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Original

Therapeutic pathway of people diagnosed with heart failure

Percurso terapêutico de pessoas diagnosticadas com insuficiência cardíaca

Recorrido terapéutico de personas diagnosticadas con insuficiencia cardíaca

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Abstract

Objective: To identify the therapeutic pathway of people with heart failure in a health region of the state of Ceará, Brazil. **Methods:** This was a cross-sectional, descriptive, documentary study with a quantitative approach, conducted through a retrospective analysis of the medical records of people diagnosed with heart failure who received care at a referral hospital in the municipality of Iguatu, Ceará, Brazil, between 2018 and 2021. A total of 427 medical records were analyzed, excluding those that were unavailable or lacked a recorded diagnosis of heart failure. **Results:** The therapeutic pathway identified the emergency department as the main point of entry for the care of people with heart failure (91.1%), whereas the Basic Health Unit accounted for 1.4% of the initial consultations. Most participants were male (58.5%), with a mean age of 72 years (SD = 12.67). Among the modifiable risk factors, systemic arterial hypertension (47.5%) and diabetes mellitus (21.7%) were the most prevalent. **Conclusion:** The therapeutic pathway of people with heart failure was characterized by the hospital emergency department as the main point of entry for care, whereas Primary Health Care represented the first point of care in only a small proportion of cases. These findings may support strategies to improve the organization of the Health Care Network and the care provided to people with heart failure.

Descriptors: Heart Failure. Health Services Accessibility. Continuity of Patient Care. Health Services

What is already known on this?

The therapeutic pathway refers to the trajectory of individuals through health care networks and social support networks in search of care, highlighting the factors that influence the therapeutic process.

What this study adds?

This study identifies the therapeutic pathway of people with heart failure, demonstrating that the hospital emergency department is the main point of entry for care.

Resumo

Objetivo: Identificar o percurso terapêutico de pessoas com insuficiência cardíaca em uma região de saúde cearense. **Métodos:** Estudo transversal, descritivo, documental, com abordagem quantitativa, realizado mediante análise retrospectiva de prontuários de pessoas com diagnóstico de insuficiência cardíaca atendidas em hospital de referência no município de Iguatu, Ceará, referentes ao

período de 2018 a 2021. Foram analisados 427 prontuários, excluindo-se aqueles indisponíveis ou sem registro do diagnóstico de insuficiência cardíaca. **Resultados:** O percurso terapêutico evidenciou a emergência como principal porta de entrada para o atendimento das pessoas com insuficiência cardíaca (91,1%), enquanto a Unidade Básica de Saúde representou 1,4% dos primeiros atendimentos. Predominaram pessoas do sexo masculino (58,5%), com média de idade de 72 anos (DP = 12,67). Entre os fatores de risco modificáveis, destacaram-se a hipertensão arterial sistêmica (47,5%) e o diabetes mellitus (21,7%). **Conclusão**: O percurso terapêutico das pessoas com insuficiência cardíaca caracterizou-se pela emergência hospitalar como principal porta de entrada para o atendimento, enquanto a Atenção Primária à Saúde representou o primeiro ponto de atendimento em pequena proporção dos casos. Esses achados podem subsidiar estratégias para o aprimoramento da organização da Rede de Atenção à Saúde e do cuidado às pessoas com insuficiência cardíaca.
Descritores: Insuficiência cardíaca. Acesso aos serviços de saúde. Continuidade da assistência ao paciente. Serviços de saúde.

