An Overview of Nursing Diagnosis in Patients with Heart Failure in the Emergency Department

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Abstract

Heart failure is a leading global cause of mortality. Accurate diagnosis is crucial as the basis for appropriate nursing care. This study aims to identify nursing diagnoses observed in heart failure patients treated at the Emergency Department of Lamongan Muhammadiyah Hospital. A retrospective descriptive-analytic design was applied to 284 medical records of heart failure patients such as admitted between January and December 2023 from 986 patients totally, selected through cluster random sampling. The study was conducted in February 2024. Data were collected via recapitulation and analysed using frequency distribution. Results indicate symptoms of heart failure including shortness of breath, increased respiratory rate, tachycardia, arrhythmias on ECG, nasal flaring, oedema, hypertension, pain, anxiety, altered PCO_2 levels, use of accessory muscles for breathing, reduced PO_2, fatigue, hypotension, dyspnea, pale skin, CRT >3 seconds, cold extremities, and decreased consciousness. The most common nursing diagnoses included ineffective breathing patterns, acute pain, decreased cardiac output, activity intolerance, ineffective airway clearance, and hypervolemia. The nursing diagnoses obtained in this study have different priorities with the theory because some patients have various conditions on the first day admitted in the hospital. Further research is needed with realtime data and compared with complicated heart failure.

Keywords : Nursing Diagnoses, Heart Failure

Introduction

Heart failure is one of the leading global health issues and a primary cause of mortality, characterized by high morbidity and mortality rates in both developed and developing countries, including Indonesia (Dwi Prahasti & Fauzi, 2021). The heart is one of the most essential organs in the human body. If it cannot function normally to pump blood throughout the body and meet its metabolic needs, it can pose a serious threat to health, ultimately leading to mortality (Rahmatiana, F., & Clara, 2020).

According to the Global Health Data Exchange (GHDx) in 2020, there were 64.34 million cases of heart failure worldwide, resulting in 9.91 million deaths and an estimated healthcare cost of 5,459 trillion Indonesian Rupiah (World Health Organization, 2021). The National Basic Health Research (Riskesdas) indicates that heart failure is the leading cause of death in Indonesia, accounting for approximately 9.7% of all heart disease-related fatalities (Riskesdas, 2018). In East Java Province, the prevalence of heart failure is 30.19%, with a rate of 0.3% based on clinical diagnosis or symptoms. At Lamongan Muhammadiyah Hospital, there

were 644 heart failure patients in 2021, 983 in 2022, and 976 in 2023. This data reflects a total of 2,603 patients over three years, averaging 867 patients annually. The classification of diagnoses includes 491 cases of heart failure, 514 cases of congestive heart failure, 1,277 cases of left ventricular failure, and 321 cases of unspecified heart failure.

Heart failure, commonly referred to as cardiac insufficiency, is a condition where the heart is unable to pump sufficient blood to meet the oxygen and nutrient demands of body tissues. As a result, patients often experience shortness of breath due to inadequate oxygen supply throughout the body. The term "heart failure" is frequently used to describe both left-sided and right-sided heart failure conditions (Suddarth, 2017).

Nursing care provided to patients must refer to the appropriate nursing diagnosis (Brasil et al., 2014). Nursing diagnosis is a vital part of determining appropriate nursing care to help clients achieve optimal health (Abbasi et al., 2018). Nursing diagnoses are clinical judgments about the experiences or responses of individuals, families, or communities to actual or potential health problems or life processes. The process of establishing nursing diagnoses is a systematic procedure comprising three stages: data analysis, problem identification, and diagnosis formulation (PPNI, 2019).

The establishment of nursing diagnoses in Indonesia adheres to Indonesian Nursing Diagnosis Standards (SDKI). The SDKI serves as a benchmark and guideline for formulating nursing diagnoses to ensure the provision of nursing care that is safe, effective, and ethical (PPNI, 2019).

Research conducted by (Paulo Cesar et al., 2016)that the main nursing diagnoses in heart failure patients in the emergency room of Permambuco Hospital Brazil include decreased cardiac output (87.3%), intolerance to activity (79.4%) and ineffective brething patterns (38.1%). Similarly, in Brazil, nursing diagnoses for heart failure patients based on NANDA-I, NIC, and NOC include decreased cardiac output (58.3%), excessive fluid volume (33.3%), activity intolerance (33.3%), impaired skin integrity (25%), impaired gas exchange (20.8%), lack of knowledge (16.7%), and risk for falls (16.7%) (Prado et al., 2019a).

