



## ปัจจัยทำนายความร่วมมือในการรักษาของผู้ป่วยโรคหัวใจล้มเหลว ในเวียดนาม

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### บทคัดย่อ

การพยายามลดจำนวนการกลับเข้ารับรักษาซ้ำในโรงพยาบาลของผู้ป่วยโรคหัวใจล้มเหลวเป็นความท้าทายที่สำคัญทางสาธารณสุข ซึ่งปัจจัยสำคัญที่ทำให้ผู้ป่วยต้องกลับเข้ารับรักษาซ้ำในโรงพยาบาลคือการไม่ร่วมมือในการรักษาของผู้ป่วยโรคหัวใจล้มเหลว การวิจัยหาความสัมพันธ์เชิงทำนายครั้งนี้ มีวัตถุประสงค์เพื่อศึกษาความร่วมมือในการรักษาและปัจจัยทำนายความร่วมมือในการรักษาของผู้ป่วยโรคหัวใจล้มเหลว ได้แก่ การศึกษา ความรู้เกี่ยวกับโรคหัวใจล้มเหลว ภาวะซึมเศร้า และการได้รับการสนับสนุนจากพยาบาล กลุ่มตัวอย่างในการวิจัยเป็นผู้ป่วยโรคหัวใจล้มเหลว Class II และ III ที่มารับการรักษาตามนัดที่แผนกผู้ป่วยนอก โรงพยาบาลหน้าดินท์ ประเทศเวียดนาม จำนวน 82 คน คัดเลือกกลุ่มตัวอย่างแบบสะดวก เก็บรวบรวมข้อมูลโดยแบบสอบถามเชิงโครงสร้าง ประกอบด้วยแบบสอบถามข้อมูลส่วนบุคคล แบบสอบถามความร่วมมือในการรักษา แบบวัดความรู้เกี่ยวกับโรคหัวใจล้มเหลว และแบบวัดภาวะซึมเศร้าของเบค วิเคราะห์ข้อมูลด้วยสถิติพรรณนาและการถดถอยพหุคูณแบบมาตรฐาน ผลวิจัยพบว่า ผู้ป่วยกลุ่มตัวอย่างส่วนใหญ่มีอายุระหว่าง 50-60 ปี (ร้อยละ 61.0) และเป็นโรคหัวใจล้มเหลว class III (ร้อยละ 64.6) มีความร่วมมือในการรักษาโดยรวมในระดับปานกลาง (คะแนนเฉลี่ย = 3.55, ส่วนเบี่ยงเบนมาตรฐาน = 0.61) โดยความร่วมมือด้านการรับประทานยาในระดับสูง (คะแนนเฉลี่ย = 4.01, ส่วนเบี่ยงเบนมาตรฐาน = 0.77) ส่วนด้านการปรับเปลี่ยนพฤติกรรม พบว่าอยู่ในระดับปานกลาง (คะแนนเฉลี่ย = 3.45, ส่วนเบี่ยงเบนมาตรฐาน = 0.61) ผลการวิเคราะห์การถดถอยพหุคูณพบว่า การศึกษา ความรู้ ภาวะซึมเศร้า และการได้รับการสนับสนุนจากพยาบาล สามารถร่วมกันทำนายความร่วมมือในการรักษาได้ร้อยละ 70.80 ( $F_{4, 77} = 46.59, p < .001$ .) โดยภาวะซึมเศร้าเป็นปัจจัยที่มีอิทธิพลมากที่สุด ( $\beta = -.35, p < .001$ ) และเป็นในทางลบ รองลงมาเป็นปัจจัยที่มีอิทธิพลในทางบวกได้แก่ ความรู้เกี่ยวกับโรคหัวใจล้มเหลว ( $\beta = .34, p < .001$ ) การได้รับการสนับสนุนจากพยาบาล ( $\beta = .16, p < .05$ ) และการศึกษา ( $\beta = .15, p < .05$ ) ผลการวิจัยเสนอแนะว่าในการพัฒนาโปรแกรมการพยาบาลเพื่อส่งเสริมความร่วมมือในการรักษาในผู้ป่วยโรคหัวใจล้มเหลว ควรให้ความสำคัญในปัจจัยที่มีอิทธิพลดังกล่าว

