

# The Relationship of Fluid Restriction Compliance to Recurrence in Congestive Heart Failure Patients

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## ABSTRACT

**Background:** Patients with congestive heart failure often experience recurrence and should be re-treated because of clinical syndromes. This study aimed to determine fluid restriction compliance on recurrence in patients with congestive heart failure.

**Methods:** The research design used the analytic observational method. The research variables were fluid restriction compliance and the recurrence rate of patients with congestive heart failure. There were 40 patients as a sample of data which overall population of patients with congestive heart failure was in Dr. Soetomo Hospital by using the Consecutive Sampling technique. The data collection used a questionnaire.

**Results:** The results showed that most respondents had high compliance (87.5%), the risk of recurrence was 26 patients (65%) by using the test result of Spearman Rho  $p=0,033$ .

**Conclusion:** There is a relationship between fluid restriction compliance and the recurrence rate. Proper care and compliance for patients with congestive heart failure can reduce the risk of disease recurrence.

## I. Introduction

Patients often return to the clinic or hospital because of heart failure recurrence. It occurs although outpatient treatment has been carried out optimally. [Prihatiningsih & Sudyasih \(2018\)](#) stated that heart failure recurrence and re-hospitalization occurred because the patients cannot recognize the symptoms of recurrence. The patient's ignorance about congestive heart failure causes the patient to be less compliant with a low-salt diet, fluid restriction, how to calculate pulse rate, weighing weight, exercise, and the need for adequate rest. Patients with congestive heart failure often experience recurrence and they must be re-admitted because the clinical syndromes occurred, including abnormalities (either inherited or acquired) in the structure and function of the heart. Consequently, it causes clinical symptoms in the form of weakness and shortness of breath. Clinical signs obtained are edema and ronchi ([Agustina, 2016](#)).

According to [Piepoli \(2016\)](#), it stated that 17,5 million people died from cardiovascular disease. The prevalence of congestive heart failure (CHF) continues to increase in both developed and developing countries. CHF occurs in developed countries, and one of them is the United States with a prevalence of 5,700,000 cases. CHF cases in Australia are 2,0%. The developing country that had CFH is Indonesia. According to [RISKADES 2018](#), CHF prevalence in Indonesia is 1,5%. The prevalence of CHF disease in West Kalimantan is estimated at 1,3%.

In Surabaya, patients with heart failure continue to increase. Based on the data at the Adult Cardiology Polyclinic, Dr. Soetomo Hospital, it is recorded that in the last 3 months starting from August to November 2018, the number of patients for an inpatient with heart failure reached 156 patients. Patients with recurrence risk are 45 patients (28%), a mild recurrence is 11 patients (7%), and patients

with severe category in recurrence level are 100 patients (64%) ([Rampengan, 2013](#)). Based on the data that was obtained, [Rahayu \(2018\)](#) stated that 1,094,000 patients experienced hospitalization because of heart failure. Re-hospitalization is almost 50% of the total heart failure patients who had undergone the previous hospitalization. Patients with heart failure have a frequency of re-hospitalization more than once in 12 months.

It proves that the number of people in Surabaya with heart failure, both productive and non-productive age, most of the hospitalized patients are the same patients. It occurs because the patients experience recurrence. It is recorded in three months for patients who had a recurrence and required to be re-treated reached 65 patients. The patient's lack of discipline in carrying out the fluid restriction as the doctor's recommendation causes the recurrence easily occurred in patients. Several cases of congestive heart failure cause a recurrence period. Those cases happened because of non-compliance with a fluid restriction at dr. Soetomo Hospital. Those cases have been observed in the period between 2013 to 2017, such as heart regulation mechanisms weaken because of excessive intake ([Handayati, 2018](#)), increased body weight in a short time, excessive intake compared to output ([Prihatiningsih and Sudyasih, 2018](#)), jugular venous distention ([Imaligy, 2014](#)), changes in breathing patterns such as *dyspnoea*/shortness of breath, orthopnea, voice abnormal breathing (rales or crackles), pleural effusion, oliguria, *ozotemia* ([Wahl et al., 2004](#)), changes in mental status in the form of anxiety ([Majid, 2010](#)). Most recurrences of heart failure occur because the patients do not meet the recommended therapy, such as violating dietary restrictions, do not comply with medical follow-up, performing excessive physical activity, and cannot recognize symptoms of recurrence ([Djamaludin, 2018](#)).

