

## NURSING DIAGNOSIS FOR PATIENTS WITH HEART FAILURE IN CORONARY UNIT<sup>1</sup>

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### ABSTRACT

The need for application and registration of nursing process at hospital motivated the present study that aimed to identify nursing diagnoses more prevalent in patients with heart failure (HF) admitted to the coronary care unit of a university hospital. This is a cross-sectional, descriptive study using a retrospective documentary analysis. The nursing diagnoses were made from clinical evidence of medical and nursing records contained in the patient's records. To formulate the diagnostic statement were used the language of the International Classification for Nursing Practice-ICNP® Version 2. The nursing diagnoses identified were: Low cardiac output, Gas exchange impaired, Risk of infection, Increased liquid volume and Ventilation impaired. These diagnostics are closely related to the pathophysiology of the disease and include the individual's biological needs, however the records contained in the patient records were insufficient to cover all known affected needs presented by patients.

**Keywords:** Heart failure. Nursing Process. Nursing Diagnosis.

### INTRODUCTION

Heart failure (HF), also known as congestive heart failure, is the inability of the heart to pump blood, usually due to dysfunction of the cardiac muscle, and thereby to provide oxygen and nutrients to tissues, becoming the final outcome of the majority of cardiovascular diseases<sup>(1)</sup>. HF is responsible for a high rate of hospitalizations. In Brazil, the figures show that from January 2010 to April 2011 346,830 Authorizations for Hospital Admission (AHA), because of Heart Failure, were paid out of 1,533,777 AHAs referred to cardiovascular diseases. That is, HF was responsible for nearly a quarter of the admissions caused by circulatory system diseases and, in general, for 2.24% of hospital admissions for any other pathology within said period<sup>(2)</sup>.

Considering the relevance of HF, nurses and their central role in patient care stand out, as they assess and identify the affected human responses, establish nursing diagnosis, propose, perform and assess the results of nursing interventions for this clientele<sup>(3,4)</sup>. These phases methodologically constitute the Nursing Process

(NP), a technological tool that subsidizes nurses in applying their knowledge and provide the information necessary for the decision-making process in the management of the assistance and nursing staff<sup>(5)</sup>.

It is also considered that the professional nursing practice is still carried out in many health units without the record of the nursing process, especially at the stage of nursing diagnosis, which consists in the interpretation of data collected by formulating propositions that will subsidize the decision making of nurses and guide the proposed interventions<sup>(6)</sup>.

The application of NP and its subsequent registration in the patient's health records are regulated by Resolution 358/2009 of the Conselho Federal de Enfermagem [Brazilian Federal Council of Nursing] (COFEN). Its implementation requires the conceptual support of a theory and can be facilitated by using categorization or standardized language of the terms used in the professional practice, considering that this use subsidizes data comparisons, measurement of the achieved results and an evidence-based practice<sup>(6,7)</sup>. In this sense, there is not a single standardized language subsidizing nursing records all over the country,

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although the International Classification for Nursing Practice-ICNP<sup>®</sup> has been created by the International Council of Nursing in order to unify the existing languages and the Brazilian Nursing Association encourages its adoption.

The use of the ICNP<sup>®</sup> includes all elements of the clinical decision-making process of nurses: what to do (interventions) as a function of the presented human needs (diagnostics) to achieve a satisfactory result (results)<sup>(7)</sup>. According to the ICNP<sup>®</sup>, Nursing Diagnosis consists in a statement given by a nurse who makes a decision about a phenomenon presented by a patient, after having evaluated him<sup>(8)</sup>.

The ICNP<sup>®</sup> is so important that in 2008 the World Health Organization (WHO) recognized it as part of its Family of International Classifications (WHO-FIC)<sup>(8)</sup>. However, in Brazil, its use is still polarized between two regions: Paraná and Paraíba states. In the first one, the ICNP<sup>®</sup> is used in primary health care by the Municipal Health Secretary of Curitiba. And in Paraíba it is part of a wide implementation project of the Nursing Care System (NCS) of the local university hospital, conducted by the Research and Development Center of the ICNP<sup>®</sup> of the Federal University of Paraíba. In regions other than these two poles, the research is embryonic and its use in clinical practice barely exists<sup>(9)</sup>.

