

Anxiety, Depression, and Coping Mechanism Among Outpatients With Heart Failure

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ABSTRACT

Anxiety and depression have been identified as common condition experienced by patients with heart failure (HF). Some HF patients who are unable to manage their anxiety and depression show poor coping mechanism. The aim of this study was to identify the correlation between anxiety, depression, and coping mechanism among outpatients with HF. This study was a descriptive study using cross-sectional design. A total of 155 HF patients were recruited from cardiology clinic of governmental hospital in East Java, Indonesia. Participants completed a demographic questionnaire, Generalized Anxiety Disorder-7 (GAD-7), Patient Health Questionnaire-9 (PHQ-9), and coping mechanism questionnaire. The mean score on the anxiety, depression, and coping mechanism was 6.41 ± 2.98 , 7.21 ± 2.99 , and 20.73 ± 3.87 , respectively. Anxiety was positively correlated with depression ($r=0.502$, $p<0.000$) while anxiety and depression were negatively correlated with coping ($r=-0.348$, $p=0.000$ and $r=-0.170$, $p=0.035$). Multivariate predictors for anxiety were gender ($p=0.036$), education ($p=0.002$), NYHA class ($p=0.000$), monthly income ($p=0.010$), depression ($p=0.000$), and coping ($p=0.001$). Significant predictors of depression were NYHA class ($p=0.000$), age ($p=0.005$), frequency of hospitalization ($p=0.000$), and anxiety ($p=0.000$). Predictors for coping mechanism were marital status ($p=0.040$), education ($p=0.000$), job status ($p=0.011$), monthly income ($p=0.001$), frequency of hospitalization ($p=0.005$), and anxiety ($p=0.001$). The findings suggested that higher level of anxiety and depression are associated with lower coping mechanism. In addition, there are various factors that influence each variable. Nursing interventions for reducing anxiety and depression are needed to achieve patients adaptive coping mechanism.

Keywords: Anxiety, Coping Mechanism, Depression, Heart Failure, Outpatients

1. INTRODUCTION

Heart failure (HF) is a chronic disease where heart muscle's capacity decrease to pump enough blood to meet the body's metabolism [1]. HF becomes global burden disease, which attacks over 26 million people worldwide [2]. The results of basic health research in Indonesia indicated the prevalence of HF in 2013 based on medical doctor's diagnosis were 0.13% or an estimated 229,696 people, and based on symptoms were 0.3% or an estimated 530,086 people [3]. Patients with HF generally experience some mental disorders, such as stress, anxiety, and depression because of their disease prognosis [4].

Anxiety is one of the most frequent condition in HF patients with the prevalence rate ranged between 11% and 70%. This prevalence rate is 4-5 times higher than in general population [5]. Alhurani et al. mentioned that patients with HF have higher level of anxiety by 60% in comparison with healthy elderly [6]. In another study, there was a difference in the prevalence of anxiety in outpatients (11-54%) which was greater than inpatients (14.8%) [7].

Depression is another comorbid disorder typically seen in HF patients with the general prevalence rate ranged from 9% to 96.1%, higher than in general population [7], [5]. Previous studies found that the prevalence of depression is slightly different between outpatients or inpatients. It is ranged from 16.7% to 70% [7]. Patients with advanced HF generally showed signs and symptoms that similar to depressive symptoms. They reported impaired cognitive functions, emotional, and somatic responses which are included in depressive symptoms [8].

In patients with HF, psychological or mental disorders affect their health status. Stress, anxiety, and depression could lead the morbidity and mortality, worsening prognosis, promote the progression of the disease's functional level, increase length of hospitalization, and also interfere the patients' adherence and the quality of life [9]. Negative mood states modulated neurochemical alterations that increase neural-hormonal sympathetic activity, inflammatory and immunological responses, which lead to cardiac remodeling and contribute to HF clinical manifestations. Positive coping mechanisms are needed to manage the adverse effects of the disease [10].

There were several studies that had investigated the relationship between some of psychological disorders with coping mechanism. Previous study showed that depressive symptoms were significantly associated with maladaptive coping in older veterans with HF [11]. Depressive symptoms were positively correlated with acceptance-resignation coping in HF patients [12]. The results of preliminary study in one of hospital in East Java, Indonesia, showed that patients who experienced high levels of anxiety had partially maladaptive coping. Having anxiety and depression was considered had an effect on patients' ability to cope with the disease. However, there are limited studies that had examined the relationship between anxiety and depression with coping mechanism in HF patients. Therefore, this study aimed to identify the correlation between anxiety, depression, and coping mechanisms among outpatients with HF.