Besides the knowledge factor and individual awareness, an important factor as a driver to fluid restriction compliance in patients with congestive heart failure is the health workers' support. It means that the officers are the manager who interacts the most with the patients so that the understanding of the physical and psychological condition is better. Interacting frequently affects the trust and always accepts the presence of health workers, including the recommendations given. Another important factor is family support from the patients who are closest and cannot be separated. Patients will feel pleasant and peaceful when they get the attention and support from their families. The support will lead to self-confidence to face or manage the disease well, and the patients are willing to follow the suggestion given by the families to support the disease management ([Riegel, 2009](#)).

Based on the foregoing, it is necessary to know the relationship between fluid restriction compliance and the recurrence of patients with congestive heart failure. Thus, the result of this study can be consideration, referral or new information that can be a solution to reduce the risk of severe recurrence to death in patients with congestive heart failure because of non-compliance with fluid restrictions.

Objective study this study aimed to determine fluid restriction compliance on recurrence in patients with congestive heart failure.

## II. METHODS

This study used an analytical research method, namely a survey or research that tried to explore how the health phenomenon occurred, then analyzed the dynamics of the correlation between the risk factors and effect factors ([Djer, 2016](#)).

The design planning used a cross-sectional method. The cross-sectional approach was a study to observe the dynamic correlation between risk factors and effects with approach, observation, or data collection at a certain time (point time approach) ([Anisa et al, 2019](#)). Each subject of the study was observed once only and risk factors and impacts were measured based on the circumstances or observation status. It meant connecting fluid restriction non-compliance to recurrence in patients with congestive heart failure at Adult Cardiology polyclinic Dr. Soetomo Hospital Surabaya.

The measuring instrument was questionnaire with closed questions which independent variable was 10 questions and dependent variable was 5 questions. The researcher collected data on samples in which located in the PPJT building 1st floor of Dr. Soetomo, Surabaya. Then, the researcher asked the respondents' consent to be the sample and explained the aim of the study. The researcher began to collect data by giving the questionnaires.

The relationship between fluid restriction compliance and recurrence in patients with heart failure used *Spearman's rho test* which was calculated by a computerized system with a significance level of  $p < 0,05$ .

The participants were assured that their engagement was voluntary, and that anonymity, privacy, and confidentiality of the data were guaranteed. Furthermore, they were informed about the purpose and the method of the study before signing a written informed consent

### III. RESULTS

Based on the result has been conducted on 40 respondents, it was obtained as follows:

Table 1. Respondent Characteristics

No		f	%
1	Age (years)		
	26-35	4	10
	36-45	8	20
	46-55	15	37,5
	56-65	10	25
	$\geq 65$	3	7,5
2	Gender		
	male	23	57,5
	female	17	42,5
3	Education Background		
	primary school	8	20
	junior high school	6	15
	senior high school	23	57,5
	diploma/bachelor	2	5
	postgraduate	1	2,5
4	Job Status		
	worked	27	67,5
	not worked	13	32,5

Table.2 Overview of fluid restriction compliance in patients with congestive heart failure

No.	Compliance Criteria	f	%
1	Compliance	35	87,5
2	Non-compliance	5	12,5
<b>Total</b>		40	100

Based on table 2, it could be explained that the majority of respondents complied with fluid restrictions as many as 35 respondents (87,5%) and respondents did not comply with fluid restrictions as many as 5 respondents (12,5%).

Table 3. Overview of recurrence in patients with congestive heart failure

No.	Recurrence Criteria	f	%
1	Recurrence risk	26	65
2	Mild Recurrence	9	22,5
3	Severe Recurrence	5	12,5
<b>Total</b>		40	100

From the identification result by using a questionnaire, it could be explained that respondents with recurrence risk were 26 respondents (65%), respondents with mild recurrence were 9 respondents (22,5%), and respondents with severe recurrence were 5 respondents (12,5%).

Table 4. Relationship between compliance and recurrence in patients with congestive heart failure  
Patient Compliance

	Recurrence						Total	
	Recurrence Risk	%	Mild Recurrence	%	Severe Recurrence	%	N	%
<b>Compliance</b>	26	74,3	4	11,4	5	14,3	35	100
<b>Non-compliance</b>	1	20	2	40	2	40	5	100
<b>Total</b>	27	67,5	6	15	7	17,5	<b>40</b>	<b>100</b>
<b>Spearman Rho Test p=0,033</b>								

Based on the result of the cross-tabulation, it showed that 40 non-compliant respondents, a small part of them had mild as many as 2 respondents (40%) and severe recurrence as many as 2 respondents (40%). Compliant respondents who had risk recurrence levels were 26 respondents (74,3%) while compliant respondents who had mild recurrence were 4 respondents (11,4%), and severe recurrence was 5 respondents (14,3%).

