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Original Article

Heart failure: assessment and comparison of disease knowledge in outpatient vs. hospitalized patients

Insuficiência cardíaca: avaliação e comparação do conhecimento da doença em pacientes ambulatoriais x hospitalizados

Insuficiencia cardíaca: evaluación y comparación del conocimiento de la enfermedad en pacientes ambulatorios versus pacientes hospitalizados

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Abstract: Objective: to evaluate and compare the knowledge of the disease among patients with heart failure (HF) in a hospital specialized in cardiology. **Method:** this is a cross-sectional study. A validated questionnaire about knowledge of disease was applied, as well as sociodemographic data and a cognitive assessment questionnaire. The patients were divided into two groups, those of the HF outpatient clinic (OC) and those hospitalized in the inpatient units (IU). Patients who scored between 51-57 points (score) had a great knowledge rating. **Results:** the sample was 98 patients, 49 in OC and 49 in IU, mostly male, mean age 62 ± 14 years. In OC, 51% had acceptable level of knowledge and in IU, 55% had poor knowledge. **Conclusion:** the knowledge of HF among outpatients and inpatients was different and suboptimal. Education activities developed by the multiprofessional team can contribute to better knowledge of the disease.

Keywords: Heart Failure; Knowledge; Nursing

Resumo: Objetivo: avaliar e comparar o conhecimento da doença entre os pacientes com Insuficiência Cardíaca (IC) em um hospital especializado em cardiologia. **Método:** trata-se de um estudo transversal. Foi aplicado um questionário de conhecimento da doença validado, além de dados sociodemográficos e um questionário de avaliação cognitiva. Os pacientes foram divididos em dois grupos, os do ambulatório de IC (GA) e os hospitalizados nas unidades de internação clínica (GI). Os pacientes que somaram entre 51-57 pontos (escore) tiveram classificação ótima de conhecimento.

Resultados: a amostra foi de 98 pacientes, 49 no GA e 49 no GI, maioria do sexo masculino, idade média de 62 ± 14 anos. No GA, 51% apresentou nível aceitável de conhecimento e no GI, 55% apresentou pouco conhecimento. **Conclusão:** o

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conhecimento da IC entre pacientes ambulatoriais e internados foram diferentes e subótimos. Atividades de educação desenvolvidas pela equipe multiprofissional podem contribuir para melhor conhecimento da doença.

Descritores: Insuficiência cardíaca; Conhecimento; Enfermagem

Resumen: Objetivo: evaluar y comparar el conocimiento de la enfermedad entre pacientes con insuficiencia cardíaca (IC) en un hospital especializado en cardiología. **Método:** este es un estudio transversal. Se aplicó un cuestionario validado de conocimiento de la enfermedad, así como datos sociodemográficos y un cuestionario de evaluación cognitiva. Los pacientes se dividieron en dos grupos, los de la clínica ambulatoria de IC (CA) y los hospitalizados en las unidades de hospitalización (UH). Los pacientes que obtuvieron entre 51-57 puntos (puntuación) obtuvieron una calificación de conocimiento óptima. **Resultados:** la muestra fue de 98 pacientes, 49 en CA y 49 en UH, en su mayoría hombres, edad media 62 ± 14 años. En CA, el 51% tenía un nivel de conocimiento aceptable y en UH, el 55% tenía poco conocimiento. **Conclusión:** el conocimiento de la IC entre pacientes ambulatorios y pacientes internos fue diferente y subóptimo. Las actividades educativas desarrolladas por el equipo multiprofesional pueden contribuir a un mejor conocimiento de la enfermedad.

Descritores: Insuficiencia Cardíaca; Conocimiento; Enfermería

Introduction

Heart failure (HF) is the final stage of most cardiovascular diseases, and is commonly described as involving heart pump failure and is a disease that is associated with a high hospital expense.¹ Recent figures from the American Heart Association (AHA) showed that approximately 6.5 million Americans over the age of 20 were diagnosed with HF between 2011 and 2014. Projections show that this prevalence will increase by 46% by the year 2030.² In Brazil, patients with acute HF have an in-hospital mortality rate of approximately 13%.³