2. METHODS

2.1. Design

A descriptive, cross-sectional correlational design was used. A consecutive sampling technique was conducted to recruit patients from cardiology clinic of government hospital in East Java, Indonesia for 2 months. The sample consisted 155 outpatients with HF stage I to IV according to New York Heart Association (NYHA) classification. The inclusion criteria for participants were the following: (1) minimum 30 years old; (2) show the typical symptoms of HF (breathlessness, ankle swelling, and fatigue); (5) able to communicate using Javanese or Indonesian language verbally; (6) signed the informed consent. The exclusion criteria of the study were (1) existence of schizophrenia before the diagnosis of HF; (2) needed critical treatment in ICU/ICCU; (3) withdraw as respondent before the research was ended.

2.2 Procedure

Patients who met the inclusion criteria during their visit to outpatient ward were contacted by research assistants. Purpose, risks, and benefits of the study were informed to participants verbally and in written form. Patients who agreed to participate after study explanation were asked to fill the questionnaire while waiting for the call queue.

2.3 Measurement of variables

2.3.1. Anxiety

The anxiety sign and symptoms was measured using Generalized Anxiety Disorder scale (GAD-7) in Bahasa (Indonesian language). The GAD-7 is a self-reported measure of anxiety [13]. Participants were asked to consider the preceding two weeks and to rate symptom

frequency as not all (0), several days (1), more than half of all days (2), or nearly all days (3). Scores of 5, 10, and 15 were taken as the cut-off points for mild, moderate, and severe anxiety, respectively. Using the threshold score of 10, the GAD-7 has a sensitivity of 89% and a specificity of 82% for generalized anxiety disorder. A recent psychometric analysis carried out by Conway et al. also supported the reliability and validity of the GAD-7 in cardiac patients [14].

2.3.2. Depression

Depression symptoms were measured using Patient Health Questionnaire-9 (PHQ-9) in Bahasa. This instrument was chosen because it is shorter than Beck Depression Inventory II (9 vs 21 items) and the psychometrics of the questionnaire have been supported in patients with HF [15]. The PHQ-9 is a 9-items self-administered questionnaire with a 4-point response scale ("0" not at all to "3" nearly every day). The items assessed the frequency of depressive symptoms over the past 2 weeks. It had a sensitivity of 88% and a specificity of 88% for major depression at cut-off score of ≥ 10 in general population [16]. However, it had 70% and 92% of sensitivity and specificity, in assessing depressive symptoms among HF patients, respectively [15]. The range of scores obtained was 0-27, with the higher scores indicating more severe depressive symptoms. PHQ-9 scores of 5, 10, 15, and 20 represented mild, moderate, moderately severe, and severe depression, respectively [16].

2.3.3. Coping mechanism

Coping mechanism questionnaire was developed based on Lazarus and Folkman transactional model coping and stress which has been modified by Kurniawati [17]. The initial questionnaire used in this study was a 16-items self-administered questions with a 4-point response scale ("0" never to "3" always). It aimed at identifying constructive coping that someone uses in dealing with stressful situations [17]. However, after testing the validity and reliability in HF patients, it obtained a valid number of 5 questions for the problem focused coping (PFC) questionnaire and 6 questions for the emotional focused coping (EFC) questionnaire. The valid questionnaire had Cronbach α and inter-item correlation of 0.75; 0.398 – 0.769 and 0.77; 0.416 – 0.795 for the PFC and EFC, respectively. The range of total scores was 0-33, with the higher scores indicating a better coping mechanism. The coping scores of 0-7, 8-15, 16-23, and 24-33 demonstrated 'less', 'enough', 'good enough', and 'good' coping mechanism, respectively.

2.3.4. Demographic and clinical characteristics

These data were collected either by administering a questionnaire and by medical records review.

2.4. Data analysis

Data were analyzed using SPSS software. Statistical significance was determined at p -value of 0.05. Participants' demographic and clinical characteristics were described by (mean \pm standard deviation or frequency and percentages). Pearson correlation (r) was used to identify relationship between the main variables. The correlation is considered weak when the correlation coefficient ranges from 0.1 to 0.3, moderate ranges from 0.31 to 0.5, and strong when the ratio exceed 0.5. Mann-Whitney test was used to show the association between main variables with qualitative variables with 2 categories. The Kruskal-Wallis test was performed to show association between main variables with more than 2 categories of qualitative variables. Multivariate analysis linier regression was used to analyze the scale predictors of each variable.