The nursing diagnoses observed in each heart failure patient may vary depending on the severity of the condition, particularly in the Emergency Department (ED). Therefore, the researcher is interested in further exploring the nursing diagnoses based on the Indonesian

Nursing Diagnosis Standards (SDKI) experienced by heart failure patients at Lamongan Muhammadiyah Hospital.

Method

This study was quantitative research with a descriptive design using a retrospective approach. The research was conducted at the Emergency Department (ED) of Lamongan Muhammadiyah Hospital in February 2024. The study population consisted of 976 medical record data of heart failure patients treated in the ED of Muhammadiyah Hospital Lamongan from January to December 2023. The sample included 284 medical record data of heart failure patients who were hospitalized and met the inclusion and exclusion criteria.

The inclusion criteria for this study were patient data admitted to the ED with a medical diagnosis of heart failure, including Congestive Heart Failure (CHF), Left Ventricular Failure (LVF), and Heart Failure Unspecified (HFU), who were hospitalized at Lamongan Muhammadiyah Hospital. The exclusion criteria were as follows: patient data admitted to the ED with cardiovascular diagnoses such as Myocardial Infarction (MI), Chest Pain, Heart Attack, Stroke, Tuberculosis, Pneumonia, Chronic Obstructive Pulmonary Disease (COPD), etc.; heart failure patients admitted to the ED but not hospitalized, and incomplete data

The research instrument used was an observation/recapitulation sheet. Data collection was carried out by requesting the medical record data from Lamongan Muhammadiyah Hospital which met the inclusion and exclusion criteria. The research process began with collecting the names of heart failure patients treated in the Emergency Department (ED) from January to December 2023, totaling 976 cases. After applying the inclusion and exclusion criteria, 324 valid data entries were identified. Subsequently, a cluster random sampling method was used to select 284 patients, and 40 data entries were eliminated.

Patients who met the inclusion criteria were recorded sequentially according to the date of admission to the Emergency Department (ED). The researcher placed the names in a box and randomly selected names from the box based on the required sample size. The researcher collected the medical record data of heart failure patients gradually, taking data on a monthly basis according to the available quota. Once the sample size met the target quota, the recorded nursing diagnoses were tabulated and analyzed descriptively.

Result

The total sample size that participated in the study was 284 patients with heart failure in the ED of Lamongan Muhammadiyah Hospital. Based on Table 1, the age category with the highest frequency among the 284 heart failure patients is 41-50 years, with 93 patients (32.7%). The age category 20-30 years has the lowest number of patients, with 21 patients (7.4%). The minimum age of heart failure patients is 20 years, and the maximum age is 70 years. According to the table 1, it can be observed that the majority of the 284 heart failure patients are female, totaling 155 patients (54.6%), while the remaining 129 patients (45.4%) are male Based on Table 1, it can be observed that among the 284 heart failure patients, nearly half have an elementary school education, with 112 patients (39.4%). In contrast, the lowest number of patients have a diploma (D3) education, totaling 2 patients (0.7%). Additionally, Table 1 shows that nearly half of the heart failure patients are self-employed, with 112 patients (39.4%), while the lowest number of patients are employed as civil servants (PNS), totaling 23 patients (8.1%).

Based on table 2, the majority of patients with heart failure had a medical diagnosis of 195 (68.6%), namely A L O (Acute Oedema of Lung), and there were several patients who received more than one medical diagnosis.

Table 1. Demographic Data of Heart Failure Patients in the Emergency Room of Lamongan Muhammadiyah Hospital

Variable	Characteristic	n	%
Age (y/o)	20 - 30	21	7.4
	31 - 40	43	15.1
	41 - 50	93	32.7
	51 - 60	76	26.8
	61 - 70	51	18.0
Total		284	100
Gender	Male	129	45.4
	Female	155	54.6
Total		284	100
Education	Not educated	3	1.1
	Elementary School	112	39.4
	Junior High School	41	14.4
	Senior High School	94	33.1
	Higher Education	32	11.3
	Diploma	2	0.7
Total		284	100.0
Occupation	Self-employed	21	7.4
	Farmer	43	15.1
	Private employee	93	32.7
	Civil servants	76	26.8
	Others	51	18.0
Total		284	100.0

Table 1 shows that the largest age category is in the 41-50 year age range, 93 people (32.7%), and the female gender is more numerous, 155 people (54.6%), the highest education level of

respondents is elementary school, 112 people (39.4%), and the employment status of most respondents was in the private employee category, 93 people (32.7%)

Table 2. Distribution of Heart Failure Patients Based on Medical Diagnoses in the Emergency

Room of Lamongan Muhammadiyah Hospital

Medical Diagnosis	n	%
A L O (Acute Oedema of Lung)	195	68.6
Decompensatio cordis	59	20.7
Cardiomegaly	52	18.3
CHF (Congestive Heart Failure)	43	15.1
Heart Failure	27	9.5
HHD With Heart Failure	2	0.7
VSD Congenital	1	0.3
Congenital Heart Disease	1	0.3

Table 2 shows that most of the respondent's medical diagnoses are ALO (68.5%).

