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THE EFFECT OF PRE-OPERATIVE EDUCATION ON ANXIETY IN PATIENTS UNDERGOING PERCUTANEOUS CORONARY INTERVENTION

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ABSTRACT
Myocardial infarction (MI) describes the process of myocardial cell death caused by ischemia or an imbalance between myocardial oxygen supply through the coronary arteries and demand. Coronary heart disease remains the leading cause of death worldwide, and in Indonesia it still shows that coronary heart disease is the highest cause of death at all ages after stroke. Providing preoperative education by providing relevant health care information and preparing physically and psychologically can reduce patient anxiety. The purpose of this research is to determine the effect of preoperative education on the anxiety of patients undergoing PCI. The method uses a quasi-experimental design. The research method used a quasi-experiment with an intervention group and a control group. The sampling technique used Purposive sampling. The number of samples in this study was 46 respondents, 23 intervention groups and 23 control groups. The study was conducted in May - June 2024 in the ICCU room of PKU Muhamadiyah Gamping Hospital, with a data collection time allocation of 15 minutes to measure anxiety and provide pre-operative education. Pre-test anxiety measurements were carried out during the ACS medical diagnosis and scheduled for PCI, then pre-operative education was given with booklet media, post-test measurements were carried out one hour before the PCI was carried out. The instrument used was the STAI (State-Trait Anxiety Inventory) questionnaire with 20 question. Data analysis using the Independent Samples Test. The result is a P value of 0.00, which means there is a difference in anxiety between the intervention group and the control group. The average anxiety of the intervention group pre-test was 34.39 decreasing to 30.57, and the control group pre-test anxiety average was 34.17 decreasing to 33.22. The conclusion is that pre-operative education is effective in reducing anxiety in patients undergoing PCI.

Keywords: anxiety; percutaneous coronary intervention; pre-operative education

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INTRODUCTION

Acute Coronary Syndrome (ACS) refers to a constellation of clinical signs and symptoms caused by worsening myocardial ischemia. The absence of myocardial damage, assessed by measuring cardiac biomarker levels so that patients can be classified as having unstable angina (Griffin, B., & Menon, 2018) WHO Media Center noted that in 2015 around 17.7 million people died from cardiovascular disease and 7.4 million were caused by coronary heart disease and 6.7 million others due to stroke. According to the sample registration system survey in 2014, in Indonesia, coronary heart disease is still the highest cause of death at all ages after stroke, which is 12.9%. This disease also has the highest prevalence with a percentage of 1.5% for cardiovascular disease (Ministry of Health of the Republic of Indonesia, Research and Development Agency, 2018).

Treatment of acute coronary syndrome includes coroangiography to determine the presence of coronary blood vessel blockage, the location of the blockage and the extent of the blockage. If there are one or two narrowed coronary blood vessels, then the installation of a ring or Percutaneous Coronary Interventions (PCI) is the next action taken to improve the prognosis,

relieve symptoms and reduce further ischemic events (Gallagher et al., 2010).Cardiac catheterization is a non-surgical intervention procedure using a catheter to widen or open narrowed coronary blood vessels with a balloon or stent. When a patient suffers from Coronary Heart Disease (CHD), catheterization is performed to reduce plaque-related narrowing or blockage. In patients before cardiac catheterization, anxiety is usually experienced due to the patient's lack of readiness, so education is needed. Pre-cardiac catheterization patients can be a source of significant stress and anxiety (Lestari, 2018).

Non-pharmacological anxiety management consisting of various interventions has been proposed to reduce patient anxiety. In addition to providing perioperative information, music therapy, relaxation techniques, building a therapeutic relationship, and essential oils are also recommended. Providing preoperative education to patients scheduled for PCI is one of the most effective ways to reduce patient anxiety (Bailey, 2010)Preoperative education has been used to improve the patient experience by providing relevant health care information, coping skills, and psychosocial support prior to surgery (Kruzik, 2009)(Anne Scott, 2004). As a way to prepare patients for their surgery both physically and psychologically, preoperative education has been shown to reduce patient anxiety and depression prior to surgery (Guo et al., 2012). The purpose of this research is to determine the effect of preoperative education on the anxiety of patients undergoing PCI.