Resumen
Objetivo: Identificar el recorrido terapéutico de personas con insuficiencia cardíaca en una región de salud del estado de Ceará. **Métodos:** Estudio transversal, descriptivo, documental, con enfoque cuantitativo, realizado mediante el análisis retrospectivo de historias clínicas de personas con diagnóstico de insuficiencia cardíaca atendidas en un hospital de referencia del municipio de Iguatu, Ceará, correspondientes al período de 2018 a 2021. Se analizaron 427 historias clínicas, excluyéndose aquellas no disponibles o sin registro del diagnóstico de insuficiencia cardíaca. **Resultados:** El recorrido terapéutico evidenció al servicio de urgencias como la principal puerta de entrada para la atención de las personas con insuficiencia cardíaca (91,1%), mientras que la Unidad Básica de Salud representó el 1,4% de las primeras atenciones. Predominaron personas del sexo masculino (58,5%), con una edad media de 72 años (DE = 12,67). Entre los factores de riesgo modificables, destacaron la hipertensión arterial sistémica (47,5%) y la diabetes mellitus (21,7%). **Conclusión:** El recorrido terapéutico de las personas con insuficiencia cardíaca se caracterizó por el servicio de urgencias hospitalarias como la principal puerta de entrada para la atención, mientras que la Atención Primaria de Salud representó el primer punto de atención en una pequeña proporción de los casos. Estos hallazgos pueden respaldar estrategias para mejorar la organización de la Red de Atención de Salud y la atención de las personas con insuficiencia cardíaca.
Descriptores: Insuficiencia Cardíaca. Accesibilidad a los Servicios de Salud. Continuidad de la Atención al Paciente. Servicios de Salud

INTRODUCTION

The demographic transition observed in Brazil, characterized by population aging, has had important impacts on people's health. The disease profile affecting the population has changed, but chronic noncommunicable diseases still predominantly affect older adults, requiring intensified action within the Health Care Network and exerting a substantial impact on the Brazilian Unified Health System (SUS).[1,2]

Cardiovascular diseases (CVDs) have become the leading cause of mortality worldwide, causing increased morbidity, premature mortality, and disabilities, in addition to health-related costs and reduced

quality of life. Risk factors for the development of CVDs include arterial hypertension, diabetes, dyslipidemia, obesity, physical inactivity, unhealthy diet, stress, and family history.[3,4]

Heart failure (HF) stands out, a complex cardiovascular disease characterized as a clinical syndrome responsible for substantial rates of hospitalization and morbidity.[5] It frequently represents the final stage of several comorbidities, such as systemic arterial hypertension (SAH), diabetes mellitus (DM), and coronary artery disease, and may present in an acute or chronic form.[6,7]

Despite advances in the management of HF over recent decades, this disease still maintains a high rate of cases. According to data from the Department of Informatics of the Brazilian Unified Health System (DATASUS), 205,278 hospitalizations were authorized in the SUS in 2024 due to this condition, with 24,312 deaths from heart failure recorded during the same period.[8] Furthermore, people with this disease undergo major changes in their lifestyle, as a consequence of the limitations imposed by the signs and symptoms of the disease.

Therefore, identifying the therapeutic pathway of people with heart failure in their search for care is of particular relevance. In this context, understanding this pathway is essential because it may reveal both personal choices and the structural factors that influence the therapeutic process.

The therapeutic pathway comprises the trajectory of individuals across different systems of care, considering how health services organize and deliver care, as well as how they respond to individuals' health needs. Moreover, it constitutes an important indicator of the quality of care, as it enables an understanding of the organization of health care networks and social support networks in the search for care.[9]

Knowledge of the therapeutic pathway of people seeking health care contributes to a better understanding of care-seeking behavior and the utilization of health services.[10] However, studies describing the therapeutic pathway of people with heart failure in decentralized health regions remain scarce, particularly within the context of the organization of the Health Care Network, limiting the understanding of access to, continuity of, and coordination of care. Given this gap, this study aimed to identify the therapeutic pathway of people diagnosed with heart failure in a decentralized health region of the state of Ceará, Brazil.