Table 3. Signs and Symptoms of Heart Failure Patients in the Emergency Room of Lamongan

Muhammadiyah Hospital

Signs and Symptoms	n	%
Shortness of breath	231	81,3
Increased breath frequency	231	81,3
Tachycardia	231	81,3
ECG features of arrhythmias	190	66,9
Nose lobe breath	145	51,5
Edema	120	42,2
Increased blood pressure	109	38,3
Weak	100	35,2
Accute pain	100	35,2
Anxiety and Restlessness	98	34,5
Pc02 Increased/Decreased	80	28,1
Accessory muscle breathing	80	28,1
P02 Decreased	75	26,4
Decreased Blood Pressure	65	22,8
Dypnea	65	22,8
Pale Skin	50	17,6
CRT>3 seconds	45	15,8
Acral coldness	30	10,5
Decreased Consciousness	21	7,3
Cough with Phlegm	15	5,2
Additional Breath Sounds	15	5,2
Bradycardia	15	5,2
Loose stools	4	1,4
Vomit	3	1,0
Seizures	2	0,7
Dizzy	2	0,7
Chest Palpitations	2	0,7
Easily Fatigued	1	0,3
Fever	1	0,3
dysarthria	1	0,3
Extremity Weakness	1	0,3

Based on Table 3 of this study, the most common signs and symptoms observed in heart failure patients treated at the Emergency Department of Muhammadiyah Hospital Lamongan are shortness of breath (81.3%), increased respiratory rate (81.3%), and tachycardia (81.3%). Other signs and symptoms include arrhythmias on ECG (66.9%), nasal flaring (51.5%), and loose stools (1.4%), with a fever occurrence in 0.3% of patients.

Table 4. Nursing Diagnosis in Heart Failure Patients at Lamongan Muhammadiyah Hospital in the Emergency Room of Lamongan Muhammadiyah Hospital

Nursing Diagnosis	n	%
Ineffective Breathing Pattern	225	79,2
Acute Pain	198	69,7
Decreased Cardiac Output	180	63,3
Activity Intolerance	176	61,9
Ineffective Airway Clearance	128	45,0
Hypervolemia	290	31,6
Impaired Gas Exchange	75	26,4
Risk for Falls	45	15,8
Ineffective Peripheral Perfusion	40	14,0
Anxiety	40	14,0
Nausea	35	12,3
Decreased Intracranial Adaptive Capacity	20	7,0
Hyperthermia	18	6,3
Sensory Perception Disturbance	18	6,3
Ineffective Thermoregulation	18	6,3
Physical Mobility Impairment	10	3,5
Hypovolemia	2	0,7
Risk for Electrolyte Imbalance	2	0,7
Verbal Communication Impairment	2	0,7
Risk for Aspiration	1	0,3
Nutritional Deficit	1	0,3
Urinary Elimination Impairment	1	0,3

Based on Table 4, each heart failure patient has more than one nursing diagnosis. The most common nursing diagnosis was ineffective breathing pattern, with a percentage of 79.28%. This was followed by acute pain, which occurred in 69.7% of patients, and decreased cardiac output with a percentage of 63.3%. Other nursing diagnoses that appeared included activity intolerance (61.9%), ineffective airway clearance (45.0%), hypervolemia (31.6%), and impaired gas exchange (26.4%).

DISCUSSION

In this study, the signs and symptoms observed in heart failure patients were shortness of breath, increased respiratory rate, tachycardia, arrhythmia on ECG, nasal flaring, swelling/edema, increased blood pressure, extremity weakness, pain scale, anxiety and restlessness, continuous pain, increased/decreased PCO2, use of accessory muscles for breathing, decreased PO2, decreased blood pressure, dyspnea, intermittent pain, pale skin color, CRT >3 seconds, cold extremities, and altered consciousness.

According to theory, the signs and symptoms of heart failure patients include shortness of breath, fatigue, swelling in the legs, tachycardia, and arrhythmias (Ponikowski et al., 2016) complaints of fatigue during activities or rest, physical weakness (Pavlovic et al., 2022), weight gain, onset or increase in peripheral edema limitations in speaking in complete sentences, paroxysmal nocturnal dyspnea, and orthopnea (Jurgens et al., 2009), depression, memory problems, and anxiety (Celano et al., 2018) chronic volume overload, increased need for rest, and increased oxygen demand (Nurhanani et al., 2020) and sleep problems (Khasanah, et.al, 2020).