The result of the *Spearman Rho* correlation test showed that the value of  $p = 0,033$  which was smaller than  $\alpha (0,05)$ , so  $H_0$  was rejected and  $H_1$  was accepted. It showed that there was a significant relationship between fluid restriction compliance and recurrence in patients with congestive heart failure at PPJT 1<sup>st</sup> floor Dr. Soetomo Hospital Surabaya.

#### IV. DISCUSSION

##### 1. Identification of compliance with fluid restriction in patients with congestive heart failure in the PPJT Dr. Soetomo Hospital, Surabaya

Based on the results of the study, it was obtained the data on fluid restriction compliance with recurrence in patients with congestive heart failure in the PPJT 1<sup>st</sup> floor Dr. Soetomo, Surabaya with fluid restriction compliance were 35 respondents (87,5%) complied, and 5 respondents (12,5%) non-complied.

The high level of respondent compliance was supported by economic capability, the reachable distance from the house to the hospital, and family assistance during a health check-up. It was in accordance with the theory which stated that compliance was influenced by knowledge factors, economic level, attitude, age, family support, distance from service center, values, and beliefs ([Emilia, 2018](#)).

The fluid fulfillment in patients with congestive heart failure would be limited. It was useful in reducing symptoms because patients with congestive heart failure had a decreased ability to excrete water in the body. Consequently, the patients were expected to minimize consuming high salt food. Patients who compliant with a low-salt diet on a cardiac diet IV and low-fat food, such as steamed rice, low-fat beef or chicken, fish sauteed in butter instead of oil, improved disease healing and reduced recurrence levels ([Festy, 2018](#)).

The respondents who did not comply were 5 respondents (12,5%). It was caused by a lack of knowledge or ignorance. Ignorance also caused patients' disobedience to take medication regularly according to doctor's prescriptions, lack of response when there were symptoms and signs of heart failure recurrence, and doctor's control irregularities. Meanwhile, according to [Majid \(2010\)](#), one of the factors that caused re-hospitalization in patients with congestive heart failure was the use of inappropriate medicines. The result of this study was the same as [Imaligy \(2014\)](#) that there were 5-10% of patients did not comply with medical therapy, 50-60% were compliant, and the rest were less compliant. The philosophy of compliance was the disease could be controlled if the patients complied with the prescribed action or therapy. Important components to influence compliance and self-care behavior in patients with congestive heart failure were patient education, collaboration with health services, and psychosocial support.

## 2. Identification of recurrence in a patient with congestive heart failure at PPJT Dr. Soetomo Hospital Surabaya

Recurrence of patients with congestive heart failure at PPJT 1<sup>st</sup> floor Dr. Soetomo Hospital Surabaya had 26 respondents (65%) for recurrence risk, 9 respondents (22,5%) for mild recurrence, and 5 respondents (12,5%) for severe recurrence. In the opinion of [Djamaludin \(2018\)](#), recurrence risk could be interpreted as classification I. It was the absence of symptoms when carrying out ordinary physical activities, the absence of fatigue, chest palpitations, and dyspnea (short breath). Patients at risk of recurrence who were completely controlled had no symptoms such as dyspnea, cough, fatigue, lower extremity edema, or restlessness. However, it required to be taken as a risk because the patient had a history of congestive heart failure, in which there was an inability of the heart to pump blood adequately throughout the body ([Sari, et al, 2016](#)).

Recurrence was the reappearance of symptoms that have previously made progress ([Prihatiningsih & Sudyasih, 2018](#)). Sick conditions had an impact that was felt directly by the respondent. The impact affected the body's system, especially physical dan psychological conditions. [Djamaludin \(2018\)](#) stated that heart failure recurrence and re-hospitalization occurred because they could not recognize recurrence symptoms. The patient's ignorance about congestive heart failure caused patients not to be compliant with a low-salt diet, fluid restriction, how to calculate pulse rate, weighing weight, activity and exercise and the need for adequate rest.

Participants with congestive heart failure in this study carried out self-care by restricting body fluids to reduce the impact. The positive nature and the effort to carry out treatment created a belief in the meaning and purpose of the participants' life so that the motivation to recover would be higher.