METHODS

A cross-sectional, descriptive, documentary study with a quantitative approach, conducted in the municipality of Iguatu, located in the south-central region of the state of Ceará, Brazil. According to data from the Brazilian Institute of Geography and Statistics (IBGE) for 2021, the municipality had an estimated population of 103,633 inhabitants and a public health care network comprising two hospitals, in addition to 36 Basic Health Units (BHU), an Emergency Care Unit (ECU), and specialized outpatient clinics.[11] This study was reported in accordance with the recommendations of the Strengthening the Reporting of Observational Studies in Epidemiology (STROBE) statement.

Data were collected from April to June 2022 through a retrospective review of the medical records of people with heart failure covering the period from 2018 to 2021 at a referral hospital for the diagnosis and follow-up of HF located in the municipality of Iguatu. The institution provides secondary health care services through the SUS and serves as the referral center for the population of 10 municipalities in the state of Ceará (Acopiara, Cariús, Catarina, Piquet Carneiro, Iguatu, Irapuan Pinheiro, Jucás, Mombaça, Quixelô, and Saboeiro), corresponding to approximately 400,000 inhabitants served by the hospital unit.[12]

Initially, a visit was made to the regional referral hospital for the care of people with heart failure located in Iguatu, Ceará, in order to understand and analyze the line of care of the disease. Subsequently, hospitalizations for heart failure recorded at the institution were identified.

After a list containing the names, ages, medical record numbers, and admission dates of individuals hospitalized during the study period had been made available, the corresponding medical records were reviewed to extract the information of interest. Variables related to the location of the first health care encounter, chief complaint, referring health care unit, and clinical outcome were recorded using a data collection instrument adapted for this study.

Medical records of individuals who sought care or were hospitalized at the study hospital and had a documented medical diagnosis of heart failure were included. The unit of analysis consisted of these medical records. A total of 463 hospitalization records were identified for the period from 2018 to 2021, of which 36 were excluded because the medical records were unavailable in the institution's archive or did not contain a recorded diagnosis of heart failure, resulting in 427 medical records included in the analysis.

It should be noted that some patients had more than one hospitalization during the study period; in these cases, each hospitalization record was considered an independent unit of analysis, as it represented a distinct episode of care.

At this stage, secondary data were extracted from the medical records using a data collection form developed by Melo[13] and adapted for the objectives of this study through the inclusion of variables related to the therapeutic pathway, based on the Rehabilitation Guidelines for People with Heart Failure issued by the Brazilian Ministry of Health (MH).[14]

The sections analyzed in the medical records included emergency department admission records (the point of entry for people with heart failure), hospital discharge summaries, and transfer records when advanced care was required. The following variables were collected: sociodemographic variables (age and sex); clinical variables (chief complaint, modifiable and non-modifiable risk factors, and clinical outcome); and variables related to the therapeutic pathway (location of the first health care encounter, referrals, and transfers between health care services).

A pilot test was conducted using 22 medical records of individuals admitted to the hospital during January and February 2022 to assess the need for modifications and adjustments to the data collection instrument. These medical records were not included in the final study sample. In the final version of the instrument, variables related to place of birth, municipality of residence, location of the first health care encounter, diagnosis, complaints, pacemaker use, referral to a rehabilitation service, and identification of the destination health care unit were added.

The data were organized and entered into a Microsoft® Office Excel 365 spreadsheet for processing and analysis. Descriptive statistics were performed using absolute and relative frequencies for categorical variables and measures of central tendency and dispersion (mean, standard deviation, minimum, and maximum values) for numerical variables. The results are presented in tables.

The study was approved under opinion number 5,312,353, by the Research Ethics Committee (CEP) of the Regional University of Cariri, ensuring compliance with the recommendations of Resolution No. 466/12, regarding research developed with human beings.[15]

RESULTS

A total of 427 medical records were analyzed, from which it was possible to identify the therapeutic pathway of people with heart failure (HF) within the health care service. The medical records were distributed as follows: 160 medical records in 2018, 130 documents in 2019, 76 in 2020, and 61 medical records in 2021. From these, information regarding the risk profile and clinical characteristics of people with HF was obtained (Table 1).

