



## ORIGINALES

### Nurses' knowledge about heart failure: a comparative study

Conhecimento de enfermeiros sobre insuficiência cardíaca: estudo comparativo  
Conocimiento de los enfermeros sobre la insuficiencia cardíaca: un estudio comparativo

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#### ABSTRACT:

**Objective:** To verify the knowledge of nurses about heart failure in different hospital institutions.

**Method:** Participants included 74 nurses from two public hospitals (a general hospital and a hospital specialized in cardiology) from a capital city in the Brazilian Northeast. The Nurses' Knowledge of Heart Failure Questionnaire (Q-NKHF) was used. Data were analyzed in a descriptive and inferential manner.

**Results:** Satisfactory indices of correct answers (70%) were found for questions related to basic knowledge about heart failure, such as sodium and fluid restriction, changes in lifestyle and sexual activity. There were no significant differences between the professionals of the general hospital and those who specialized in cardiology.

**Conclusion:** The nurses' knowledge about heart failure was satisfactory in the general hospital and unsatisfactory in the specialized service in cardiology. The subjects in need of educational intervention, together with the investigated participants, were identified.

**Keywords:** Nursing; Heart Failure; Knowledge.

#### RESUMO:

**Objetivo:** Verificar o conhecimento de enfermeiros sobre insuficiência cardíaca em diferentes instituições hospitalares.

**Método:** Participaram 74 enfermeiros de dois hospitais públicos, geral e especializado em cardiologia, de uma capital do Nordeste brasileiro. Utilizou-se o Questionário de Conhecimento de Enfermeiros sobre Insuficiência Cardíaca (Q-CENIC). Os dados foram analisados de forma descritiva e inferencial.

**Resultados:** Constatou-se índices satisfatórios de acertos ( $\geq 70\%$ ) nas questões referentes ao conhecimento básico sobre insuficiência cardíaca como a restrição de sódio e líquidos, mudanças no estilo de vida e atividade sexual. Não houve diferenças estatísticas entre os profissionais do hospital geral e do especializado no atendimento cardiológico.

**Conclusão:** Verificou-se que o conhecimento de enfermeiros acerca da insuficiência cardíaca foi satisfatório no hospital geral e insatisfatório no serviço especializado em cardiologia. Identificou-se os temas que necessitam de intervenção educativa, junto aos participantes investigados.

**Palavras chave:** Enfermagem; Insuficiência Cardíaca; Conhecimento.

## RESUMEN:

**Objetivo:** Verificar el conocimiento de las enfermeras sobre la insuficiencia cardiaca en diferentes hospitales.

**Método:** Participaron 74 enfermeros de dos hospitales públicos, general y especializado en cardiología, de una capital brasileña del noreste. Se utilizó el Cuestionario de Conocimiento de Enfermeros sobre Insuficiencia Cardíaca (Q-CENIC). Los datos se analizaron de forma descriptiva e inferencial.

**Resultados:** Se encontraron índices satisfactorios de respuestas correctas ( $\geq 70\%$ ) en términos de conocimientos básicos sobre la insuficiencia cardíaca como la restricción de sodio y líquidos, los cambios en el estilo de vida y la actividad sexual. No hubo diferencias estadísticas entre los profesionales del hospital general y los de atención especializada en cardiología.

**Conclusión:** Se encontró que el conocimiento de los enfermeros sobre la insuficiencia cardíaca fue satisfactorio en el hospital general e insatisfactorio en el servicio especializada en cardiología. Se identificaron los temas que necesitan de intervención educativa, junto con los participantes investigados.