METHOD

The research method used a quasi-experiment with an intervention group and a control group. The sampling technique used Purposive sampling with inclusion criteria including willingness to be a respondent, first elective PCI, age 18-80 years, normal communication skills, stable hemodynamics and exclusion criteria for patients diagnosed with comorbidities, and patients with cognitive confusion. The population in this study was 46 respondents, 23 intervention groups and 23 control groups. The study was conducted in May - June 2024 in the ICCU room of PKU Muhamadiyah Gamping Hospital, with a data collection time allocation of 15 minutes to measure anxiety and provide preoperative education. Pre-test anxiety measurements were carried out during the ACS medical diagnosis and scheduled for PCI, then preoperative education was given with booklet media, post-test measurements were carried out one hour before the PCI was carried out. The instrument used was the STAI (State-Trait Anxiety Inventory) questionnaire with 20 question items with the final result being a score of 20-80. The STAI was established with the reliability at 0,850. Data analysis using the Independent Samples Test.

RESULT

Table 1.
Average age of respondents (n = 46)

Variable	Frekuency	Min	Max	Mean	Std.Devisiasion
Age	46	39	69	54,54	7,55

From table 1 above, it shows that the average respondent age is 54.54 years, with the youngest age being 39 years and the oldest being 69 years.

From the table 2, it shows that most of the respondents are male, as many as 31 respondents (67.4%), and female respondents as many as 15 respondents (32.6%), while the characteristics of respondents based on education level show that most of the respondents with the last education of high school/Islamic high school as many as 23 respondents (50%), respondents with the last education of elementary school/Islamic elementary school as many as 9 respondents (19.6%), respondents with the last education of junior high school/Islamic junior

high school as many as 7 respondents (15.2%), respondents with the last education of college as many as 7 respondents (5.21%).

Table 2.
Respondent Characteristics by Gender, Education Level (n = 46)

Variable	Control		Intervention		Total	%
	f	%	f	%		
Gender						
Male	14	60,9	17	73,9	31	67,4
Female	9	39,1	6	26,1	15	32,6
Education Level						
Elementary School/Islamic Junior High	7	30,4	2	8,7	9	19,6
School/Islamic Junior High School/Islamic Senior	3	13,0	4	17,4	7	15,2
Junior High School/Islamic Junior High	10	43,5	13	56,5	23	50,0

Table 3.
Mean anxiety before and after intervention group and control group (n = 46)

Characteristic	Min	Max	Mean	Std.Devisiasion
Anxiety (Pre) intervention	26	41	34,39	4,39
Anxiety (Post) intervention	22	37	30,57	4,36
Anxiety (Pre) Control	22	41	34,17	4,67
Anxiety (Post) Control	24	40	33,22	4,37

Based on table 3 above, it is known that the average anxiety in the intervention group before (Pre) was 34.39 and the standard deviation was ±4.39, and the average anxiety after (post) was 30.57 and the standard deviation was ±4.36. While the average anxiety in the control group before (pre) was 34.17 and the standard deviation was ±4.67, and the average anxiety after (post) was 33.22 and the standard deviation was ±4.37.

Table 4.
Results of Data Normality Test with Shapiro-Wilk Test (n = 46)

Normality Test	df	sig	Description
Anxiety before and after in the intervention group	23	Pre : 0,20 Post : 0,25	normal data distribution
Anxiety before and after in the control group	23	Pre :0,23 Post : 0,19	normal data distribution
Anxiety in the intervention and control groups	23	0,12	normal data distribution

Table 4 shows that the results of the data normality test using the Shapiro-Wilk test in the intervention group with 23 respondents, where the results of the normality test obtained a sig pre value of 0.20, and post 0.25 (> 0.05) which states that the data distribution is normal. The normality test before and after in the control group obtained a sig pre value of 0.23 and post 0.19 (> 0.05) which states that the data distribution is normal, and the anxiety normality test in the intervention and control groups obtained a sig value of 0.12 (> 0.05) which states that the data distribution is normal.