High hospital readmission rates caused by exacerbation of HF could be minimized through health education strategies. Such strategies include non-pharmacological intervention measures aimed at improving knowledge and self-care of the disease.⁴ In a variety of scenarios (guidance at outpatient clinics, at home, by telephone or bedside in inpatient units), multiprofessional educational interventions have been widely used, seeking to reduce non-adherence to treatment, the high number of hospitalizations and the comorbidities associated with HF.⁵ While, the in-home visit and telephone contact are alternative interventions that have already been established in the literature as being capable of improving these scores.⁶

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This collective effort by the patient and multidisciplinary team can contribute to a better quality of life, or at least to maintaining an adequate health behavior. However, even in hospital centers of excellence there are gaps in terms of the prescription and guidance on water and salt restrictions, weight control, early recognition of signs and symptoms of decompensation of the HF, which has a direct impact on the knowledge and adherence to treatment.⁷

Health education can be defined as a process through which healthcare practitioners provide patients with information that will change their health behavior or improve their condition.⁸ Thus, the implementation of education activities combined with optimized pharmacological treatment, seek to reduce hospitalization and readmission rates that have remained high over the years.⁹

However, in the respective hospital scenarios that HF patients are exposed to, such as a specific multidisciplinary outpatient clinic, where guidelines are systematized through defined protocols, and during hospitalization due to disease decompensation, we investigated as per whether there is a difference in the knowledge of the disease among these patients?

From this perspective, this study was designed to evaluate and compare the knowledge of the disease among patients with HF in a hospital specialized in cardiology.

Method

This is a prospective cross-sectional study conducted at the HF outpatient clinic and inpatient units of a hospital specialized in cardiology from November 2015 to April 2016.

The patients were divided into two groups: the outpatient group (OG) and the hospitalization group (HG). We included patients diagnosed with HF, of both genders, older than 18 years of age. In the OG, the patients were receiving follow up care at the institution's HF outpatient clinic and their medical records showed that they had appeared for at least two appointments. The HG patients were hospitalized in the inpatient units and had been diagnosed with HF at least one year from admission.

Hospitalized patients undergoing outpatient follow-up and / or under unstable clinical condition at the time of study allocation were excluded. In addition, patients with neurological sequelae or cognitive impairment that were unable to answer the questionnaires were also excluded.

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Patients were randomly invited to participate in the study individually by the researchers, from Monday to Friday for the HG and once a week at the HF outpatient clinic.

After signing the Informed Consent Form (ICF), clinical and demographic data were collected, including the assessment of the functional class based on the standards of the New York Heart Association (NYHA), then the Mini-Mental State (MMSE) cognitive assessment questionnaire was applied¹⁰ and the knowledge questionnaire for HF patients.¹¹

NYHA functional classification was used to describe the severity of the HF symptoms. It is based on the patient's ability to tolerate exercise and ranges from the absence of symptoms to the presence of symptoms at rest (I-IV). Class I patients are asymptomatic, class II patients have mild symptoms, class III have marked limitations in activity due to symptoms, and class IV have severe limitations.⁵

The MMSE is a widely used cognitive assessment scale, validated and adapted to the Brazilian population and stratified into several domains, as this instrument quantifies the questions by designating a score that can vary between 0 - 30 points. The cutoff point for cognitive decline is 23/24 points. The study used this scale to control a possible confounding factor in the knowledge analysis.¹²

The knowledge assessment questionnaire was constructed and validated by researchers from the Universidade do Estado de Santa Catarina (UDESC),¹¹ consisting of 19 questions, containing four multiple choice alternatives, with one being the correct answer; one incomplete; one wrong and one alternative providing the "I don't know" as an option.

The scoring of the questionnaire is performed as follows:

- "0" for selecting the incorrect answer and I don't know
- "1" point for the incomplete alternative
- "3" points for the correct alternative

Following this criterion, the maximum score is between 51 - 57 points, classified as excellent knowledge. The minimum classification based on points (<17) is classified as insufficient knowledge.

Table 1 - Classification of patient's level of knowledge according to the score.

Sum of the Scores	%	Classification
51 – 57	90 - 100	Excellent
40 – 50	70 - 89	Good

29 – 39	50 - 69	Acceptable
17 – 28	30 - 49	Little knowledge
< 17	<30	Insufficient Knowledge

Data were analyzed using descriptive and analytical statistics using the Statistical Package for Social Sciences (SPSS) version 22.0. Continuous variables were expressed as mean and standard deviation for those with normal distribution or median and percentiles 25-75 for atypical distribution.