**Palabras clave:** Enfermería; Insuficiencia Cardíaca; Conocimiento.

## INTRODUCTION

In the context of chronic diseases, cardiovascular diseases are responsible for high morbidity and mortality rates and an increase in hospital admissions, with an increase in public health expenditures and a consequent decrease in the quality of life of people affected.<sup>(1)</sup>

Among cardiovascular diseases, heart failure is highlighted as a serious and growing problem in public health worldwide, as it is the final common pathway of most heart diseases.<sup>(1)</sup>

Approximately 23 million people are carriers of heart failure; 2 million new cases are diagnosed each year around the world. Data show that 6.5 million people in Europe, 5 million people in the United States, and 2.4 million people in Japan have the disease.<sup>(2)</sup>

In Brazil, approximately 6.4 million people have heart failure, and it is the first cause of hospitalizations due to circulatory apparatus disease.<sup>(3)</sup> It is known that the disease triggers signs and symptoms such as dyspnea, exertion fatigue, lower limb edema, nocturnal cough and orthopnea. Other manifestations may be evidenced, such as hypotension, vertigo and bradycardia, leading to frequent hospitalizations.<sup>(4)</sup>

Evidence highlighted in the literature reveals that approximately 50% of patients with heart failure are readmitted to the health services within 90 days after discharge, with worsening clinical conditions that can lead to death. Among the main factors for aggravation of the disease is the low adherence to the complex therapeutic regimen proposed. As a fundamental aspect for the resolution of any proposed treatment, therapeutic adherence deserves particular attention from the multiprofessional team.

Topics such as weight control, salt and fluid restriction, correct use of medications, physical exercise, diet and worsening symptoms are recommended for the education

and orientation of patients with heart failure to stimulate self-care capacity.<sup>(6)</sup> In this sense, it is imperative that the nurse holds leading knowledge regarding his/her role in health education and care for individuals with heart failure.

Given the importance of the nurse's knowledge for the management of heart failure, a serious illness and with important implications for the quality of life of affected people, the need to provide answers to the following guiding questions emerged: What knowledge do nurses have about heart failure? Is there a difference in knowledge between nurses who work in a cardiology hospital and those who work in a general hospital?

In view of such questions, the present study aimed to verify the knowledge of nurses about heart failure in a hospital institution specialized in cardiology and in a general hospital.

## METHODS

This is an exploratory-descriptive, cross-sectional and comparative study with a quantitative nature. Two public hospitals for cardiologic care in a capital in the Northeast of Brazil were chosen as research scenarios. Scenario A offers specialized care in cardiology, and scenario B offers general assistance.

The population consisted of nurses who worked in medical/cardiologic clinic, intensive therapy and cardiologic emergency units of the selected institutions, as these places are destined to hospitalize patients with heart failure. The non-probabilistic and intentional sample consisted of 74 participants. The inclusion criteria proposed for research were to be a nurse and to perform care activities for people with heart failure over a period of more than six months in hospital care in the institutions. Nurses who did not fully complete the data collection questionnaire were excluded. All participants received information about the study both verbally and in writing.

For data collection, a questionnaire queried characterization variables of the study participants, such as age, sex, complementary training, nursing time and professional activity unit. Nurses' knowledge was verified through the Nurses' Knowledge of Cardiac Failure Questionnaire (Q-NKHF), adapted version, translated and validated for Brazilian Portuguese<sup>(7)</sup>. The questionnaire consists of 15 questions with dichotomous answers of the true or false type related to the management of heart failure (i.e., diet, physical exercises, signs and symptoms of clinical decompensation). Because there was no cutoff point determination relative to the number of correct answers to the questions presented in the selected instrument – above which the knowledge would be evaluated as satisfactory – a success rate equal to or greater than 70% for each question was used for the result of the present investigation, which is an index already adopted in another national investigation.<sup>(8)</sup>

The questionnaire was completed in shifts and schedules according to the work shift of each participant, by means of the presence of one of the researchers, prioritizing moments when the professionals were not performing care or nursing procedures. The mean time to complete the questionnaire was 36 minutes. The periods of data collection were from August to September 2014 in scenario A and from January to April 2016 in scenario B. The distinct periods of data collection are justified; the initial survey occurred in 2014 in scenario A by the same researchers after a period of adaptation and organization of the service, while the specialized service in cardiology

had activities that started in 2013. Therefore, it was decided to conduct the research in another institution, with the purpose of an educative proposal, observing the same criteria and proposed objective as the initial research.