Table 1. Sociodemographic and clinical characteristics of patients admitted with heart failure. Iguatu, Ceará, Brazil, 2022 (n = 427).

VARIABLES	n	%
Age group		
38 to 49 years	18	4.2
50 to 59 years	69	16.2
60 to 69 years	74	17.3
70 to 79 years	129	30.2
80 to 89 years	114	26.7
90 to 99 years	23	5.4
Reasons for hospitalization*		
Dyspnea	392	91.8
Lower-limb edema	167	39.1
Cough	96	22.4
Oxygen desaturation	54	12.6
Hypotension	38	8.8
Anasarca	37	8.6
Decreased level of consciousness	34	7.9
Diaphoresis	30	7.0

Others	206	47.8
Non-modifiable risk factors*		
Age over 65 years	304	71.1
Previous history of chronic disease	298	69.7
Male sex	250	58.5
Age less than or equal to 65 years	123	28.8
Pacemaker use	9	2.1
Comorbidities and modifiable risk factors*		
Systemic arterial hypertension	203	47.5
Diabetes mellitus	93	21.7
Smoking	31	7.2
Obesity	17	3.9
Alcohol consumption	9	2.1
Fibrillation	6	1.4
Dyslipidemia	3	0.7
Others	212	49.6

VARIABLES	Mean	SD	Minimum	Maximum
Age (years)	72	12.67	38	99
Number of non-modifiable risk factors	2.31	0.68	1	4
Number of modifiable risk factors	1.32	1.02	0	4
Length of hospital stay (days)	6.23	4.13	1	32

Source: Prepared by the authors (2022).

Note: n = absolute frequency; % = relative frequency; SD = standard deviation.

*Each patient could present more than one characteristic simultaneously in the medical record; therefore, percentages exceed 100%.

Male patients (58.5%) and older adults predominated, with a mean age of 72 years (±12.67), particularly those aged 70 to 79 years (Table 1).

Regarding the reasons for hospitalization, dyspnea (91.8%), lower-limb edema (39.1%), cough (22.4%), and oxygen desaturation (12.6%) stood out. The remaining clinical manifestations, grouped under the category "Others" in Table 1, included hypotension, anasarca, decreased level of consciousness, diaphoresis, nausea, chest pain, precordial pain, fever, abdominal pain, cold skin, orthopnea, among others.

Regarding the non-modifiable risk factors, the following stood out: 304 (71.1%) patients with age above 65 years, 298 (69.7%) people with previous history of chronic disease, and 250 (58.5%) of the male sex. Concerning the modifiable risk factors, systemic arterial hypertension was the most prevalent, affecting 203 (47.5%) patients, followed by diabetes mellitus, affecting 93 (21.7%) patients.

The mean age was 72 years, with a standard deviation of 12.67. The mean length of hospital stay was 6.23, with a standard deviation of 4.13, ranging from 1 to 32 days. The analysis of the variables according to year of occurrence is presented in Table 2.

Table 2. Sociodemographic and clinical characteristics of patients admitted with heart failure according to year of occurrence. Iguatu, Ceará, Brazil, 2022.

VARIABLES	YEAR OF OCCURRENCE					
	2018	2019	2020	2021	Total	%
Gender						
Male	101	72	45	32	250	58.5
Female	58	58	31	30	177	41.5
First health care encounter						
Emergency department	152	115	68	54	389	91.1
ECU	5	11	8	8	32	7.5
BHU	2	4	-	-	6	1.4
Additional diagnosis						
Pneumonia	33	27	16	8	84	19.6
Acute pulmonary edema	5	5	2	5	17	4