Categorical variables were described as absolute numbers (n) and percentages (%). Comparisons between groups were performed using the t-test for independent data of continuous variables and the chi-square test or Fisher's exact test for categorical values. For analysis of the variables “education” and “evaluation of cognitive function” multiple linear regressions were performed.

The project was approved by the institution’s Research Ethics Committee, under number CAAE 5123/15, on October 1, 2015 in accordance with Resolution 466/2012 of the National Health Council (*Conselho Nacional de Saúde*).

Results

In total 98 patients were analyzed, 49 in the OG and 49 in the HG, while two patients refused to participate. The majority was of the male gender, mean age 62 ± 14 years. The functional class was stratified based on the NYHA standard. In the OG, class I was more prevalent, corresponding to 47% of the sample, while 61% of HG were in functional class III. Regarding cognitive assessment, 76 patients in both groups had scores lower than the cutoff point (<24 points), however there was no statistical difference ($P = 0.146$). The other characteristics are shown in Table 1.

Table 1 - Demographic and clinical characteristics of outpatients and inpatients. Porto Alegre, RS, 2016.

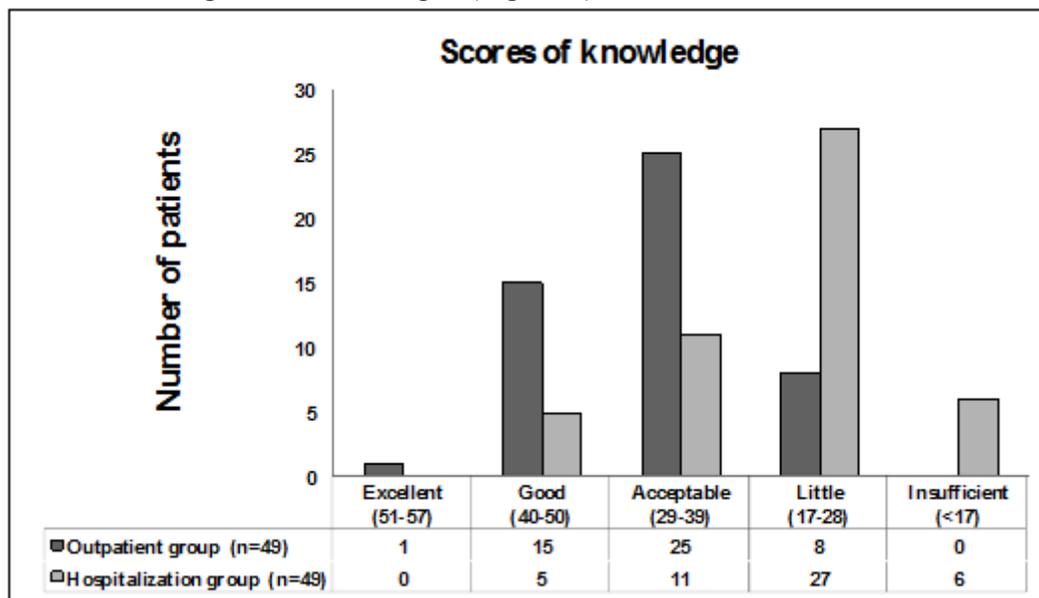
Characteristics	Outpatient Group n=49	Hospitalization Group n=49	P
Age, years*	57±13	66±13	0.002
Gender, male [†]	37 (75)	32 (65)	0.269

Education (years of education)[†]			0.360
≤ 8	34 (69)	38 (78)	
> 8	15 (31)	11 (22)	
Time since diagnosis, years[†]			0.691
1-2	7 (14)	5 (10)	
2-5	10 (20)	13 (26)	
> 5	32 (65)	31 (63)	
Functional Class[†]			<0.001
I	23 (47)	0 (0)	
II	12 (24)	8 (16)	
III	14 (29)	30 (61)	
IV	0 (0)	11 (22)	
Ejection Fraction of the LV (%)	45±20	42±17	0.489
Cognitive assessment (<24 points) [†]	35 (71)	41 (84)	0.146
Comorbidities[†]			
Systemic Arterial Hypertension (SAH)	35 (71)	41 (84)	0.146
Diabetes Mellitus (DM)	18 (37)	23 (47)	0.306
Heart Attack	14 (29)	12 (24)	0.647
Dyslipidemia	12 (24)	18 (24)	0.188
Coronary Artery Disease	11 (22)	12 (24)	0.812
Atrial Fibrillation	8 (16)	8 (16)	1.000
Stroke	7 (14)	5 (10)	0.538
Obesity	6 (12)	7 (14)	0.766