Given the need for implantation, implementation and consequent record of the Nursing Process in the institution where this study was conducted, initially it was made a review in the LILACS database, of the Virtual Health Library, with the descriptors: *Nursing Diagnosis and Heart Failure*, using the subject descriptor field and without the application of other filters.

A total of seven (7) articles with the description of the nursing diagnoses for heart failure were found; however, none of them had the ICNP<sup>®</sup> as the language chosen for such description. In addition, only one (01) article presented the implementation of the diagnoses in nursing consultation, the others addressed the survey of diagnoses and their defining characteristics.

Although the literature does not point implementation initiatives of the nursing diagnosis in clinical practice, prior knowledge of

a subset of standardized nursing diagnoses for a specific clientele can facilitate the record of the nursing process and contribute to qualify the given assistance.

Accordingly, the present study aimed to identify the most prevalent nursing diagnoses in patients with HF admitted to coronary care unit. Once described, these diagnoses will allow intervention to minimize common grievances resulting from the disease, in a more objective, efficient and individualized way. Moreover, it is expected to contribute to the standardization of the language used by the nursing staff in the mentioned hospital context.

## METHODOLOGY

This is a descriptive and cross-sectional study, conducted through a retrospective documentary analysis, developed in the coronary care unit of a university hospital, in the state of Rio de Janeiro. Its population was composed of patients admitted to the unit with primary diagnosis of Heart Failure in the period between July and December 2010. The non-probabilistic convenience sample consisted of all patients with heart failure admitted to the coronary care unit during the six (6) months of data collection. In this period, said unit operated with only four (4) beds for treatment of several cardiovascular diseases, thus the sample was composed of 15 patients, given that the demand of admissions of the unit was considered representative of the local population.

From the hospital records, the medical and nursing records were analyzed, corresponding to the day and night shifts during the first five days of hospitalization of each patient. This analysis sought to detect areas of relevant attention to nursing, clinical evidences and/or risk factors that denoted a human response capable of constituting nursing diagnosis.

Thus, 265 developments were assessed, out of which 12 did not registered any data relevant to nursing. As for the remaining 253, a total of 1,393 clinical evidences or risk factors that indicated human responses or posed risks to them were found. Considering that the same evidence was presented with different forms of record, such as: hyperglycemia or high blood sugar levels, they were reduced by similarity, in

such a way that the same human response was written uniformly, totalizing 86 terms.

Such evidences were cataloged and had their frequencies registered in Microsoft Office Excel 2007 program. The clinical evidences and/or risk factors that corroborated the clinical judgment of the nurse and consequent construction of a nursing diagnosis were grouped and their frequencies were summed. The formulation of diagnostic statements occurred from the cross-mapping and the guidelines of the ICNP<sup>®</sup>, Version 2, i.e., it was used a term of the *focus* axis and a term of the *judgment* axis.

Since the most common nursing diagnoses were being searched, with the future purpose of building a protocol to the unit, the nursing diagnoses that had a frequency of  $\geq 50\%$ , through a simple descriptive statistics, were considered representative. The diagnoses were built jointly by two (2) nurses with 5 years of experience in cardiology and one (1) nursing professor with expertise in the area to elaborate the diagnostics in search for consensus among the peers.

The present study was submitted to the Ethics and Research Committee of the university hospital, as recommended by the National Ethics and Research Resolution 196/96, which deals with research involving human subjects. It was approved on December 17, 2010, under Protocol No. 0238.0.258.000-10.

## RESULTS AND DISCUSSION

As for the characteristics of the clientele, seven (46.6%) were female and eight (53.3%) male. The presented average age was 58.9 years. Age above 65 years (10) is a predisposing factor for the development of the disease. In this study, ten (66.6%) patients were in Functional Class III and three (20%) in Functional Class IV, which is expected when dealing with hospitalized patients. The episodes of cardiac decompensation occurred more frequently from the Class III<sup>(10)</sup>.