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## Introduction

Heart failure (HF) is a major public health issue, currently affecting over 23 million people worldwide. It has been estimated that 1.6 million Vietnamese were affected by HF in 2008<sup>1</sup>, and 1.97% of the population in 2012<sup>2</sup>. To resume a normal lifestyle and prevent high levels of morbidity and mortality, patients have to adhere to prescribed treatments, including medication regimens and numerous lifestyle changes that often require substantial personal investment by patients<sup>3</sup>. Medication adherence is typically defined as patients using medications as prescribed by the physician. Lifestyle changes can include diet (e.g. sodium restriction, fluid restriction, low fat-cholesterol), exercise, weight control, alcohol use, smoking, stress management, blood pressure monitoring, symptom recognition and follow-up treatment appointments<sup>4</sup>.

Treatment adherence clearly affects health outcomes; treatment non-adherence has been confirmed as a cause of re-hospitalization; pathologic changes; worsening cardiac functioning, signs and symptoms; disease complications; reduced functional abilities; increased severity of health problems; increased healthcare costs; and overall increased risk of mortality and morbidity<sup>5</sup>. Treatment adherence among HF patients has led to significant reductions in hospital readmission rates as well as substantial increases in survival rates and in patient quality of life<sup>6</sup>. Previous studies found that HF patient hospital readmission rates remain high due to poor treatment adherence and the patient's inability to identify the signs and symptoms of cardiac decompensation<sup>7</sup>. Therefore treatment adherence is an important factor in the long-range health status of HF patients.

In actuality, treatment adherence has been found to be low in HF patients. In Vietnam, 37% of HF patients do not take their prescription medication, 10% of participants do not monitor their symptom regularly, a similar percent did not appear for recommended follow-up visits, and over half (52.5%) continued their normal salty diet after discharge<sup>8</sup>.

Therefore full treatment adherence is unlikely. Understanding treatment adherence is also important because patients with more than one condition to manage are at a higher risk of preventable hospital re-admission<sup>6</sup>. According to the World Health Organization's Multidimensional Adherence Model (MAM), treatment adherence can be conceptualized as a phenomenon comprised of five sets of interacting dimensions: socioeconomic factors, health care system factors, condition factors, therapy factors, and patient factors<sup>9</sup>. Based on the literature review, the variables most often linked to the remarkably high rates of non-adherence were education (socioeconomic factors), patient's knowledge (patient factors), depression (condition factors) and nurse support (health care system factors)<sup>10</sup>.

In Vietnam, treatment adherence has been found to be low and in need of management; interventions may well improve this situation. The study and knowledge of treatment adherence of HF patients are still limited, and Vietnamese cultural characteristics differ from those of other countries. Therefore, this study, describing treatment adherence and examine the predictive power of education, knowledge of HF, depression, and nurse support on treatment adherence of adult patients with HF in Namdinh General Hospital, Vietnam, will add to the quantity and cross-cultural quality of the treatment adherence knowledge base.



## Material and methods

This predictive correlation research was designed to describe HF patient treatment adherence, and to examine the ability of education, knowledge of HF, depression, and nurse support to predict treatment adherence.

**Population:** The population for this study was adult Vietnamese patients with chronic HF. The sampling frame was members of the population who were receiving prescribed treatment at the cardiovascular department of Namdinh General Hospital, Vietnam.

**Sample:** For this predictive correlation design study, the formula of Tabachnick and Fidell was used to calculate the smallest acceptable sample size<sup>11</sup>. Sample size depends on a number of factors, including desired power (.80), alpha level (= .05), number of predictors and expected effect size. Since this study has four predictors, the sample size was calculated to be 82.

**Instruments:** The data were collected by using five structured interview questionnaires. Those questionnaires originally in English were translated into Vietnamese by an accepted back-translation technique. The procedure was carried out by three bilingual translators who were fluent in English and Vietnamese.

The Personal Information Questionnaire contained seven items asking about personal characteristic and health information: age, gender, educational attainment, marital status, method of payment for treatment, HF classification level, and co-morbidities.