Depression	6 (12)	9 (18)	0.400
Renal Impairment	5 (10)	8 (16)	0.372
Chronic Obstructive Pulmonary Disease	2 (4)	6 (12)	0.140

* Mean ± standard deviation; † n (%); Pearson's χ^2 Test (Chi-square). LV: Left Ventricle Source: Data from research, 2016

In the assessment of knowledge of the disease, the OG score was considered “acceptable” in the majority of the patients included (51%), while in contrast, in the HG, 55% of the sample were scored as having "little knowledge" (Figure 1).



Pearson's χ^2 Test (Chi-square). Source: Data from research, 2016

Figure 1 - Scores for knowledge of disease in HF patients. Porto Alegre, RS, 2016.

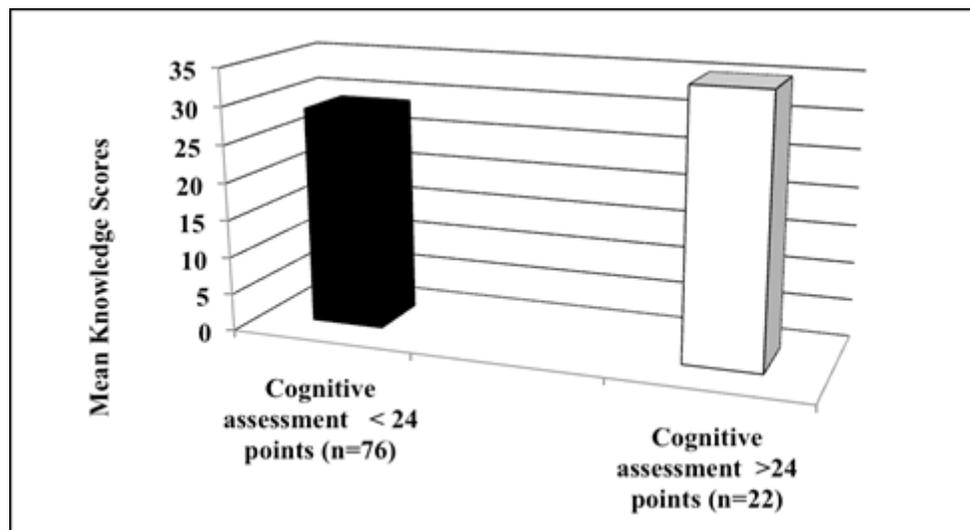
Table 2 explores the results of patients stratified by education and the scores for the knowledge of the disease, regardless of the group they were allocated to. In the group ≤ 8 years the “little knowledge” score had a prevalence of 43%, while in the group > 8 years 54% of the sample was classified as “good”.

Table 2 - Scores on the knowledge of disease, according to years of education. Porto Alegre, RS, 2016.

Score	Education (< 8 Years of education) n=72	Education (> 8 Years of education) n=26
Excellent (> 50)	0 (0)	1 (4)
Good (40- 50)	6 (8)	14 (54)
Acceptable (29- 39)	29 (40)	7 (27)
Little knowledge (17 - 28)	31 (43)	4 (15)
Insufficient (<17)	6 (8)	0 (0)
P	<0.001	

* n (%); Pearson's χ^2 Test (Chi-square).

Patients with cognitive decline (<24 points) assessed by the MMSE questionnaire had a mean of 29 ± 10 points in the HF knowledge score. Those with scores ≥ 24 , the mean was 35 ± 8 points ($P = 0.010$). Data in Figure 2.



t-Test: Source: Data from research, 2016

Figure 2 - Scores for knowledge of disease in HF patients according to cognitive assessment. Porto Alegre, RS, 2016.

Multiple linear regressions were used to verify whether the variables “education” and “cognitive assessment” are related to the “study group”. The analysis resulted in a statistically significant model [$F(3.94) = 27.499$; $P < 0.001$; $R^2 = 0.471$]. The “Education” ($\beta = 0.454$; $t = 6.018$; $P < 0.001$) and “cognitive assessment” ($\beta = 0.169$; $t = 2.232$; $P < 0.028$) are predictors of the “study group”. The equation that describes this relationship is: $\text{study group} = 20.331 + 4.169 (\text{cognitive assessment}) + 10.553 (\text{years of education})$.