2.5 Ethical approval

The study was approved by the Health Research Ethics Committee, Faculty of Nursing, Universitas Airlangga in 2019. The participants in the study were informed about the purpose of the study before written consent was obtained. The researchers also guaranteed that the documents be kept confidentially.

3. RESULT

The participants of this study consisted of 52.3% ($N = 81$) male with a mean age of 57.86 ± 10.63 years. Demographic and clinical characteristics of the participants are presented in Table 1. All the participants were Moslem (100%). Most of them were married (81.3%), educated to elementary school (36.1%), employed (50.3%), had monthly income less than regional minimum wage (71.6%). More than half of the participants (53.5%) were in functional NYHA class of II. Most of the participants used national health insurance (75.5%), had an average of 3.03 ± 1.91 (in month) length of time suffering from HF since the first diagnosed, had a mean frequency of hospitalization and comorbid of 4.27 ± 4.95 and 2.28 ± 0.76 , respectively.

Table 2. shows the mean scores and correlations between anxiety, depression, and coping mechanism. The mean scores for anxiety, depression, and coping mechanism were 6.41 ± 2.98 , 7.21 ± 2.99 , and 20.73 ± 3.87 , respectively. Regarding GAD-7 and PHQ-9, the average of participants had mild level of anxiety and depression. The prevalence of anxiety in this study was 74.2% ($N = 115$) and most of them were mild anxiety (61.3%, $N = 95$). A total of 132 (85.2%) participants had depression with 72.3% ($N = 112$) were mild depression. Most of the participants (67.1%, $N = 104$) had good enough level of coping mechanism and it was the representation of average. Anxiety had a significant positive correlation with depression ($r = 0.502$, $p < 0.01$). However, anxiety and

depression were negatively associated with coping mechanism ($r = -0.348$, $p < 0.01$ and $r = -0.170$, $p < 0.05$, respectively).

Multivariate predictors for anxiety were gender (in favor of females), education, NYHA class, monthly income, depression (0.466, 95% CI 0.323 to 0.608, $p < 0.01$), and coping mechanism (-0.190, 95% CI -0.297 to -0.083, $p < 0.01$) (Table 3). Multivariate analysis found significant predictors of depression were NYHA class, age (0.054, 95% CI 0.017 to 0.092, $p < 0.01$), frequency of hospitalization (0.153, 95% CI 0.069 to 0.236, $p < 0.01$), and anxiety (0.473, 95% CI 0.328 to 0.617, $p < 0.01$) (Table 4). Marital status, education, job status, monthly income, frequency of hospitalization (0.179, 95% CI 0.056 to 0.301, $p < 0.01$), and anxiety (-0.406, 95% CI -0.634 to -0.178, $p < 0.01$) were the significant predictors of coping mechanism (Table 5).

4. DISCUSSION

The study was conducted to identify the correlation between anxiety, depression, and coping mechanism and predictive factors of these variables among outpatients with HF in Indonesia. To our knowledge, this is the first report to correlate multiple mental disorders to coping mechanism and to describe the state and predictors of anxiety, depression, and coping mechanism among outpatients with HF in Indonesia.

The results showed that anxiety and depression were prevailing in outpatients with HF. More than 70% of participants in this study were experiencing anxiety and depression. These results were consistent with previous studies about higher incidence of anxiety and depression in patients with HF [5], [9], [18], especially among outpatients [10], [19], [20], [21]. However, the average level of anxiety and depression in this study was mild. This result was linier with current literature showing low level of those variables among outpatients with HF [10].

Table 1. Demographic and clinical characteristics of outpatients with HF (N=155)

Characteristics	M ± SD or n (%)
Gender	
Male	81 (52.3)
Female	74 (47.7)
Marital status	
Single	1 (0.6)
Married	126 (81.3)
Widowed	28 (18.1)
Education	
Not educated	17 (11.0)
Elementary school	56 (36.1)
Junior high school	29 (18.7)
Senior high school	32 (20.6)
Higher education	21 (13.5)
Job status	
Employed	78 (50.3)
Unemployed	77 (49.7)
NYHA class	
Class I	49 (31.6)
Class II	83 (53.5)
Class III	22 (14.2)
Class IV	1 (0.6)
Monthly income	
< regional minimum wage	111 (71.6)
≥ regional minimum wage	44 (28.4)
Health insurance	
Regional health insurance	31 (20.0)
National health insurance	117 (75.5)
Independent (not using health insurance)	7 (4.5)
Age (years)	57.86 ± 10.63
Time since HF diagnosis (in month)	3.03 ± 1.91
Frequency of hospitalization	4.27 ± 4.95
Comorbid	2.28 ± 0.76