The data collected were tabulated and stored in the Excel program for Windows and were then analyzed using SPSS software (Statistical Package for the Social Sciences) for Windows, version 20.0, with results presented in a descriptive manner in tables.

The categorical variables are expressed in absolute and relative frequencies, with the respective *p*-values given for comparison tests of proportions to evaluate the existence of significance between the data obtained in scenarios A and B. For the continuous variables, the results obtained are presented as means and standard deviations.

The research scenarios were compared, taking as reference the following variables: age, time of professional performance and hospital institution. At the 95% confidence level, the Shapiro-Wilk normality test was performed. Thus, the hypothesis of data normality was rejected, instead opting for the non-parametric Mann-Whitney test. A significance level of 5% ( $\alpha = 0.05$ ) was considered.

The study complied with the formal requirements contained in national and international standards that regulate research involving human subjects, according to Resolution 466/2012 of the Brazilian National Health Council.

## RESULTS

The sample consisted of 74 nurses: 35 (47%) in scenario A and 39 (53%) in scenario B. The predominance was female (84%), with a mean age of  $35.55 \pm 6.82$  years, ranging from 24 to 56 years. A mean of  $9.70 \pm 6.71$  years was noted for the time of professional performance, with a mean of  $3.41 \pm 6.05$  years noted for the time of performance in the hospital institution selected for the study. Most of the nurses developed their care activities in the medical/cardiology clinic. Regarding the complementary training of nurses, they reported having completed specialization (Table 1).

**Table 1** - Sociodemographic variables of the nurses interviewed (n = 74). João Pessoa, PB, Brazil, 2016.

HOSPITAL SCENARIO	A		B	
	N	(%)	N	(%)
<b>Nurses</b>	35	100.0	39	100.0
<b>Sex</b>				
Female	29	82.9	34	87.2
Male	6	17.1	5	12.8
<b>Total</b>	35	100	39	100
<b>Age group</b>				
20	7	20.0	9	23.1
30	21	60.0	18	46.1
40	6	17.1	9	23.1
≥	1	2.9	3	7.7
<b>Total</b>	35	100	39	100
<b>Work unit</b>				
Cardiologic urgency *	12	34.3	-	-
Intensive therapy	11	31.4	14	35.9
Medical/cardiology clinic	12	34.3	25	64.1
<b>Total</b>	35	100	39	100
<b>Complementary training**</b>				
Specialization in progress	6	17.1	2	4.4
Specialization completed	24	68.6	31	68.9
Residence	2	5.7	9	20.0
Master's degree	3	8.6	3	6.7
<b>Total</b>	35	100	45	100
<b>Area of complementary training**</b>				
Cardiology/hemodynamics	3	5.4	-	-
Family health	13	23.6	14	31.8
Public health	10	18.2	2	4.6
Urgency/emergency	9	16.4	1	2.3
Intensive care unit	9	16.4	14	31.8
Other	11	20.0	13	29.5
<b>Total</b>	55	100	44	100

**Source:** Research data, 2016.

\* Service only offered in scenario A.

\*\* Nurses could answer more than one option.

In the verification of the nurses' knowledge about heart failure, the results obtained indicated satisfactory indices of correct answers (70%) in questions related to fluid ingestion (Q1), sodium restriction (Q2), weight control (Q5), identification of fluid retention signs (Q6), use of medications and changes in lifestyle (Q7), sexual activity (Q13) and prevention of clinical decompensation (Q15) in both research scenarios. In scenario B, three questions were 100% correct, which was not evidenced in scenario A, which was aimed at specialized cardiology care. A satisfactory knowledge ( $\geq 70\%$ ) regarding respiratory symptoms (Q9) in scenario B and signs and symptoms of advanced heart failure (Q3) were also observed in scenario A (Table 2).