The Treatment Adherence of Vietnamese Adults with HF Questionnaire (TA-VA-HFQ) was developed by the researcher based on the literature review and adapted for Vietnamese culture and context<sup>4,12,13,14</sup>. This instrument was composed of

two main dimensions: medication adherence and lifestyle change. The latter assessed adherence to prescriptions/recommendations for medication (4 items), diet (2 items), fluid intake (1 item), stimulant avoidance (2 items), self-monitoring (3 items), exercise (2 items), stress control (1 item), preventing respiratory infection (1 item), and contact with healthcare providers (2 items). It used 5-point Likert type items, where: 1 = never, 2 = almost never, 3 = sometimes, 4 = often and 5 = always. Items were phrased so that higher scores represented higher levels of treatment adherence. The level of treatment adherence was based on mean scores, which were classified into three groups: 1 – 2.33 = Low adherence, 2.34 – 3.66 = Moderate adherence and 3.67 – 5 = High adherence. This categorization was also used for scale, dimension and sub-dimension. Five Thai experts in nursing rated content validity, language suitability, and criteria for scoring for the entire questionnaire. The content validity of TA-VA-HFQ was 0.97 and Cronbach's alpha coefficient of .89.

The Dutch HF Knowledge Scale (DHFKS), developed by van der Wal et al., was used to measure subjects' HF knowledge<sup>15</sup>. This instrument is composed of 15 multiple-choice items divided into three content areas: 1) four items concerning HF in general; 2) six items on diet, fluid restriction and activity (which measure HF treatment), and; 3) five items measuring symptoms and symptom recognition. Each item has three response options, only one of which is correct. A correct answer is worth one point, whereas wrong or missing answers receive zero points. The possible total scores thus ranges from 0 to 15. Van der Wal et al. recommended aggregating HF knowledge into high and low categories, with a cutoff at the median score of 11<sup>15</sup>. Thus subjects' DHFKS scores in this



study were interpreted as follows:  $\leq 10$  = low level of knowledge, and  $11+$  = high level of knowledge. The reliability of the DHFKS was .62. Although this is slightly low, the instrument can be used because it has been demonstrated to be a valid and reliable scale<sup>15</sup>. This questionnaire had been translated to Vietnamese by Huyen, who used it to assess HF knowledge among older HF adults in Vietnam<sup>16</sup>. Kuder-Richardson 20 (K-R 20) was used to test the reliability of the DHFKS. The calculation yielded a K-R 20 of .67. These levels of internal consistency coefficient were acceptable.

The Beck Depression Inventory (BDI-II) was used to measure depression. The BDI-II includes 21 items and was created by Beck et al. based on Response Theory<sup>17</sup>. The BDI-II was designed to assess severity of depression among psychiatric patients as well as possible depression in the non-diagnosed ("normal") population. This self-report questionnaire is rated on a four-point scale ranging from 0 (no symptoms) to 3 (severe symptoms). The overall depression scores range from 0 to 63 and are typically divided into four categories: 0 – 9 = normal, 10 – 15 = mild depression, 16 – 23 = moderate depression and 24 – 63 = severe depression. The internal consistency reliability of BDI-II was acceptable with Cronbach's alpha coefficient of .92. The BDI-II has been translated into several languages; the Vietnamese version was translated by the Vietnam National Institute of Mental Health and has been used to assess depression in Vietnam.

The Nurse Support of Treatment Adherence Questionnaire (NS-TAQ) for Vietnamese adults with HF was developed by the researcher based on the literature review. This instrument was composed of two main dimensions -- information and emotional encouragement -- regarding nurse support of

treatment adherence in adult HF patients. The NS-TAQ is composed of 5-point Likert type items with the following ratings: 1 = never, 2 = almost never, 3 = sometimes, 4 = often and 5 = always. Average scores were then calculated, with higher average scores representing higher levels of nurse support. Average scores were then classified into three groups: 1 – 2.33 = low support, 2.34 – 3.67 = moderate support, and 3.68 – 5 = high support. The content validity index of NS-TAQ was 1.00 and the Cronbach's alpha coefficient was .89.

**Ethical considerations:** This study was approved by the Ethics Committee of Graduate Studies of the Faculty of Nursing, Burapha University, Thailand. Permission for data collection was received from the Director of Namdinh General Hospital, Vietnam. Written informed consent was obtained from all participants.

**Data collection procedures:** Data were collected by the researcher. The list of HF outpatients was obtained from the hospital's patient database. The researcher used convenience sampling to select outpatient subjects from the list of outpatients who met inclusion criteria and were in the outpatient cardiovascular clinic. The researcher clearly explained the research objectives, ethical issues, and protection of the human rights of the participants. Participants were asked to sign a consent form acknowledging their willingness to participate in the study. The researcher then administered the questionnaires via face-to-face interviews.