COPD	9	1	3	3	16	3.7
Pleural effusion	2	1	5	5	13	3
Atrial fibrillation	2	6	1	-	9	2.1
CRF	2	3	1	2	8	1.9
AMI	2	2	1	2	7	1.6
Others	5	5	4	4	18	4.2
Admission to the ICU						
No	119	89	53	36	297	69.6
Yes	40	41	23	26	130	30.4
Discharge status						
Without disability	122	100	54	42	318	74.7
Death	32	25	14	14	85	20.6
Rehabilitation service	5	4	5	6	20	4.7
Referred to a BHU	-	1	-	-	1	0.23

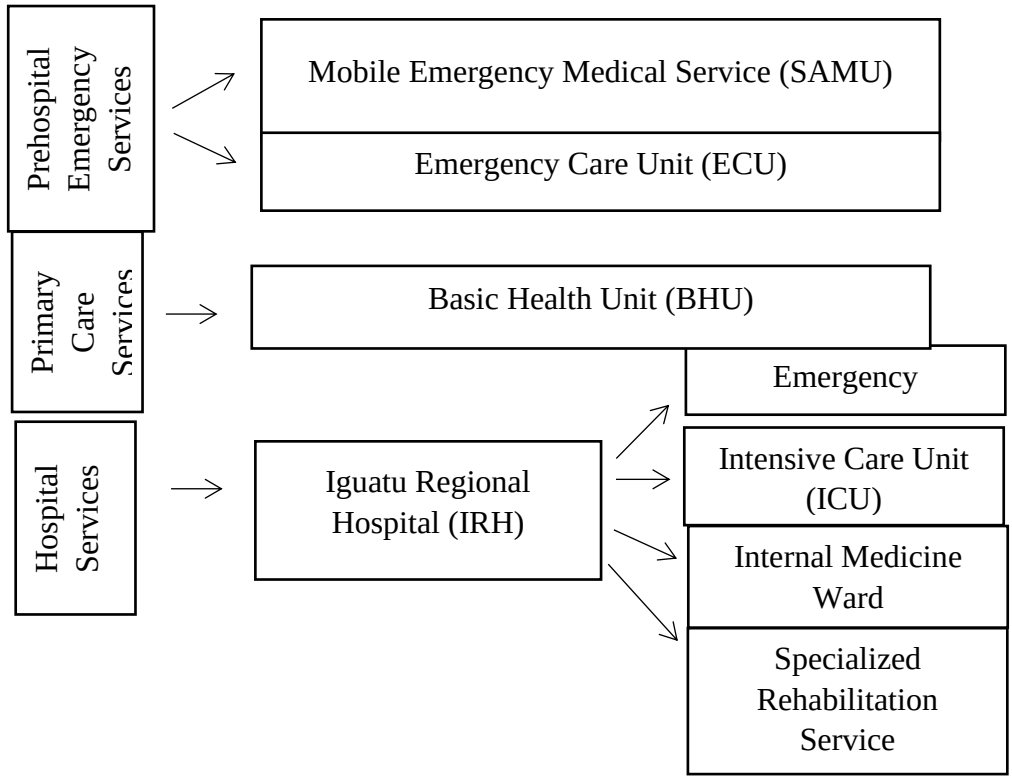
Source: Prepared by the authors (2022).

It was observed that the emergency department was the main point of entry for the care of people with heart failure (91.1%), whereas the Basic Health Unit was infrequently the initial point of care (Table 2).

Most patients presented an additional diagnosis besides heart failure, with pneumonia being the most frequent (19.6%). The remaining diagnoses, grouped under the category "Others", included gastritis, diabetes mellitus, pancreatitis, cirrhosis, liver disease, urinary tract infection, shock, gastrointestinal bleeding, peripheral venous thrombosis, acute coronary syndrome, among others.

Figure 1 presents a schematic representation of the organization of the Health Care Network available in the municipality for the care of people with heart failure during the initial phase of the therapeutic pathway.