The test to compare proportions revealed statistical significance for questions related to respiratory symptoms (Q9), dietary restrictions and signs of clinical worsening of heart failure (Q10) and parameters of weight control (Q12), showing better indices in scenario B, although for Q10 and Q12, the correct answer indices were unsatisfactory in the two scenarios surveyed (Table 2).

**Table 2** - Differences in the proportions of correct answers between hospital scenarios A and B (n = 74). João Pessoa, PB, Brazil, 2016.

Questions	Scenario A (n = 35)		Scenario B (n = 39)		p*
	n	%	n	%	
<b>Q1.</b> Patients with HF should drink plenty of fluids every day (F).	33	94.3	39	100	0.1302
<b>Q2.</b> As long as no salt is added to food, there are no dietary restrictions for patients with HF (F).	29	82.9	37	95.0	0.096
<b>Q3.</b> Cough, nausea and decreased appetite are common symptoms of HF at a more advanced stage (T).	28	80.0	26	67.0	0.098
<b>Q4.</b> Patients with HF should reduce activities, and most forms of active exercise should be avoided (F).	11	31.4	9	23.0	0.1972
<b>Q5.</b> If the patient presents increases of more than 1,400 kg in 48 hours without other HF symptoms, this weight gain should not be considered (F).	32	91.4	39	100	0.0620
<b>Q6.</b> The globular abdomen may indicate fluid retention due to worsening of HF (T).	32	91.4	34	87.2	0.5567
<b>Q7.</b> If the patient takes his/her medications correctly and follows the proper guidelines regarding the suggested "lifestyle", he/she may cure their HF (F).	31	88.6	36	92.3	0.5835
<b>Q8.</b> If the patient sleeps with more than one pillow at night to avoid feeling short of breath, it will not mean that his/her HF state has worsened (F).	18	51.4	25	64.1	0.2699
<b>Q9.</b> If a patient wakes up at night with difficulty breathing, and this difficulty is relieved when getting out of bed and walking, this does not mean that the condition of the IC has worsened (F).	16	45.7	28	71.8	0.0225
<b>Q10.</b> Processed lean meats are an acceptable food choice as part of the patient's diet (F).	7	20.0	23	60.0	0.0007
<b>Q11.</b> Once IC signs disappear, daily (patient) weighing is no longer required (F).	29	82.9	29	74.4	0.3753

<b>Q12.</b> Daily weight control should be compared to the previous day's weight, not the patient's ideal weight or dry weight (F).	10	28.6	12	30.8	0.0406
<b>Q13.</b> Stable patients can be encouraged to maintain their sexual activity by making the necessary adjustments to avoid overexertion and the onset of symptoms (T).	33	94.34	38	97.4	0.4927
<b>Q14.</b> Patients with HF should be advised to use nitrates, and sildenafil can only be used 24 hours after the suspension of nitrate (V).	20	57.1	26	66.7	0.3990
<b>Q15.</b> Correct use of medications and adherence to measures to control diet, weight and water intake may prevent crises of decompensation (V).	34	97.1	39	100	0.2879

**Source:** Research data, 2016.

The highest mean of correct answers index per question was 75.3, which was observed in scenario B, while the mean index of correct answers per question in scenario A was equal to 69.1. In the comparison between groups using the Mann-Whitney test, there was no statistical evidence that the groups had differences in the number of correct answers. The *p*-values of the tests of comparison of the research scenarios considering the variables age, time of professional work and institution were 0.283, 0.071 and 0.534, respectively; these results show evidence that at the 95% confidence interval level, there were no significant differences between the professionals of the two institutions for these variables.

## DISCUSSION

Checking nurses' knowledge about heart failure is of paramount importance because the prevalence and incidence of the disease has been increasing significantly, despite advances in clinical management. In addition, this investigation allows for the identification of possible gaps in the management of patient care, especially in the hospital environment, to reduce the unfavorable outcomes of the disease.