**Data analysis:** The data were analyzed by using descriptive statistics to describe treatment adherence and standard multiple regression to examine the predictive power of education, HF knowledge, depression, and nurse support on treatment adherence.



## Results

The 82 participants' ages were from 20-60 years old. The majority were age 50-60 (61.0 %) and female (56.1 %). Most were married (80.5%), 32,9% of participant had completed secondary school and 23,2% completed high school, and 69.5 % were using insurance to pay for treatment. Nearly two-thirds (64.6%) of participants had Class III HF. All participants had at least one co-morbidity, the most common being hypertension (78.0%).

The descriptive independent variables data presented that education was moderate level (Mean = 10.94, SD = 3.92), knowledge about general heart failure presented as low level (Mean = 8.89, SD = 2.81), depression was presented mild depression (Mean = 14.97, SD = 7.66), and nurse support presented as moderate level adherence (Mean = 3.05, SD = .44).

Other descriptive data showed that treatment adherence was moderate (Mean = 3.55, SD = 0.61). Medication adherence was high (Mean = 4.01, SD = 0.77), and lifestyle change was moderate (Mean = 3.45, SD = 0.61).

Within the lifestyle change dimension, the stimulant avoidance mean score (Mean = 4.61, SD = 0.50) indicated a high level of adherence. Variables presenting a moderate level of adherence were diet adherence (Mean = 3.17, SD = 0.82), drinking fluids per recommendations of health care providers (Mean = 3.26, SD = 0.84), self-monitoring (Mean = 3.12, SD = 0.67), exercise (Mean = 3.19, SD = 0.79), stress control (Mean = 3.11, SD = 0.90), prevented of respiratory infection (Mean = 3.09, SD = 0.82), and contact with healthcare provider (Mean = 3.55, SD = 0.71). (Table 1.)

Pearson Product-Moment Correlations were calculated to determine relationships between

variables. Table 3 shows that treatment adherence was significantly and positively correlated with education ( $r = .55, p < .001$ ), nurse support ( $r = .63, p < .001$ ), and knowledge ( $r = .74, p < .001$ ). It was significantly and negatively correlated with depression ( $r = -.76, p < .001$ ). (Table 2.)

Standard multiple regression showed that education, knowledge, depression and nurse support predicted 70.8% of the variation in treatment adherence ( $R^2 = .708, F_{4,77} = 46.59, p < .001$ ). The strongest predictor of treatment adherence in HF patients was depression ( $\beta = -.35, p < .001$ ). (Table 3.)

## Discussion

This study found that Class III patients outnumber Class II patients (64.6% to 35.4%). Although this study used a convenience sample, the observed difference is consistent with a previous study that found 56.9% of patients in class III<sup>18</sup>. This could also be because Class II patients, with relatively slight limitations in physical activity, are less likely to view those mild limitations as worth a visit to a physician. It is also noteworthy that 100% of the sample had at least one co-morbidity, with the modal condition (78.0%) being hypertension. It is logical that any co-morbidity has the potential to hinder treatment adherence among HF patients.

Standard multiple regression indicated that the model, which included education, knowledge, depression and nurse support, explained 70.8 % of the variance in treatment adherence ( $R^2 = .708, F_{(4, 77)} = 46.59, p < .001$ ). Education, knowledge, and nurse support were positively related to overall treatment adherence, while depression was negatively related. This result is consistent with the MAM model.



### Education

Education was a significant predictor of treatment adherence ( $\beta = .15$ ,  $p < .05$ , with higher education linked to higher treatment adherence. Additional education could improve patients' ability to discern more symptoms, improve their ability to successfully adapt to challenges to their functional status and daily activities, and thus improve their perception of their health. More education could raise awareness of the features of chronic diseases and make it more likely patients are aware of ways to cope with the HF's physical symptoms and treatment effects. Extant research has established that education is significantly and positively related to adherence in patients with HF<sup>19,20</sup>.

### Knowledge

Findings of this study also indicated that knowledge could predict treatment adherence ( $\beta = .34$ ,  $p < .001$ ), with greater knowledge being associated with increased treatment adherence. High levels of HF knowledge could lead to increased ability to make health-related adaptations, e.g., one's response to unexpected symptoms of heart failure. HF knowledge seems a necessary foundation for adherence<sup>21</sup>. This finding reflects those of previous studies, where higher levels of HF knowledge were linked to higher levels of adherence<sup>20, 21</sup>.