In order to establish nursing diagnoses, the frequencies of clinical evidences and risk factors that evidenced such diagnosis were summed. The **Low cardiac output** nursing diagnosis was evidenced in 94.23% of the analyzed developments. Cardiac output means "Cardiac

Status: Amount of blood ejected from the left ventricle per minute"<sup>(8)</sup>. This diagnosis was formulated from the observation of the following clinical evidences: hypocoloration, sinus tachycardia, irregular heart rate, slow peripheral perfusion, third heart sound, fatigue, bradycardia, restlessness and cyanosis.

The inability of the heart to maintain adequate cardiac output is evidenced by several signs and symptoms. Skin paleness and cyanosis occur when there is a reduction of oxygenated blood flow<sup>(11,12)</sup>. When in bradycardia, the heart has a longer time of diastole and, consequently, a longer time of filling; nevertheless, beats inferior to 40bpm are not sufficient to maintain a good cardiac output. The opposite situation also prevents an appropriate CO, because tachycardia above 150bpm does not allow an ideal ventricular filling due to a very short diastolic time<sup>(3,11)</sup>. The presence of the 3rd heart sound, or gallop rhythm, is usually originated in the left ventricle, being considered common in patients with HF and, in conjunction with an irregular heart rhythm, cause a decrease in the cardiac output<sup>(3,12)</sup>.

A study conducted in a reference center for cardiology observed that out of the 38 evaluated patients with heart failure, 27 (71.1%) had a diagnosis of decreased cardiac output. Among the characteristics that evidenced such diagnosis, altered heart rhythm, bradycardia or tachycardia, presence of third heart sound and reduced ejection fraction stood out<sup>(13)</sup>. In turn, another systematic review study brought as characteristics of this diagnosis, besides those already mentioned, decreased peripheral perfusion, fatigue, cold skin and hypocoloration<sup>(14)</sup>.

The second surveyed nursing diagnosis was **Impaired Gas Exchange**, with a frequency of 84.97%. Gas Exchange means "Process of the Respiratory System: Alveolar exchange of oxygen and carbon dioxide, balance in the ventilation perfusion associated with the breathing effect, skin coloration and energy level"<sup>(8)</sup>. This diagnosis was formulated from the observation of the following clinical evidences: adventitious sounds, low-pitched or abolished vesicular breath sounds, and low  $O_2$  saturation, secretion in airway and lung congestion.

All these reported problems unfavorably interfere with the gases exchange. Regarding the pathophysiology of the HF, the reduction in cardiac output and accumulation of blood upstream one or both ventricles are the foundations of all clinical manifestations that follow. The accumulation of fluids observed in HF occurs on the basis of the following mechanisms of adaptation: 1 – increased pressure and final diastolic volume of the ventricle, 2 – increased pressure and volume of the atrium correspondent to the deficient ventricle, 3 – more vigorous contraction of the atrium, 4 – increased pressure in the venous and capillary beds upstream the compromised ventricle 5 – increased transudation of fluids from the vessels to the interstitial space, whether pulmonary or systemic. This sequence of events is the main responsible for the accumulation of characteristic fluids of the HF, which will culminate in pulmonary congestion, pleural effusion, decreased vesicular breath sounds and presence of adventitious sounds<sup>(11)</sup>.

Research conducted with 37 hospitalized patients, suffering from heart failure, assessed the degree of impairment of their gas exchange and identified as clinical indicators for the diagnosis of Impaired Gas Exchange the depth change in respiratory rate and orthopnea<sup>(15)</sup>.

A third nursing diagnosis is Risk of Infection, with a frequency of 72.33%. Infection consists of "Pathological Process: Invasion of the body by pathogenic microorganisms that reproduce and multiply, causing diseases by local cellular injury, secretion of toxin or antigen-antibody reaction"<sup>(8)</sup>. The evidences that allowed such diagnosis were: peripheral venous access, vesical delay probe and deep venous access.