This study revealed that nurses' knowledge about heart failure was satisfactory in scenario B and unsatisfactory in scenario A ( $\geq 70\%$  and  $\leq 70\%$ , respectively). The questions with scores of correct answers above 90% of the sample in the two scenarios were related to fluid intake, weight control, sexual activity and adherence to therapy instituted with the purpose of avoiding crises of disease decompensation.

As observed in the study, a similar result was found in a sample of 51 nurses from two general hospitals in Rio Grande do Sul state, Brazil, where it was observed that the basic knowledge questions involving the control of heart failure presented higher correct answer indices among the participants.<sup>(8)</sup>

In scenario B, the general hospital, correct answer indices by nurses above 90% were observed for questions related to diet restrictions (Q2) and the absence of a cure for the disease, even with the follow-up of drug treatment and changes in lifestyle (Q7). In scenario A, a hospital specialized in cardiology, the indices obtained for these

variables, although not reaching 90%, were above 80%, revealing satisfactory knowledge among the nurses.

Following the same line of reasoning, for the sign of increased abdominal volume as indicative of the worsening of heart failure (Q6), the nurses at the specialized hospital presented a score of over 90%, while those in the general hospital had scores between 80% and 90%.

In the general hospital, satisfactory correct answer indices (above 70%) were still observed for questions related to nocturnal dyspnea (Q9) and daily patient weighing (Q11). In the specialized hospital, questions that also reached satisfactory indices covered the common symptomatology in cases of advanced heart failure, such as cough, nausea and loss of appetite (Q3) and daily patient weighing (Q11).

However, unsatisfactory indices of correct answers (<70% of nurses), but involving questions that were adequately answered by more than 50% of the nurses, involved aspects concerning the use of pillows during sleep (Q8) and nitrates (Q14) in the two scenarios studied and regarding the common symptomatology of heart failure (Q3) and processed meat consumption (Q10), though only among general hospital nurses. It should be noted that for Q10, only 20% of the nurses in the specialized hospital responded adequately, revealing a very low index of correct answers, significantly different from the percentage of nurses in the general hospital who answered the question correctly (60%). Similarly, a low percentage of correct answers was evidenced in the specialized hospital for the question concerning nocturnal dyspnea (Q9), which was significantly different from that found in the general hospital, which was satisfactory (> 70%).

Concerning these issues, data in the literature note that dyspnea, fatigue, lower limb edema, nocturnal paroxysmal dyspnea, orthopnea and jugular venous distention are indicated as the main signs and symptoms of hospitalized patients with clinical decompensation.<sup>(9)</sup>

There was a need to deepen the nurses' knowledge regarding the avoidance of processed foods due to their high sodium content, which is responsible for the activation of the renin angiotensin system, increasing fluid retention, which can lead to cardiac hypertrophy. In addition, small, light meals and no added salt should be encouraged in ready-to-eat foods, as should avoiding industrialized, canned foods and cold meats, which are high in sodium.<sup>(10)</sup>

Particular attention is drawn to the low percentage of correct answers obtained among the nurses of the two scenarios studied for the variables involving physical activity (Q4) and care with daily weight control (Q12). For (Q12), the indices were low and significantly different among the groups, with a lower mean in the hospital that provides specialized care.