### Depression

This study also found that depression was significantly and negatively related to treatment adherence ( $\beta = -.35$ ,  $p < .001$ ). Depression is not only a debilitating mental illness itself, but also could negatively affect such HF challenges as medication adherence and lifestyle changes (e.g., diet, smoking, alcohol use). Patients with difficulty taking medications were 60% more likely to have significant depressive symptoms than patients without difficult taking medications<sup>17</sup>. In this study, depression had the

highest correlation with treatment adherence ( $r = -.76$ ,  $p < .001$ ). Similarly, other research found that depression was the best predictor of overall self-ratings of medication memory and treatment adherence<sup>22</sup>. Depression should not be ignored as a predictor of treatment adherence.

### Nurse Support

Care provided by specialist nurses has been shown to improve outcomes for patients with HF. In this study, more nurse support was related to better treatment adherence ( $\beta = .16$ ,  $p < .05$ ). This result could be explained by the role of nurse, which includes counseling and reminding patients about treatment adherence; in fact this is no different from the physician's role. The nurse is in position to directly assessment HF patients' treatment adherence and to provide information and emotional encouragement regarding medication management and lifestyle changes<sup>12, 19, 21</sup>. Other research found that instructions provided by nurses had a positive impact on treatment adherence. In one case treatment adherence scores increased significantly between the first and third home visits. More nurse support, therefore, should yield greater treatment adherence.

HF is a serious chronic condition. Treatment is necessary and usually of long duration. Treatment adherence is problematic yet vitally important in successfully adapting to the patient's new health status. Consistent with prior research on HF patient treatment adherence, this Vietnamese study found that educational attainment, HF knowledge, depression and nurse support are all strongly linked to treatment adherence. Nurses cannot affect patient educational attainment, but they are well positioned to make a positive difference in patient knowledge, patient depression and nurse support.



## Recommendations

The findings of this study contribute to nursing practice and nursing education, and suggest further nursing research. Based on a survey of adult Vietnamese HF patients, the results show that education, knowledge, depression and nurse support could predict treatment adherence. In practice, nurses can use these predictors to develop appropriate nursing intervention programs and nursing care plans to improve treatment adherence of HF patients, particularly in ways amenable to Vietnamese culture and lifestyle. Nursing intervention programs and nursing care plans should focus on prevention/reduction of depression, increasing HF knowledge and enhancing nurse support. The results also can be applied in designing nurse training programs that teach nursing students how to improve treatment adherence in patients with HF. Finally, beneficial future studies should be conducted in other nations and cultures, be longitudinal in design, and employ larger, probability-based samples to expand our understanding of treatment adherence among HF patients in various settings.