NYHA: New York Heart Association; SD: standard deviation

Table 2. Mean scores and correlation coefficients of main variables (N=155)

Variable	Mean (SD)	1	2
1. Anxiety	6.41 (2.98)	-	-
2. Depression	7.21 (2.99)	0.502** <i>p</i> =0.000	-
3. Coping mechanism	20.73 (3.87)	-0.348** <i>p</i> =0.000	-0.170* <i>p</i> =0.035

* *p* < 0.05

** *p* < 0.01

Table 3. Predictors of anxiety (N=155)

Characteristics	Mean (SD)	Min	Max	95% CI		p-value
				Lower	Upper	
Gender						0.036*
Male	6.10 (3.20)	0	17	5.39	6.81	
Female	6.76 (2.71)	2	15	6.13	7.38	
Marital status						0.934
Single	6.00	6	6	-	-	
Married	6.44 (3.07)	0	17	5.90	6.98	
Widowed	6.32 (2.67)	2	11	5.29	7.36	
Education						0.002**
Not educated	7.24 (3.17)	3	17	5.60	8.87	
Elementary school	7.27 (2.86)	3	17	6.50	8.03	
Junior high school	6.03 (3.39)	2	17	4.75	7.32	
Senior high school	5.78 (2.64)	2	16	4.83	6.73	
Higher education	4.95 (2.33)	0	10	3.89	6.01	
Job status						0.352
Employed	6.29 (3.26)	0	17	5.56	7.03	
Unemployed	6.53 (2.68)	2	15	5.92	7.14	
NYHA class						0.000**
Class I	4.90 (2.05)	0	11	4.31	5.49	
Class II	6.61 (2.77)	2	17	6.01	7.22	
Class III	8.86 (3.64)	3	17	7.25	10.48	
Class IV	10.00	10	10	-	-	
Income monthly						0.010*
< regional minimum wage	6.72 (2.94)	0	17	6.17	7.27	
≥ regional minimum wage	5.64 (2.99)	2	17	4.73	6.55	
Health insurance						0.203
Regional health insurance	7.10 (3.10)	2	17	5.96	8.23	
National health insurance	6.30 (2.96)	0	17	5.76	6.84	
Independent	5.29 (2.63)	3	10	2.86	7.72	
		b	VIF			
Age (years)	57.86 (10.63)	-0.038	1.071	-0.076	0.000	0.052
Time since HF diagnosis (in month)	3.03 (1.91)	-0.098	1.126	-0.315	0.119	0.372
Frequency of hospitalization	4.27 (4.95)	-0.009	1.194	-0.096	0.077	0.828
Comorbid	2.28 (0.76)	0.166	1.018	-0.352	0.685	0.527
Depression	7.21 (2.99)	0.466	1.191	0.323	0.608	0.000**
Coping	20.73 (3.87)	-0.190	1.118	-0.297	-0.083	0.001**

Adjusted $R^2 = 0.323$

SD standard deviation, *b* regression estimate, CI confidence interval, NYHA New York Heart Association

* $p < 0.05$

** $p < 0.01$

Table 4. Predictors of depression ($N=155$)

Characteristics	Mean (SD)	Min	Max	95% CI		p -value
				Lower	Upper	
Gender						0.643
Male	7.17 (3.15)	2	17	6.48	7.87	
Female	7.26 (2.84)	2	20	6.60	7.92	
Marital status						0.952
Single	7.00	7	7	-	-	
Married	7.25 (2.91)	2	17	6.73	7.76	
Widowed	7.07 (3.47)	3	20	5.72	8.42	
Education						0.161
Not educated	8.12 (3.26)	3	15	6.44	9.79	
Elementary school	7.38 (2.47)	3	17	6.71	8.04	
Junior high school	6.97 (3.19)	3	17	5.75	8.18	
Senior high school	6.84 (2.32)	3	16	6.01	7.68	
Higher education	6.95 (4.49)	2	20	4.91	9.00	
Job status						0.817
Employed	7.38 (3.20)	2	17	6.66	8.11	
Unemployed	7.04 (2.78)	2	20	6.41	7.67	
NYHA class						0.000**
Class I	5.57 (2.19)	2	12	4.94	6.20	
Class II	7.20 (2.06)	3	16	6.76	7.65	
Class III	10.32 (3.76)	5	17	8.65	11.98	
Class IV	20.00	20	20	-	-	
Income monthly						0.200
< regional minimum wage	7.30 (2.86)	3	17	6.79	7.80	
≥ regional minimum wage	7.00 (3.70)	2	20	5.87	8.13	
Health insurance						0.241
Regional health insurance	7.68 (2.76)	4	17	6.66	8.69	
National health insurance	7.16 (3.09)	2	20	6.60	7.73	
Independent	6.00 (2.16)	2	9	4.00	8.00	
		b	VIF			
Age (years)	57.86 (10.63)	0.054	1.042	0.017	0.092	0.005**
Time since HF diagnosis (in month)	3.03 (1.91)	-0.200	1.107	-0.416	0.017	0.071
Frequency of hospitalization	4.27 (4.95)	0.153	1.097	0.069	0.236	0.000**
Comorbid	2.28 (0.76)	0.071	1.020	-0.452	0.594	0.789
Anxiety	6.41 (2.98)	0.473	1.198	0.328	0.617	0.000**
Coping	20.73 (3.87)	-0.040	1.208	-0.151	0.072	0.485