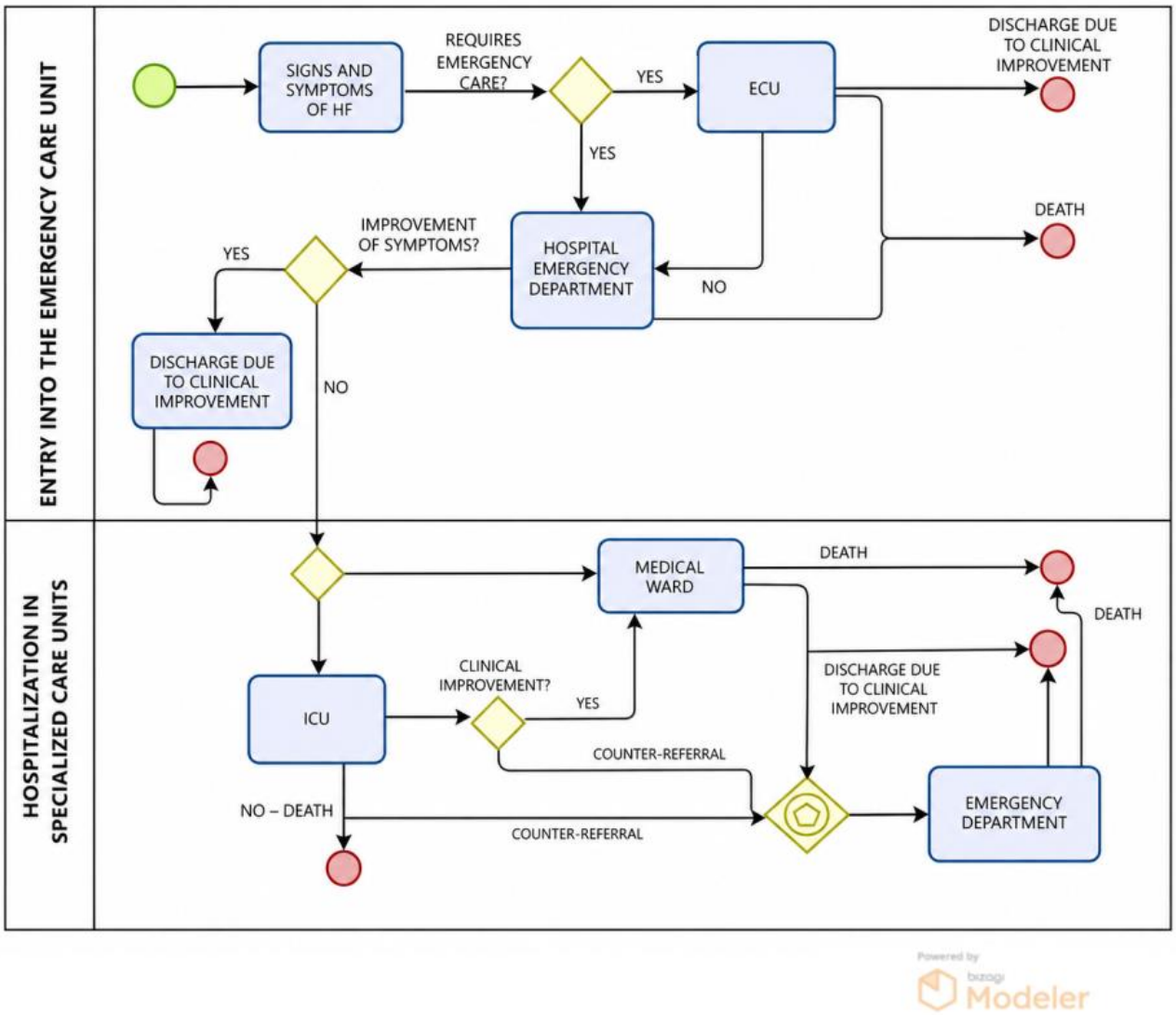
Figure 1. Schematic representation of the organization of the Health Care Network for the care of people with heart failure during the initial phase of the therapeutic pathway in a referral municipality of the Health Region. Iguatu, Ceará, Brazil, 2022.



