includes signs for self-monitoring, self-diagnosis, repetition, discomfort index, and total cholesterol levels. In patients with coronary heart disease, 73% of responders exhibit lower self-monitoring reactions and behaviors. This is also true for self-diagnosis responses and behavior, with up to 86% of respondents falling into the 'less' category. 62% of respondents engaged in self-regulation throughout their emotions and behavior towards the recurrence. In response to the pain index, 33% of patients reported no discomfort, while 27% experienced considerable pain. 76% of respondents had cholesterol levels over 200 mg/dl, even though 76% of patients had cholesterol levels above 200 mg/dl.

Based on Table 2, almost all (73%) of coronary heart disease clients do not self-monitor, nearly all

Table 1. Respondent characteristics

Characteristics	Category	F	
		n	%
Age	40 – 50 Years	27	14
	51 – 60 Years	63	32
	61- 75 Years	105	54
Education	Base	172	88
	Intermediate	20	10
	Tall	3	2
Gender	Male	100	51
	Female	95	49
Long suffered	13 years old	163	83
	Less than 3 years	32	17
Number of attacks	First	74	38
	Second	65	32
	More than twice	57	29

Table 2. Self-regulatory coronary heart disease patients

Parameter	Category	Frequency	
		n	%
Self-monitoring	High	13	7
	Medium	39	20
	Low	143	73
Self-diagnosis	Well	13	7
	Enough	13	7
	Not enough	169	86
Recurrence	Yes	121	62
	Not	74	38
Pain index	No Pain	65	33
	Light	39	20
	Medium	52	27
	Heavy	39	20
Total cholesterol	<200mg/dl	45	24
	> 200mg/dl	150	76

Table 3. Value of factor loading (outer loading) self regulatory model early intervention

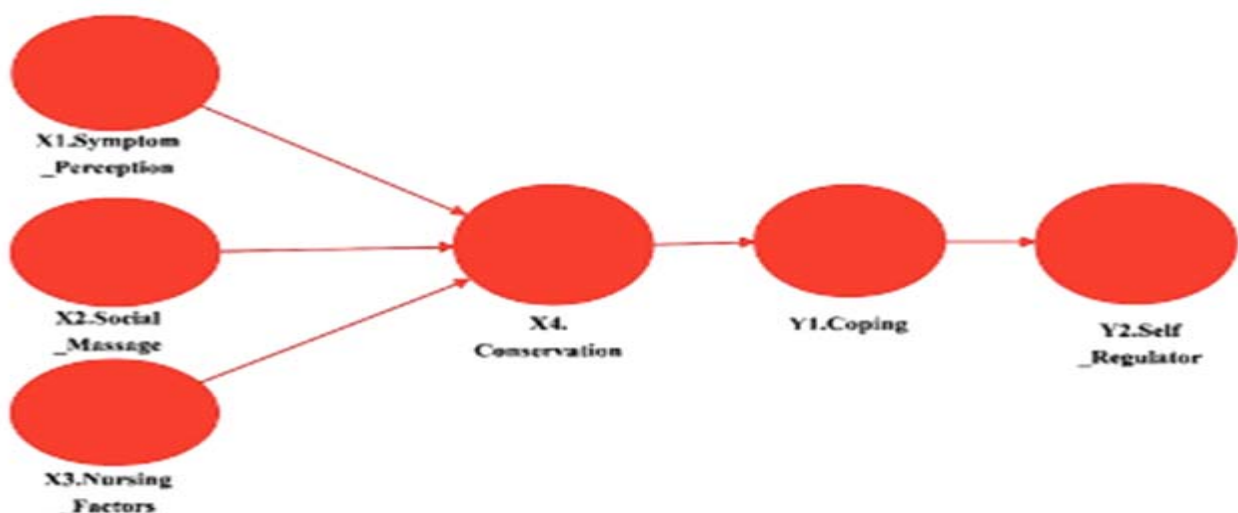| Variable	Indicator	Factor Loading	Validity
Self-regulatory	Self-monitoring	0.73615	Valid
	self-diagnosis	0.90	Valid
	recurrence	0.23	Invalid
	Pain index	0.59	Valid
	Total cholesterol	0.04	Invalid

Figure 1. Path diagram of the self-regulatory model

(86%) do not self-diagnose, 62% experience recurrence with index pain, 33% were painless, and 76% have total cholesterol levels greater than 200 mg/dl.

The measurement framework (outer model) and indicators that measure hidden variables must be tested. Testing the structural framework (inner model) verifies model correctness. It is crucial to verify the data-gathering tool before running the model.

Convergent validity is met if an indicator's coefficient loading score (outer loading) surpasses 0.5.

This test will determine the relevance of the construct's indicators. T-tests test. Hypothesis-based t-tests are one-tailed. The reference value compares the Outer Model T statistics value to the T table. If the T-statistical value exceeds the T-table value, the indicators significantly affect the construct. The self-regulation intervention model should contain these signals. T table = T n-1; ? = T 194; ? = 5% = 1.65 The T table score is 1.65 when the degree of freedom (data amount - 1) = (n-1) = 195-1 = 194 and the margin of error tolerances (?) is 5%.

Structural model analysis examines how independent-dependent relationships affect dependent components. The route coefficient is the coefficient value of this link.

The dimensional path coefficient data show the route coefficient, also known as the Inner Weight. The independent-dependent relationship must be explored first. Self-regulation management to avoid repetition and total cholesterol levels in patients with coronary heart disease will be addressed by testing between constructs, but the hypotheses will not be evaluated.

DISCUSSION

54% of coronary heart disease people in the sample were 61-75 years old, and 88% had completed elementary school. 51% of coronary heart disease clients are men, 49% women. 83% had the condition for up to three years. 38% had an initial assault, 32% had two, and 30% had more than two.