Adjusted $R^2 = 0.319$

SD standard deviation, b regression estimate, CI confidence interval, NYHA New York Heart Association

* $p < 0.05$

** $p < 0.01$

Table 5. Predictors of coping mechanism (N=155)

Characteristics	Mean (SD)	Min	Max	95% CI		p-value
				Lower	Upper	
Gender						0.340
Male	21.05 (3.89)	9	33	20.19	21.91	
Female	20.38 (3.84)	12	27	19.49	21.27	
Marital status						0.040*
Single	24.00	24	24	-	-	
Married	21.03 (3.85)	9	33	20.35	21.71	
Widowed	19.25 (3.70)	12	27	17.82	20.68	
Education						0.000**
Not educated	18.24 (2.73)	14	23	16.83	19.64	
Elementary school	19.98 (3.88)	12	27	18.94	21.02	
Junior high school	20.52 (3.55)	13	26	19.17	21.87	
Senior high school	22.06 (3.93)	9	33	20.65	23.48	
Higher education	23.00 (3.35)	17	29	21.48	24.52	
Job status						0.011*
Employed	21.50 (3.84)	9	33	20.63	22.37	
Unemployed	19.95 (3.77)	12	29	19.09	20.80	
NYHA class						0.129
Class I	21.43 (3.71)	14	33	20.36	22.50	
Class II	20.76 (3.58)	12	29	19.98	21.54	
Class III	18.91 (4.80)	9	27	16.78	21.04	
Class IV	24.00	24	24	-	-	
Income monthly						0.001**
< regional minimum wage	20.11 (3.85)	9	33	19.38	20.83	
≥ regional minimum wage	22.30 (3.49)	13	29	21.23	23.36	
Health insurance						0.241
Regional health insurance	19.87 (4.29)	13	27	18.30	21.44	
National health insurance	20.91 (3.73)	9	33	20.23	21.60	
Independent	21.43 (4.32)	15	27	17.44	25.42	
		b	VIF			
Age (years)	57.86 (10.63)	0.011	1.098	-0.045	0.067	0.696
Time since HF diagnosis (in month)	3.03 (1.91)	-0.012	1.132	-0.329	0.306	0.943
Frequency of hospitalization	4.27 (4.95)	0.179	1.131	0.056	0.301	0.005**
Comorbid	2.28 (0.76)	-0.395	1.014	-1.151	0.361	0.304
Anxiety	6.41 (2.98)	-0.406	1.418	-0.634	-0.178	0.001**
Depression	7.21 (2.99)	-0.083	1.522	-0.319	0.152	0.485

Adjusted $R^2 = 0.141$

SD standard deviation, *b* regression estimate, CI confidence interval, NYHA New York Heart Association

* $p < 0.05$

** $p < 0.01$

In contrast to inpatients with HF who tend to have higher levels of anxiety and depression [9], [18], it is assumed that the functional status of outpatients may have influenced on patients responses to the questionnaires, which assessing those variables over past two weeks. In current study and align with previous investigation [10], most of outpatients were in NYHA functional class I and II whereas in another study examining inpatients with HF showed the majority of patients were in NYHA functional class III and IV [5]. NYHA functional class had significant association with anxiety and depression in this study consistent with prior study regarding these variables [10], although another study have failed to demonstrate an association between the functional class and anxiety [22]. In fact, the literature showed that anxiety and depression were vary among patients with HF [23]. The higher NYHA functional class disposed to have higher anxiety and depression scores [5]. In addition, prior study supported these finding that the higher the functional class, the greater the symptom overload [24]. The more symptoms presence might impact the patients' social relationships and functionality negatively, as well as change their health perception [25].