The signs and symptoms found in this study that are listed in the SDKI but are not mentioned in the theory include increased respiratory rate, nasal flaring, increased blood pressure, complaints of pain, anxiety and restlessness, fluctuating PCO2 levels, weakness or fatigue, decreased blood pressure, pale skin color, CRT >3 seconds, cold extremities, and altered consciousness. The symptoms found in this study in heart failure patients, including shortness of breath, are due to fluid accumulation that inhibits lung expansion, causing difficulty in breathing. Symptoms such as nasal flaring, increased respiratory rate, fluctuating PCO2, dyspnea, and additional breath sounds were also observed.

Based on the research findings, there were six most common nursing diagnoses in heart failure patients in the Emergency Department of Muhammadiyah Hospital Lamongan. These nursing diagnoses include ineffective breathing pattern, decreased cardiac output, activity intolerance, hypervolemia, impaired gas exchange, and ineffective peripheral perfusion.

According to theory, the nursing diagnoses for heart failure patients include decreased cardiac output, hypervolemia, activity intolerance, impaired skin and tissue integrity, knowledge deficit, and risk for falls (Brasil et al., 2014). impaired gas exchange, ineffective breathing pattern, ineffective airway clearance, and fatigue(Prado et al., 2019b).

The nursing diagnoses in heart failure patients show that the most frequent diagnosis is ineffective breathing pattern. ineffective breathing pattern refers to a condition in which

inspiration and expiration do not provide adequate ventilation (El Haque et al., 2021). According to SDKI, the signs and symptoms of ineffective breathing pattern include dyspnea, orthopnea, use of accessory muscles for breathing, prolonged expiratory phase, abnormal breathing pattern, pursed-lip breathing, nasal flaring, increased anterior-posterior thoracic diameter, decreased minute ventilation, decreased vital capacity, decreased expiratory pressure, decreased inspiratory pressure, and altered chest excursion (PPNI, 2017).

The signs and symptoms that emerged for the nursing diagnosis of ineffective breathing pattern in this study were dyspnea, shortness of breath, increased respiratory rate, use of accessory muscles for breathing, and nasal flaring. Therefore, the conclusion for the signs and symptoms in the diagnosis of ineffective breathing pattern is dyspnea, shortness of breath, increased respiratory rate, use of accessory muscles for breathing, and nasal flaring.

The nursing diagnosis in heart failure patients indicates that the third most frequent diagnosis is decreased cardiac output. Decreased cardiac output refers to a condition in which the heart is unable to pump enough blood to meet the body's metabolic demands (PPNI, 2017), According to SDKI, the signs and symptoms of decreased cardiac output include dyspnea, increased/decreased blood pressure, weak peripheral pulse, CRT >3 seconds, and pale/cyanotic skin (PPNI, 2017).

The signs and symptoms that appeared for the nursing diagnosis of decreased cardiac output in this study were dyspnea, decreased blood pressure, increased blood pressure, CRT >3 seconds, and pale skin. Therefore, the conclusion for the signs and symptoms in the diagnosis of decreased cardiac output is complaints of dyspnea, decreased blood pressure, increased blood pressure, CRT >3 seconds, and pale skin.

The nursing diagnoses identified in this study included ineffective breathing pattern, acute pain, decreased cardiac output, activity intolerance, ineffective airway clearance, hypervolemia, blood sugar instability, impaired gas exchange, risk for falls, ineffective peripheral perfusion, anxiety, nausea, and fatigue. the nursing diagnoses obtained in this study were consistent with the observations and diagnoses established by the hospital.

CONCLUSIONS

The signs and symptoms that appear in heart failure patients include shortness of breath, increased respiratory rate, tachycardia, arrhythmic ECG findings, nasal flaring, swelling/edema, increased blood pressure, pain complaints, pain scale, anxiety and restlessness, continuous pain, increased/decreased PCO2, use of accessory muscles for

breathing, decreased PO2, weakness/fatigue, decreased blood pressure, dyspnea, intermittent pain, pale skin color, CRT >3 seconds, cold extremities, and altered consciousness. Meanwhile, the signs and symptoms described in the theory for heart failure patients include shortness of breath, fatigue, swelling in the legs, tachycardia, and arrhythmias. The most common nursing diagnoses in heart failure patients include ineffective breathing pattern, decreased cardiac output, activity intolerance, hypervolemia, impaired gas exchange, and ineffective peripheral perfusion. It is hoped that future researchers will conduct further studies with a larger sample size, using more advanced research design methods and experimental interventions as.

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