These data lead us to reflections about the signs and symptoms of heart failure, such as dyspnea and fatigue, which make the patient unable to perform physical activity. However, evidence in the literature demonstrates that the practice of physical activity contributes to improvements in functional capacity and to the development of autonomic function in muscles and improved quality of life. Thus, patients in stable clinical condition should be encouraged to perform physical activities considered to be



of low intensity, such as walking and stretching, after a physical evaluation because prolonged rest or physical inactivity may lead to skeletal muscle hypertrophy.<sup>(11,12)</sup>

It is important to note that fasting weight control should be performed at the same time daily and should be compared to dry weight. Sudden gains of 2 kg over three days are signs of water retention.<sup>(13,14)</sup> In addition, the control of water retention also extends to the amount of water that can be ingested by the patient because the patient's clinical condition makes it difficult to eliminate fluids as a result of the increase in antidiuretic hormone production. Therefore, the recommendation for fluid consumption for symptomatic patients is from 1,000 to 1,500 ml/day.<sup>(14,15)</sup>

In this study, nurses presented unsatisfactory knowledge regarding the use of sildenafil, a medication used to treat pulmonary hypertension. The use of sildenafil requires care because it has vasodilator action and can be used only 24 hours after the suspension of nitrates, which are also vasodilators. The combined administration of these two drugs can reduce blood pressure and may lead to hypotension and, consequently, shock.<sup>(16)</sup> Therefore, it is necessary for the nurse to be aware of the main drugs used in the pharmacological management of heart failure to guide the possibility of side effects, minimizing possible crises of decompensation due to poor drug administration.

An American study with 90 nurses found unsatisfactory knowledge on the topics related to the use of drug therapies, weight monitoring and recognition of signs and symptoms of clinical decompensation. This study indicated that gaps in the knowledge of nurses about the principles of heart failure can lead to insufficient patient education, leading to poor management of self-care and new hospital readmissions.<sup>(17)</sup>

Of the 15 items present in the Q-NKHF, eight questions were adequately answered by more than 70% of the nurses in the two scenarios surveyed. Considering the set of correct answers in each scenario, the mean indices were 75.3% in the general hospital and 69.1% in the specialized hospital. Although scenario A is a specialized service of cardiology, one of the factors that may have contributed to the lower index of correct answers is that scenario B is a high-complexity and large-scale teaching hospital that offers education services in health, a mode of education not available in scenario A.

Thus, the implementation of a permanent education service is relevant to identify gaps in the knowledge about heart failure and the possible fragility in the assistance offered to potentiate the clinical reasoning and the development of nursing care systematization through the nursing process, an essential technological tool for the practice of comprehensive and humanized care.

In this respect, nurses are presumed to have sufficient technical competence and ability to provide quality care in the proposed clinical and therapeutic management of heart failure, including in their ability to identify the signs and symptoms of decompensation, to guide and implement nursing interventions when necessary to reduce and minimize possible complications in functional capacity and in the activities of daily living, consolidating assistance for the profession based on scientific knowledge rather than on empirical care.

In this sense, this study opens new perspectives for research in the nursing area, such as research based on the proposition of educational strategies aimed at the nurses interviewed, with the purpose of favoring learning in aspects related to heart failure

that were found to be unsatisfactory and of performing a new post-intervention investigation to evaluate the acquisitions of the studied group.

Thus, the professional is encouraged to delve deeper into the subject because heart failure is a growing problem in public health that requires clinical practice and quality care by the nurse that is based on the best scientific evidence for health. As a limitation of this study, the sample size could have been larger; however, to meet the proposed objectives, only the nurses who provided direct assistance to the patients with heart failure were invited to participate in the study.

## CONCLUSION

The results allow us to conclude that nurses' knowledge about heart failure was satisfactory in the general hospital and unsatisfactory in the hospital specialized in cardiology. There was a greater percentage of correct answers at the general hospital, especially with regard to basic care of the disease. With regard to the recognition of signs of clinical worsening of heart failure and drug therapy, nurses presented some difficulties, as observed by the lower indices of correct answers.

The data obtained helped to identify subjects requiring educational intervention among the participants investigated. In this way, through continuing education, updates on the pathophysiological process and measures of pharmacological and non-pharmacological adherence to the treatment of heart failure and the elaboration of a care protocol to guide nurses' approaches to this population are sought to improve care and to reduce morbidity and mortality rates and disease complications.

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