Correlation analysis between anxiety and depression showed positive relationship. It was consistent with previous studies which revealed that the higher anxiety associated with the higher depression among patients with HF [5], [20], [24]. According to multivariate regression results in this study, anxiety was also become significant predictor of depression and vice versa. Anxiety leads to moments of self-exploration and contributes to depressive symptoms [24]. This is supported by previous studies that explain the pathophysiological relationship between those mental disorders. Anxiety and depression affect the biological processes of cardiovascular function in patients with HF by altering neuro-hormonal function via the hypothalamic-pituitary-adrenal (HPA) axis activation autonomic dysregulation, and cytokine cascades and platelets activation [7], [26]. This close pathophysiological relationship could explain why these variables were mutually correlated and influence each other. Anxiety and depression increase the risk of developing HF [25]. These psychosocial factors also increase the risk of primary composite outcome simultaneously, include death from any cause and re-admission of hospitalization because of deterioration of HF symptoms and poor quality of life (QoL) [23], [27], [28]. Anxiety and depression coincide, but not independently, become independent factors correlated with deterioration of clinical outcomes [23].

Multivariate analysis reported that gender (in favor of females) was one of the predictors of anxiety. It is consistent with previous study and support the current literatures regarding higher prevalence of anxiety disorders among women with HF compare to men [21], [22], [29]. It is conceived that cardiovascular disorder

lead to vulnerability to trauma or worsening of the prior psychological trauma or anxiety symptoms [21]. Women are assumed to be more sensitive to those situations than men and had a higher prevalence of anxiety.

Multivariate analysis revealed that older patients with HF increase the risk of getting depressed. It is in line with previous studies that found that depression scores increase with age [5], [22]. However, this result was contrast in anxiety variables that showed in the current study, that younger age increases the risk for getting anxiety. This result aligned with past finding that showed that younger age as the predictor of anxiety status [20].

The study results showed that mean scores of coping mechanisms among outpatients with HF were at 'good enough' category. Anxiety and depression had significant negative correlation with coping mechanism. The results demonstrated that the higher levels of anxiety and depression associated with the lower levels of coping mechanism. Prior study supported this result that showed elevated depressive symptoms were correlated with more maladaptive coping mechanism, including avoidant coping style, pessimistic attitude, and lack of perceived support [30]. The mean scores of anxiety and depression among outpatients in current study were in the mild category, which was assumed as the reason of the patients' coping level at 'good enough' state.

It was reported in this study that employed status revealed better coping mechanism. Prior studies demonstrated that higher levels of anxiety and depression was occurred in unemployed patients compare to employed [18], [31]. This might support our finding because anxiety and depression were significantly correlated with coping mechanism in this study. Our study showed that employed patients had less anxiety than unemployed, but not depression. Although the mean differences were not significant, but it could explain the current issue. In addition, earlier studies demonstrated that HF patients with higher annual salary had lower levels of anxiety and depression and higher levels of security compare with the lower ones [18], [31]. Consistent with previous study, the results showed that patients with monthly income beyond regional minimum wage had less anxiety, depression, and better coping mechanism. It is believed that unemployed patients could had lower income, hence they had lower levels of security and higher levels of anxiety and depression, which affect the ability to conduct coping mechanism.

Anxiety was showed as one of significant predictors of coping mechanism in this study. The anxiety in outpatients with HF intend to decrease patient's coping mechanism capability. Previous study support this findings that both emotion-focused coping and problem focused coping were positively associated with better physical and psychological self-care [32].

The frequency of hospital admission in this study was the significant predictor, both depression and coping mechanism. It is in line with previous studies that found the association between depression and re-hospitalization among patients with HF [23], [27], [28]. It is believed that patients with more frequent hospital admission tend to have worse depressive symptoms and worse coping mechanism due to feelings of boredom, hopelessness, and feeling as burden to their family [8].

Marital status in the current study was significant predictors of coping mechanism. HF patients with married status tends to have better coping mechanism. Being married is assumed had social support. It seems that social support had important role, because of the mechanism to defense life stressors and promote health and wellness. Social support able to diminish the adverse effects of chronic diseases and help the patients to cope with their disease effectively [33]. Education was the significant predictors of both coping mechanism and anxiety in this study. Patients who have higher education tend to have better coping mechanism and less anxiety. It considered that better knowledge provided better cognitive capability to conduct self-care behaviors and affect their coping and psychosocial responses [34].