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## Figures and tables

**Table 1** Mean scores and levels of treatment adherence (n = 82).

Variables	Possible range	Actual range	Mean	SD	Response level
<b>Overall Treatment Adherence</b>	1.00-5.00	2.44-4.89	3.55	.61	Moderate
<b>Medication adherence</b>	1.00-5.00	2.00-5.00	4.01	.77	High
1. Take all medications	1.00-5.00	2.00-5.00	4.07	.78	High
2. Take medications on time	1.00-5.00	2.00-5.00	4.02	.80	High
3. Never forget to take medications.	1.00-5.00	2.00-5.00	3.96	.82	High
4. Never stop medications without symptoms	1.00-5.00	1.00-5.00	3.98	.98	High
<b>Lifestyle change</b>	1.00-5.00	2.33-4.87	3.45	.61	Moderate
- <b>Healthy diet</b>	1.00-5.00	2.00-5.00	3.17	.82	Moderate
5. Low salt diet	1.00-5.00	2.00-5.00	3.22	.93	Moderate
6. Low fat and cholesterol diet	1.00-5.00	1.00-5.00	3.12	.88	Moderate
- <b>Fluid intake</b>					
7. Follow recommendations of health care providers	1.00-5.00	2.00-5.00	3.26	.84	Moderate
- <b>Stimulant avoidance</b>	1.00-5.00	3.00-5.00	4.61	.50	High
8. Avoid drinking alcohol	1.00-5.00	2.00-5.00	4.52	.63	High
9. Avoid smoking	1.00-5.00	3.00-5.00	4.70	.49	High
- <b>Self-monitoring</b>	1.00-5.00	1.67-5.00	3.12	.67	Moderate
10. Monitoring body weight	1.00-5.00	1.00-5.00	2.91	.85	Moderate
11. Check Blood Pressure	1.00-5.00	2.00-5.00	3.26	.81	Moderate
12. Record and report symptoms	1.00-5.00	1.00-5.00	3.18	.89	Moderate
- <b>Exercise</b>	1.00-5.00	1.50-5.00	3.19	.79	Moderate
13. Exercise 5+ times/week	1.00-5.00	2.00-5.00	3.05	.85	Moderate
14. Exercise 30+ min/time	1.00-5.00	1.00-5.00	3.33	.90	Moderate
- <b>Stress control</b>					
15. Practice relaxation to reduce stress.	1.00-5.00	2.00-5.00	3.11	.82	Moderate
- <b>Infection prevention</b>					
16. Prevented respiratory infection	1.00-5.00	2.00-5.00	3.09	.89	Moderate
- <b>Contact with healthcare provider</b>	1.00-5.00	2.00-5.00	3.55	.71	Moderate
17. Contact healthcare provider about unexpected symptoms	1.00-5.00	2.00-5.00	3.30	.78	Moderate
18. Treatment follow up	1.00-5.00	2.00-5.00	3.79	.78	High

**Table 2** Correlation matrix (n = 82)

Variables	1	2	3	4	5
1. Treatment Adherence	-				
2. Education	.55***	-			
3. Knowledge	.74***	.48***	-		
4. Depression	-.76***	-.48***	-.68***	-	
5. Nurse support	.63***	.41***	.53***	-.63***	-

\*\*\*p < .001

**Table 3** Results of multiple regression analysis (n = 82)

Predictors	B	SE	$\beta$	t	p - value
Education	.42	.20	.15	2.09	.040
Knowledge	1.33	.34	.34	3.94	<.001
Depression	-.50	.13	-.35	-3.76	<.001
Nurse support	.19	.09	.16	2.02	.047

Intercept = 42.55, R<sup>2</sup> = .708, F<sub>4,77</sub> = 46.59



## Factors Predicting Treatment Adherence among Patients with Heart Failure in Vietnam

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### Abstract

Reducing the rate of re-hospitalization among heart failure (HF) patients is a major public health challenge. Treatment non-adherence is a crucial factor shown to trigger re-hospitalization. This study describes treatment adherence and explores the predictive ability of education, knowledge, depression and nurse support on treatment adherence among adult Vietnamese HF patients. Convenience sampling was used to recruit 82 subjects, diagnosed as HF class II and class III, who were assessed during treatment follow-up visits to the outpatient cardiovascular department of Namdinh General Hospital, Vietnam. Structured interviews and questionnaires were used to collect data via the Personal Information Questionnaire, Treatment Adherence Heart Failure Questionnaire, Dutch Heart Failure Knowledge Scale, Beck Depression Inventory-II and Nurse Support Treatment Adherence Questionnaire. Data were analyzed via descriptive statistics and standard multiple regression. The findings showed that the majority of participants were age 50-60 (61.0 %) and nearly two-thirds (64.6%) were in HF class III. Overall treatment adherence was moderate (Mean = 3.55, SD = 0.61). Medication adherence was high (Mean = 4.01, SD = 0.77) and lifestyle change adherence was moderate (Mean = 3.45, SD = 0.61). Standard multiple regression analysis indicated that education, knowledge, depression and nurse support significantly predicted treatment adherence ( $R^2 = .708$ ,  $F_{4, 77} = 46.59$ ,  $p < .001$ ). Depression, negatively related to treatment adherence, was the strongest predictor ( $\beta = -.35$ ,  $p < .001$ ). Education ( $\beta = .15$ ,  $p < .05$ ), knowledge ( $\beta = .34$ ,  $p < .001$ ) and nurse support ( $\beta = .16$ ,  $p < .05$ ) were significantly and positively related to treatment adherence. The results suggest that nurses, although they cannot affect patient educational attainment, can develop appropriate nursing intervention programs focusing on the other predictors to improve treatment adherence in HF patients.

**Keywords :** heart failure, Treatment adherence, vietnam

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