## 3. Analysis of the relationship between fluid restriction compliance and recurrence in patients with congestive heart failure in the PPJT of Dr. Soetomo Hospital Surabaya

Based on the results of the study, it could be seen that the majority of respondents had compliance with recurrence risk as many as 26 respondents (65%). The high number indicated that compliance was a multidimensional phenomenon of mutual influence and interaction. Factors influenced the compliance, such as patient, type of therapy, socioeconomic, health services, and environmental conditions ([Agustina, 2016](#)). The compliance was underlined by the patient's attitude or action in complying with the treatment that has been determined by the medical team. The results of the study were in accordance with the theory of Smeltzer dan Bare, which was one of the nursing interventions in patients with congestive heart failure is fluid management or fluid consumption restriction. Excessive fluid consumption could aggravate the work of the heart that has experienced the failure. [Neswita \(2016\)](#) stated that the knowledge of GHF patients could be supported by counseling on the use of medicines and diet settings. It reduced the risk of patient recurrence.

The results showed that patients with compliance criteria but experienced recurrence were 5 respondents (12,5%). 5 Respondents aged 58 years as many as 1 respondent (20%), 60 years as many as 3 respondents (60%), and 70 years as many as 1 respondent (20%). It was in accordance with the factors that influenced the recurrence. According to [Djer \(2016\)](#) that elderly patients experienced anatomical, physiological, and anatomical pathological changes. Then, stiffness occurred in the central and peripheral arteries. There was also diffuse coronary artery changed that initially occurred in the left coronary artery at young age, then at the age of 60 years continued in the right coronary artery. All 5 respondents were male, male patients with congestive heart failure had a higher prevalence than females. The underlying cause in men was coronary artery disease (CAD). Several other factors were history before hospital admission and length of stay in hospital. 3 out of 5 respondents had history of rehospitalization once a month with a length of hospitalization of 7 days, a long history of suffering from congestive heart failure of 13-60 months, and a history of hypertension while the other 2 respondents had a history of rehospitalization once in 3 months with a length of hospitalization of 7 days and a long history of suffering from congestive heart failure of  $\leq 12$  months. The longer the length of stay in the

hospital indicated the severity or complexity of the disease and the older the age of the patient with congestive heart failure (CHF) was predicted the higher for hospitalization. 5 respondents who came to the hospital for control, 4 of them were not accompanied by their families. It occurred because of very low family support for the respondents.

Ignorance and inability of the patient and family about how to care at home had an impact on health problems or the patient's unpreparedness to face discharge after the patient was hospitalized. It caused complications and resulted in re-hospitalization ([Umara, 2017](#)).

Non-compliance with medicine use and fluid restriction could also increase mortality, morbidity, and re-hospitalization ([Austaryani, 2012](#)). Patients who had non-compliance criteria and no recurrence was no history of hypertension, relatively young age, and family support. According to [Majid \(2010\)](#) that family support could also help to improve individual coping mechanisms by providing emotional support and suggestions about alternative strategies. It was based on previous experience and invited others to focus on more positive aspects ([Majid, 2010](#)).

Based on the result of the study conducted, it showed that there was a significant relationship between compliance to fluid restriction and recurrence in patients with congestive heart failure in PPJT, 1<sup>st</sup> floor Dr. Soetomo Surabaya. It occurred if the patients had a high level of compliance as medical personnel suggested, it could affect the recurrence rate. It was the same when the patients had compliance with the consumption of fluid restriction. The level of knowledge also underlined the respondent's mindset to obey a rule or pattern that has been made by medical personnel. Compliance with the management of patients with heart failure, including diet patterns would reduce the risk of patient recurrence. For health workers, especially nurses always provide education (KIE), especially to patients and their families about how to maintain a healthy lifestyle and obey the rules. Consequently, there was no recurrence of congestive heart failure patients.

## V. CONCLUSION

Based on the research about fluid restriction compliance to recurrence in congestive heart failure patients at PPJT, Dr. Soetomo Hospital, Surabaya can be concluded as follows:

The level of fluid restriction compliance in patients with congestive heart failure is mostly compliant. At the level of recurrence, most patients experience the recurrence risk. There is a significant relationship between fluid restriction compliance and recurrence in patients with congestive heart failure at PPJT room 1<sup>st</sup>-floor dr. Soetomo Hospital, Surabaya. Compliance with the management of patients with heart failure reduces the patient's risk of recurrence.



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