5. CONCLUSION

Anxiety and depression have significantly positive correlation, while both of them have significantly negative correlation with coping mechanisms. Nursing interventions for reducing anxiety and depression are needed to achieve patients adaptive coping mechanism.

AUTHORS' CONTRIBUTIONS

The first author is responsible for the all process of research, while the second and the third author were supervising the process, giving advise for improvement of research methodologist and academic writing of this publication.

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REFERENCES

[1] C. Rogers, "Heart Failure," *Nurs. Clin. NA*, vol. 50, no. 4, pp. 787–799, 2015.
 [2] G. Savarese and H. L. Lund, "Global Public

Health Burden of Heart Failure," *Card. Fail. Rev.*, vol. 3, no. 1, pp. 7–11, 2017.

- [3] Department of Health Research and Development Ministry of Health Republic of Indonesia, "Basic Health Research," Jakarta, 2013.
- [4] M. Olano-Lizarraga, C. Oroviogicoechea, B. Errasti-Ibarrondo, and M. Saracibar-Razquin, "The personal experience of living with chronic heart failure: a qualitative meta-synthesis of the literature," *J. Clin. Nurs.*, vol. 25, no. 17–18, pp. 2413–2429, 2016.
- [5] M. E. Aburuz, "Anxiety and depression predicted quality of life among patients with heart failure," *J. Multidiscip. Healthc.*, vol. 11, pp. 367–373, 2018.
- [6] A. S. Alhurani *et al.*, "The Association of Comorbid Symptoms of Depression and Anxiety With All-Cause Mortality and Cardiac Rehospitalization in Patients With Heart Failure," *Psychosomatics*, vol. 56, no. 4, pp. 371–380, 2015.
- [7] D. W. Chapa *et al.*, "Pathophysiological Relationships Between Heart Failure and Depression and Anxiety," *Crit. Care Nurse*, vol. 34, no. 2, pp. 14–24, 2014.
- [8] F. Okviasanti, A. Yusuf, and S. T. Putra, "Depression in patients with heart failure: A phenomenological study," *Indian J. Public Heal. Res. Dev.*, vol. 10, no. 8, pp. 2740–2745, 2019.
- [9] M. Polikandrioti *et al.*, "Factors associated with depression and anxiety of hospitalized patients with heart failure," *Hell. J. Cardiol.*, vol. 56, no. 1, pp. 26–35, 2015.
- [10] M. A. Cirelli, M. S. Lacerda, C. T. Lopes, J. de Lima Lopes, and A. L. B. L. de Barros, "Correlations between stress, anxiety and depression and sociodemographic and clinical characteristics among outpatients with heart failure," *Arch. Psychiatr. Nurs.*, vol. 32, no. 2, pp. 235–241, 2018.
- [11] A. L. Paukert, A. Lemaire, and J. A. Cully, "Predictors of depressive symptoms in older veterans with heart failure," *Aging Ment. Heal.*, vol. 13, no. 4, pp. 601–610, 2009.
- [12] C. Chen, W. Fang, Y. An, L. Wang, and X. Fan, "The multiple mediating effects of illness perceptions and coping strategies on the relationship between physical symptoms and depressive symptoms in patients with heart failure," *Eur. J. Cardiovasc. Nurs.*, vol. 19, no. 2, pp. 125–133, 2020.
- [13] R. P. Swinson, "The GAD-7 scale was accurate for diagnosing generalised anxiety disorder," *Evidence-based med*, vol. 11, no. 6, p. 184, 2006.