Associated with the peripheral catheter, the main complication is phlebitis. This is a venous inflammation caused by a mechanical or chemical irritation and its symptoms are redness around the catheter, increased local temperature of the skin, presence of edema and local pain and, sometimes, secretion<sup>(16)</sup>. The central venous access, in turn, is responsible for bloodstream infection (BSI), which occurs when the germ found at the site of insertion of the catheter reaches the bloodstream, causing bacteremia that may result in sepsis (17). Finally, the vesical delay probe (VDP) is associated with the urinary

tract infection, which is one of the most common in hospitals, accounting for 40% of nosocomial infections (12).

This nursing diagnosis is not directly related with the HF, but with the fact that it deals with patients hospitalized in a coronary care unit who need to undergo invasive procedures to control the symptoms. In a study conducted with 60 patients hospitalized in a medical-surgical unit, 58.3% were at risk of infection, and this was the most frequent nursing diagnosis of the research<sup>(18)</sup>. The holistic view of the patient requires that all diagnoses associated with it shall be reported and discussed.

Fourth, the **Increased Volume of Liquid** nursing diagnosis was raised, with a frequency of 67.98%. Volume of Liquid means "Nutritional Status: sum of body processes and homeostatic mechanisms involved in the regulation of retention and disposal of body fluids such as the amount and balance of water and electrolytes in the intracellular compartments of the body"<sup>(8)</sup>. The evidences that allowed the survey of such diagnosis were: edema of lower limbs, generalized edema, pain in the right hypocondrium, jugular venous distention at 45°, abdominal distension, hepatic congestion and pulmonary congestion.

Decreased cardiac output triggers a compensatory mechanism of activation of the rennin-angiotensin-aldosterone system that prevents the sodium elimination and provokes water retention. Besides this mechanism, increased pressure of ventricular filling provokes an accumulation of liquid upstream the compromised ventricle, which causes tissue congestion. The higher fluid retention associated with a mechanism that leads to its leakage is the fundamental cause of the edema formation<sup>(11)</sup>.

The accumulation of fluids is responsible for hepatomegaly and liver pain. The presence of jugular venous distention at 45° indicates an increased venous pressure in the system of the superior vena cava and denotes the inability of the ventricle to adapt to a higher amount of blood<sup>(11,13)</sup>. Validation study of the excessive volume of liquid diagnosis, conducted in Rio Grande do Sul state, with 32 patients, presented dyspnea, orthopnea, edema, positive hepatojugular reflux, pulmonary congestion, hepatomegaly and jugular vein distension as

defining characteristics for the referred nursing diagnosis<sup>(19)</sup>.

The last surveyed nursing diagnosis was **Impaired Ventilation**, with a frequency of 57.35%. Ventilation means "Process of the Respiratory System: Moving air into and out of the lungs with certain respiratory pattern and rhythm, depth of inspiration and strength of expiration"<sup>(8)</sup>. The evidences that allowed the survey of such diagnosis were: dyspnea, dry cough, orthopnea, decreased lung expansion and increased inspiratory time.

One of the main symptoms of HF is dyspnea, which consists in the conscious and painful act of breathing. It is associated with pulmonary congestion in patients with HF and its severity varies according to the patient's ability to perform activities of daily living. Orthopnea occurs when dyspnea happens in a horizontal position or reclined and the relief is only possible by the decubitus elevation. In patients with HF, nonproductive cough may be considered as dyspnea, for it is intimately associated with pulmonary congestion and, in general, the use of diuretics relieves symptoms<sup>(11,13)</sup>.

The nursing diagnoses surveyed here are in line with recent survey conducted in a study on nursing diagnoses and interventions for Heart Failure, using the International Classification for Nursing Practice. In this study, the diagnostic statements were constructed from the literature and distributed according to the main symptoms of HF. The low cardiac output was related to tachycardia; impaired gas exchange and

impaired ventilation were associated with impaired dyspnea and the increased volume of fluids was referred to the edema<sup>(20)</sup>.