Self-regulatory factor

The findings indicate that a significant proportion of coronary heart disease patients exhibit low levels of self-regulatory behaviors, particularly in self-monitoring (73%) and self-diagnosis (86%), which are critical for maintaining health integrity and managing their condition effectively. Although 62% of respondents demonstrated some degree of emotional and behavioral self-regulation in response to disease recurrence, the overall low engagement in key self-regulatory parameters suggests a potential gap in patient self-management.

In terms of symptom experience, about one-third of patients reported no discomfort, yet a notable 27% suffered considerable pain, highlighting variability in pain perception and possibly pain coping mechanisms. Additionally, the majority of patients (76%) had elevated cholesterol levels exceeding 200 mg/dl, indicating suboptimal lipid control despite awareness of their condition. These results underscore the need for targeted interventions to enhance self-regulatory skills and lipid management among patients with coronary heart disease, aiming to improve outcomes and quality of life.

Self-monitoring, self-diagnostic recurrence, discomfort index, and total lipids are used for assessing self-regulation aspects. Based on the measurement model's reliability test (convergent test, differentiation test, importance test), the parameters of self-monitoring, self-diagnosis, and discomfort index can explain the self-regulatory factor because the factor transferring value is higher than 0.5 (convergent test), the cross-validation value loading from the value of the loading factor is higher than 0.5 (discriminant test), and the T-values value is higher than T-table (significance test) (si). The three validity tests could not explain self-regulatory mechanisms for recurrence indicators and total cholesterol. Consequently, self-monitoring, self-diagnosis, and pain index are indications that may be used to define self-regulating aspects. Self-monitoring necessitates self-observation; thus, the patient must be vigilant to prevent recurrence. Self-monitoring requires heightened vigilance from the patient (Baumeister, 1994). Acute heart attacks are the most critical moment for coronary heart disease patients. The patient's family must learn how to phone 911 (Maynard, 1993). Controlling cholesterol through diet and exercise, as well as reducing daily fat consumption, are examples of patient self-regulation (Smeltzer, 2002).

Self-monitoring and vigilance will help coronary heart patients self-regulate. Diet, cholesterol management, and fat avoidance. If significant discomfort arises, the family must seek medical attention.

Self-monitoring of patients with coronary heart disease

Self-monitoring frameworks indicate that individuals with weak self-monitoring tendencies are more likely to be influenced by external information and attitudes, as noted by Rose and Kim (2011). If environmental culture influences company choices, this might be problematic. High self-monitors tend to value social prominence more than low self-monitors.

Self-monitoring involves control of impressions and self-regulation (Snyder & Gangestad, 1986). Self-control in social situations influences others' impressions of themselves (Shaw & Constanzo, 1982). When engaging with others, people constantly want to present a specific image.

Synder (Watson et al., 1984) defines self-monitoring as the use of internal and external cues to present oneself. Mark Snyder developed the concept of self-monitoring based on this idea, which describes the process each individual goes through while giving impression management to others. Snyder and Cantor (Fiske and Taylor, 1991) define self-monitoring as planning, acting, and making social choices. Robbin (1996) defines self-monitoring as a personality quality that measures a person's capacity to adapt to external factors.

Baron and Byrne (2004) describe self-monitoring as the amount to which people control their behavior depending on external conditions and the responses of others (high self-monitoring) or internal variables such as beliefs, attitudes, and objectives (low self-monitoring). Based on the diverse opinions of the aforementioned experts, self-monitoring refers to a person's ability to communicate with others by using both internal and external cues to obtain the information needed to act in response to social conditions and situations.

Self-diagnosis of coronary heart disease patients

According to the Better Health Channel (2008), self-diagnosis involves diagnosing a medical problem. Some social media, prior personal experiences, or recognizing signs or medical markers of a condition a family member has may be helpful. Knowing medical jargon for symptoms can be helpful when searching online.

Self-diagnosing psychological ailments might lead us to overlook physical issues masquerading as mental ones. Self-diagnosis weakens the doctor's authority. We are familiar with ourselves, yet we may need a mirror. Self-diagnosis might lead to missing something. Self-diagnosis might cause patients to overestimate their illness. Denying clinical symptoms makes self-diagnosis harder. An impartial T-test evaluated the self-diagnosis behavior of coronary heart disease patients between the management and control groups. The T-test and T-table showed that patients with coronary heart disease in the treatment and control groups self-diagnosed differently.

The management group's self-diagnosis behavior averages 2.2 compared with 1.35 in the control group. Additionally, 2.22 is reduced to 2, which is okay, while 1.35 is reduced to 1, which is horrible. The management group's self-assessment was better than that of the control group.

Pain level

The independent T-test demonstrated a statistically significant difference in pain reactions between the treatment and control groups, with the treatment group reporting lower pain levels. This suggests that the therapeutic intervention contributed to improved pain management among patients with coronary heart disease.

The observed reduction in pain may be attributed to targeted clinical care, including optimized pharmacological treatment and enhanced patient monitoring. Additionally, psychosocial support or patient education within the treatment protocol bolstered patients' ability to cope with pain. In contrast, the control group, which did not receive such intervention, exhibited higher pain levels, indicating less effective pain control. These findings highlight the crucial role of comprehensive and multidisciplinary care approaches in mitigating pain and enhancing patient outcomes in the management of coronary heart disease.

CONCLUSION

Self-monitoring, self-diagnosis, recurrence, pain, and total cholesterol are self-regulatory factors

in patients with coronary heart disease. The measuring model revealed that three factors-self-monitoring, self-diagnosis, and pain level-could accurately characterize the self-regulating variables of patients with coronary heart disease.

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