- [14] A. Conway *et al.*, "Accuracy of anxiety and depression screening tools in heart transplant recipients," *Appl. Nurs. Res.*, vol. 32, pp. 177–181, 2016.
- [15] M. H. Hammash *et al.*, "Psychometrics of the PHQ-9 as a measure of depressive symptoms in patients with heart failure," *Eur. J. Cardiovasc. Nurs.*, vol. 12, no. 5, pp. 446–453, 2013.
- [16] K. Kroenke, R. L. Spitzer, and J. B. W. Williams, "The PHQ-9: Validity of a brief depression severity measure," *J. Gen. Intern. Med.*, vol. 16, no. 9, pp. 606–613, 2001.
- [17] N. D. Kurniawati, "Pengaruh Asuhan Keperawatan Mind-Body-Spiritual (MBS) terhadap Kecerdasan Spiritual, Ekspresi Hsp 70, eNOS, VCAM-1, dan MCP-1 pada Pasien Penyakit Jantung Koroner," Universitas Airlangga, 2018.
- [18] Z. Aggelopoulou, N. V. Fotos, A. A. Chatziefstratiou, and K. Giakoumidakis, "The level of anxiety, depression and quality of life among patients with heart failure in Greece," *Appl. Nurs. Res.*, vol. 34, pp. 52–56, 2017.
- [19] M. J. De Jong, M. L. Chung, J.-R. Wu, B. Riegel, M. K. Rayens, and D. K. Moser, "Linkages between Anxiety and Outcomes in Heart Failure," *Hear. Lung*, vol. 40, no. 5, pp. 393–404, 2011.
- [20] R. L. Dekker, T. A. Lennie, L. V. Doering, M. L. Chung, J.-R. Wu, and D. K. Moser, "Coexisting anxiety and depressive symptoms in patients with heart failure," *Eur. J. Cardiovasc. Nurs.*, vol. 13, no. 2, pp. 168–176, 2014.
- [21] B. Bayani *et al.*, "Depression and anxiety in a cardiovascular outpatient clinic: A descriptive study," *Iran. J. Psychiatry*, vol. 6, no. 3, pp. 125–127, 2011.
- [22] E. Celik *et al.*, "Heart failure functional class associated with depression severity but not anxiety severity," *Acta Cardiol. Sin.*, vol. 32, no. 1, pp. 55–61, 2016.
- [23] T. Suzuki *et al.*, "Impact of clustered depression and anxiety on mortality and rehospitalization in patients with heart failure," *J. Cardiol.*, vol. 64, no. 6, pp. 456–462, 2014.
- [24] E. M. Kurogi, R. de C. G. E. S. Butcher, and M. de G. Salvetti, "Relationship between functional capacity, performance and symptoms in hospitalized patients with heart failure," *Rev. Bras. Enferm.*, vol. 73, no. 4, p. e20190123, 2020.
- [25] R. P. Ogilvie, S. A. Everson-Rose, W. T. Longstreth, C. J. Rodriguez, A. V. Diez-Roux, and P. L. Lutsey, "Psychosocial Factors and Risk of Incident Heart Failure: The Multi-Ethnic Study of Atherosclerosis (MESA)," *Circ Hear. Fail*, vol. 9, no. 1, pp. 1–15, 2016.
- [26] B. Bordoni, F. Marelli, B. Morabito, and B. Sacconi, "Depression and anxiety in patients with chronic heart failure," *Future Cardiol.*, vol. 14, no. 2, pp. 115–119, 2018.
- [27] B. DeJongh, K. Birkeland, and M. Brenner, "Managing Comorbidities in Patients with Chronic Heart Failure: First, Do No Harm," *Am. J. Cardiovasc. Drugs*, vol. 15, no. 3, pp. 171–184, 2015.
- [28] J. Vongmany, L. D. Hickman, J. Lewis, P. J. Newton, and J. L. Phillips, "Anxiety in chronic heart failure and the risk of increased hospitalisations and mortality: A systematic review," *Eur. J. Cardiovasc. Nurs.*, vol. 15, no. 7, pp. 478–485, 2016.
- [29] B. Carlson, H. Hoyt, J. Kunath, and L. C. Bratzke, "Gender Differences in Hispanic Patients of Mexican Origin Hospitalized with Heart Failure," *Women's Heal. Issues*, vol. 30, no. 5, pp. 384–392, 2020.
- [30] R. B. Trivedi *et al.*, "Coping styles in heart failure patients with depressive symptoms," *J. Psychosom. Res.*, vol. 67, no. 4, pp. 339–346, 2009.
- [31] S. H. Chu *et al.*, "Factors affecting quality of life in Korean patients with chronic heart failure," *Japan J. Nurs. Sci.*, vol. 11, no. 1, pp. 54–64, Jan. 2014.
- [32] C. C. Li and S. C. Shun, "Understanding self care coping styles in patients with chronic heart failure: A systematic review," *Eur. J. Cardiovasc. Nurs.*, vol. 15, no. 1, pp. 12–19, 2016.
- [33] A. Mojahed, M. Fallah, A. Ganjali, and Z. Heidari, "The role of social support and coping strategies in the prediction of psychological well-being in type 2 diabetic patients of Zahedan," *Bali Med. J.*, vol. 8, no. 1, p. 281, 2019.
- [34] M.-H. Liu, C.-H. Wang, Y.-Y. Huang, W.-J. Cherng, and K.-W. K. Wang, "A correlational study of illness knowledge, self-care behaviors, and quality of life in elderly patients with heart failure," *J. Nurs. Res.*, vol. 22, no. 2, pp. 136–145, 2014.