Discussion

This study assessed and compared the knowledge of patients with HF about their disease in a cardiology hospital. Patients who were undergoing followed up care at the HF outpatient clinic were shown to have better knowledge than those who were hospitalized due to disease decompensation. These results confirm the data in the literature that follow-up and guidance by a specialized cardiology outpatient team provides better performance regarding the knowledge of HF and self-care.¹³

According to the study, which reviewed the education profiles for patients with HF, the educational process can occur during hospitalization, outpatient activities or at home, being worked on separately or in association; whereby, due to the focus being on minimizing the exacerbation of the disease and the readmission rates, the quality of life and self-care improve. However, data from the literature indicate that there are no definitive studies to ensure the ideal setting to perform educational activities in patients with HF.¹⁴

Results from another study of similar population and design to this study, while having a smaller sample, showed that 40% of the patients do not know what HF is. In addition, only one third of this sample had heard of the disease before diagnosis.¹⁵ These results become more robust when assessing elderly patients with a low level of education, in which it was found that these variables might negatively contribute to the knowledge of the disease, as well as self-care behaviors and quality of life.¹⁶⁻¹⁷

In the present study, most patients had a length of education ≤ 8 years. When compared to those with higher levels of education (> 8 years of study), they showed better knowledge scores. Along the same lines, patients with cognitive decline, regardless of the group they were allocated to, showed a significantly worse knowledge score.

Low education and low income are risk and / or aggravating factors for decompensating HF as well as for hospital readmission.¹⁸ Nevertheless, systematic educational intervention strategies in nursing are effective in reducing these outcomes in the context of HF.¹⁹ For example, a randomized clinical trial conducted with patients hospitalized for decompensated heart failure and diagnosed with mild cognitive impairment had significantly increased disease knowledge scores in the intervention group within 30 days of discharge (Intervention = 11.27 to 11.85 vs. Control = 11.21 to 11.22; $P < 0.001$).²⁰

In another study comparing patients who received an intervention with systematic and individualized strategies versus patients who received usual guidance, a tendency was shown that the model of health education promotion applied is effective in alleviating the symptoms of depression, improving self-monitoring and improving the quality of life of elderly patients with CHF.²¹ However, there are gaps in this scenario, which does not establish the intensity, frequency and duration of these interventions.

In the multivariate analysis, only the variables “education” and “cognitive assessment” maintained the association with the study group. In comparison, a study that assessed the behavioral aspects of HF (adherence, lifestyle, diet control), only fluid restriction and weight control were related to more knowledge of the disease.²²

One noteworthy aspect that is linked to cognitive impairment is the older age of patients in the hospitalization group. In the Brazilian records of those with HF, published in Brazil,³ the results indicate that the population admitted to hospitals due to the decompensation of the disease is predominantly elderly in the south and southeast regions of the country. Associated with the lower level of knowledge of the disease in this group, there was also a high percentage of patients with hypertension and DM, which is similar to those found in the Brazilian records of HF.

Considering this scenario of elderly patients, who present cognitive impairment, and multiple comorbidities that leads to polypharmacy, there is a need for nursing management with different educational strategies that address all these factors.

The patient with HF should be considered complex and requires an individualized care plan, including family and caregivers as part of the process, regardless of where they will be seen.

Conclusion

The results of the present study revealed that the HF knowledge scores among patients in a specialized outpatient clinic were higher than those admitted for decompensation. Although the knowledge was suboptimal in the outpatient group, it is suggested that the educational activities developed by the multiprofessional team be systematic and continuous. In this manner, the possibility of improved knowledge of the disease becomes more promising. The analysis of the profile of the study population at both educational and cognitive levels was significantly different when the knowledge scores of the disease were assessed.

The focus on nursing interventions aimed at behavioral changes in self-care, adherence and knowledge should be present in the clinical practice of the nurses, regardless of the place of practice. During hospitalization, patients should be approached regarding knowledge of the disease, guidance for self-care and preparation for discharge after the stabilization of the acute condition.

This study had certain noteworthy limitations. It was a cross-sectional study with a small number of patients, whereby we suggest that further research be conducted with a more robust design in order to suggest effective interventions for clinical practice. In addition, upon applying the questionnaire to the hospitalized patients, certain limitations of the instrument in this population were identified. The questionnaire becomes lengthy for patients with an impaired clinical condition, especially for the more symptomatic patients, in the NYHA functional class III and IV.

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