Table 5.
Results of the Anxiety Statistical Test (Pre and Post) in the Intervention Group (n = 23)

Anxiety	Intervention group	f	Mean	p
	Before	23	34,39	*sig.* 0.001
	After	23	30,57	

Based on table 5 above, it shows that there is a difference in the mean value before (pre-test) which is 34.39 and after (post-test) which is 30.57. The results of the statistical test using the Paired sample test obtained a sig. value of 0.001 which is smaller than the α value: 0.05, meaning that it can be concluded that there is an effect of preoperative education on the anxiety of patients who will undergo PCI.

Table 6.
Results of the Anxiety Statistical Test (Pre and Post) in the control group (n = 23)

Anxiety	Control group	f	Mean	p
	Before	23	34,17	*sig.* 0.001
	After	23	33,22	

Based on table 6 above, it shows the difference in mean values before (pre) which is 34.17 and after (post) which is 33.22. Based on the results of the Paired sample test, the sig. value of 0.000 is smaller than the α value: 0.05, which means that there is a significant difference in anxiety before and after in the control group.

Table 7.
Results of the Statistical Test of Anxiety in the Intervention Group and Control Group (n = 46)

Anxiety	Intervention and Control Groups	f	Mean	p
	Intervention	23	3,83	*sig.* 0.000
	Control	23	0,96	

Table 7 above shows the difference in the mean in the intervention and control groups. The mean in the intervention group is 3.83 and the mean in the control group is 0.96. The mean value in the intervention group is much greater than the mean in the control group, this illustrates the success of the application of preoperative education on anxiety in patients who will undergo PCI. The results of the statistical test using the Independent Samples Test obtained a sig. value of 0.000 smaller than the α value: 0.05, meaning that it can be concluded that there is an effect of preoperative education on the anxiety of patients who will undergo PCI.

DISCUSSION

Age

The results of the study showed that the average age of respondents was 54.54 years, with the youngest age being 39 years and the oldest being 69 years. Age is an important determining factor in patients with acute coronary syndrome. Age over 40 years increases the risk of coronary heart disease. As age increases, plaque accumulates in the same location. These substances then stick to the walls of blood vessels, making plaque larger, narrowing the arteries so that the supply of oxygen-rich blood to the heart becomes thinner and can cause blockages in the coronary arteries, this condition is supported largely by factors of poor health history that result in coronary heart disease (Basri & Ningsih, 2017).In the study (Ruiz-Garcie J, 2012) it was found that the occurrence of atherosclerosis is accelerated with age, this study explains that with aging, increased plaque, necrotic core, and increased calcium levels significantly show effects related to the development of atherosclerosis.

Gender

The results of the study showed that most of the respondents were male, as many as 31 respondents (67.4%). Men have a risk 2-3 times greater than women., Age (men> 45 years and women> 55 years), family history of cardiovascular disease, and modifiable risk factors. Modifiable risk factors include hypertension, hyperlipidemia, diabetes mellitus, lifestyle, smoking (Katz R, 2006) The results of the study (Yusuf S, Hawken S, Ounpuu S, Dans T, Avezum A, Lanas F, 2004) in an INTERHEART study, which also stated that men (76%) experience more myocardial infarction than women. The American Heart Association states that men have a greater risk of heart attack and it occurs earlier than women. Santoso, stated that women seem to be relatively immune to this disease until menopause, and then become just as susceptible as men, this is thought to be due to the protective effect of estrogen (American Heart Association (AHA), 2007).