## FURTHER CONSIDERATIONS

Nurses, on their daily work, specifically in the coronary care unit, make their decisions based on clinical judgment on human responses presented by patients, building their nursing diagnoses, planning and implementing their interventions. Therefore, it is essential that professionals involved in care are prepared to recognize these problems and able to develop a correct judgment.

An important limitation of this study was the lack of information available in the medical and nursing records which restricted diagnostics built to the biological needs of the individual. These needs were not fully addressed also. Nevertheless, this study characterized the beginning of a movement to implantation and record of the nursing process in the coronary care unit where it was developed, thus contributing to the improvement of the work process and the given assistance.

Thus, we emphasize the importance of continuing to perform studies that promote the standardization of the language of professional practice and facilitate the record of the Nursing Process. So that it is possible to compare data, measure results and practice evidence-based nursing.

## DIAGNÓSTICOS DE ENFERMAGEM PARA PACIENTES COM INSUFICIÊNCIA CARDÍACA EM UNIDADE CORONARIANA

### RESUMO

A necessidade de aplicação e registro do Processo de Enfermagem em unidade hospitalar motivou a realização do presente estudo que tem como objetivo identificar os diagnósticos de enfermagem mais prevalentes nos pacientes internados na unidade coronariana de um hospital universitário com Insuficiência Cardíaca (IC). Trata-se de uma pesquisa transversal e descritiva realizada por meio de uma análise documental retrospectiva. Os diagnósticos de enfermagem foram elaborados a partir de evidências clínicas levantadas dos registros médicos e de enfermagem contidos nos prontuários. A formulação da declaração diagnóstica foi feita com a utilização da linguagem de Classificação Internacional para a Prática de Enfermagem - CIPE® versão 2. Os diagnósticos de enfermagem identificados foram: Baixo débito cardíaco, Troca gasosa prejudicada, Risco para infecção, Volume de líquido aumentado e Ventilação prejudicada. Estes diagnósticos estão intimamente relacionados à fisiopatologia da doença e contemplam as necessidades biológicas do indivíduo; no entanto, os registros contidos nos prontuários revelaram-se insuficientes para abranger a totalidade das necessidades sabidamente afetadas e apresentadas pelos pacientes.

**Palavras-chave:** Insuficiência cardíaca. Processos de Enfermagem. Diagnóstico de Enfermagem.

## DIAGNÓSTICOS DE ENFERMERIA PARA PACIENTES COM INSUFICIÊNCIA CARDÍACA NA UNIDADE CORONÁRIA

### RESUMEN

La necesidad de la aplicación y registro del Proceso de Enfermería en el hospital motivó el presente estudio que tuvo como objetivo identificar los diagnósticos de enfermería más frecuentes en los pacientes con insuficiencia cardíaca (IC), ingresados en la unidad coronaria de un hospital universitario. Se trata de un estudio transversal, descriptivo, realizado mediante un análisis documental retrospectivo. Los diagnósticos de enfermería fueron hechos de evidencia clínica de registros médicos y de enfermería identificados que figuran en los registros médicos. Para formular la declaración de diagnóstico se utilizó el lenguaje de la Clasificación Internacional para la Práctica de Enfermería - CIPE® Versión 2. Los diagnósticos de enfermería identificados fueron: Bajo gasto cardíaco, Deterioro del intercambio gaseoso, Riesgo de infección, El aumento de volumen de líquido y Deterioro de la ventilación. Estos diagnósticos están estrechamente relacionados con la fisiopatología de la enfermedad e incluyen las necesidades biológicas de la persona, sin embargo los registros contenidos en las historias clínicas no fueron suficientes para cubrir todas las necesidades conocidas y afectadas y presentadas por los pacientes.

**Palabras clave:** Insuficiencia Cardíaca. Procesos de Enfermería. Diagnóstico de Enfermería.

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