Education Level

The results of the study based on education level showed that most respondents with a final education of high school/vocational high school were 23 respondents (50%). Education is a process of changing the attitudes and behavior of a person or group and also an effort to mature humans through teaching and training efforts. With higher education, a person will tend to be able to digest information better than someone with a low education. Knowledge is closely related to education, where a person with higher education, the broader the knowledge they have (Pakpahan, M., Siregar, D., Susilawaty, A., Tasnim, Mustar, Ramdany, R., Manurung, E. I., Sianturi, E., Tompunu, M. R. G., Sitanggang, Y. F., 2021). There is an influence of health education on the level of knowledge and anxiety of pre-cardiac catheterization patients at the Integrated Heart Service Installation of Dr. Saiful Anwar Malang Regional General Hospital. Providing health education has an effective influence in increasing knowledge and reducing anxiety. Explanation of pre-cardiac catheterization information will help patients increase their knowledge, reduce stress, and improve patient perceptions of cardiac catheterization (Masriani, 2020)

Analysis of anxiety before and after the implementation of preoperative education.

The results of the implementation of EBNP, namely the implementation of preoperative education on the anxiety of patients undergoing PCI, obtained a p value <0.05 which means that there is a difference in reducing anxiety between the intervention group and the control group. Cardiac catheterization is a difficult experience for almost all patients. Various bad possibilities can occur that will be dangerous for the patient. So often patients and their families show a somewhat excessive attitude with the anxiety they experience. Physiological reactions to anxiety are the first reactions to arise in the autonomic nervous system, including increased pulse and respiration rates, shifts in blood pressure and temperature, relaxation of smooth muscles in the bladder and intestines, cold and moist skin. Anxiety is a negative emotion that arises because of danger, tension, and stress that is facing or because of the rise of the sympathetic nervous system. For patients, PCI can be a stressor where the most common response to stress is anxiety (Atkinson RL, Smith EE, 2004). Anxiety can occur before or after PCI, where the highest anxiety score occurs 1 day after the procedure (Gu et al., 2016). Typical manifestations in pre-operative patients depend on each individual and can include withdrawing, being silent, cursing, complaining and crying. Psychological responses are generally related to anxiety in the face of anesthesia, an uncertain diagnosis of the disease, malignancy, pain, ignorance about the surgical procedure and so on. One way that can be done to reduce the level of anxiety in pre-cardiac catheterization patients is by providing knowledge or health education about cardiac catheterization to patients in order to reduce the level of anxiety in these patients, by paying full attention to the smallest things in caring for patients. The results of this study prove that the pre-operative education provided can reduce anxiety in pre-catheterization patients. This is because preoperative education is an effort to change the behavior of respondents, which includes changes in the way they think, behave, and act by providing information related to acute coronary syndrome, management, and how to care for them after PCI. This is what causes changes in anxiety in respondents before and after being given preoperative education (Zhuo et al., 2023).

Preoperative education has been used to improve the patient experience by providing relevant health care information, coping skills, and psychosocial support before surgery (Kruzik, 2009) (Anne Scott, 2004). According to previous journals Both groups experienced a decrease in anxiety scores at follow-up. However, the group that received preoperative education experienced a greater decrease in anxiety compared to the usual care group (Guo et al., 2012) One of the factors that influences a person's anxiety is the level of knowledge possessed by

the patient and family. Low knowledge causes a person to easily experience stress about something that can be considered as pressure that can cause a crisis and can cause anxiety. Health education is an effort and activity carried out by nurses as a form of nursing implementation in individuals, families and communities to improve the client's ability to achieve optimal health. Health education is very important to be provided by nurses to change the behavior of individuals, families and communities so that they achieve healthy living behaviors. Through the health education provided, it is hoped that individuals, families and communities can experience changes in their way of thinking, attitude and behavior so that they can help overcome existing nursing problems, help the success of the medical therapy being undertaken, prevent the occurrence or recurrence of diseases and form healthy living behaviors (Niman, 2017).

CONCLUSION

Providing preoperative education has an effective influence in reducing anxiety, with an explanation of pre-cardiac catheterization information will increase knowledge and help reduce stress, bad perceptions about cardiac catheterization so that clients understand the actions that will be performed on them and are more prepared to undergo PCI.

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