Source: Prepared by the authors based on the organization of the municipality's Health Care Network (2022).

Figure 2 presents a schematic representation of the therapeutic pathway of people with heart failure, elaborated by the authors based on the data obtained in this study.

Figure 2. Schematic representation of the therapeutic pathway of people with heart failure, developed based on the data obtained from the study. Iguatu, Ceará, Brazil, 2022.



Source: Prepared by the authors based on the study data (2022).

DISCUSSION

In this study, a predominance of the male sex was observed among people with heart failure, a result similar to that described in national studies that show a higher frequency of hospitalizations in this population.[16,17] This profile may be related to the interaction of biological, metabolic, and behavioral factors involved in the development and progression of cardiovascular diseases, as well as to differences in symptom perception, care-seeking behavior, and treatment adherence.[17,18] Consequently, these aspects may influence the timing of health care utilization and access to the different points of the Health Care Network, thereby affecting clinical outcomes and continuity of care.[18]

Similarly, the predominance of individuals aged 70 to 79 years was consistent with findings from national studies on the epidemiology of heart failure in Brazil, which have demonstrated a higher frequency of hospitalizations among older age groups.[17] Population aging, together with the accumulation of chronic diseases, particularly systemic arterial hypertension and diabetes mellitus, contributes to the increasing occurrence and clinical complexity of heart failure.[17,19] This age profile reinforces the need for an integrated health care network capable of ensuring longitudinal follow-up within Primary Health Care

(PHC), early identification of episodes of decompensation, and coordination of care across the different levels of health care, thereby reducing avoidable hospitalizations.[19,20,21]

The clinical manifestations recorded at hospital admission were consistent with decompensated heart failure, highlighting symptoms that frequently motivate patients to seek emergency care.[19,22] This scenario indicates that many patients access health care services only after clinical deterioration has occurred, when functional limitations and impairment of daily activities have already become established.[19] This finding reinforces the importance of early identification of signs of decompensation and continuous follow-up within PHC, promoting timely interventions capable of reducing hospitalizations and ensuring continuity of care.[20,21]

In addition to the clinical manifestations, the high frequency of systemic arterial hypertension and diabetes mellitus reinforces the role of these conditions as major comorbidities associated with heart failure, consistent with studies identifying them as among the principal factors related to the development and progression of the syndrome.[23] The coexistence of these diseases increases the complexity of clinical management and requires longitudinal follow-up, continuous monitoring, and adherence to therapeutic measures.[20,23] In this context, an integrated care pathway focused on prevention, early diagnosis, clinical management, and timely referral across the different levels of care is essential to reduce episodes of decompensation and avoidable hospitalizations.[14,20,21]

In the present study, the emergency department was the main point of entry for the care of people with heart failure, indicating that health care was sought predominantly in situations of clinical deterioration. This finding is consistent with the literature, according to which episodes of decompensation frequently require immediate care and hospitalization.[20,24] In contrast, the limited use of PHC as the first point of care suggests weaknesses in care coordination and longitudinal follow-up, given that this level of care plays a central role in continuous monitoring, risk stratification, health education, and the early identification of signs of decompensation.[14,20,21]

This pattern of access evidences fragilities in the organization of the therapeutic pathway of people with heart failure. The predominance of emergency service utilization may reflect difficulties in maintaining continuity of outpatient follow-up, barriers to accessing specialized services, and limitations in the integration of the different levels of care.[5,24] This occurs because the therapeutic pathway is influenced by the way individuals access, navigate, and remain within the Health Care Network.[9,10] Therefore, fragmentation of care may contribute to delayed diagnosis, recurrent episodes of decompensation, and an increased number of hospitalizations.[14,21]

In this context, the organization of the therapeutic pathway of people with heart failure depends on effective coordination among the different points of the Health Care Network. Although PHC is recognized as the main point of entry into the health system and the coordinator of care for people with chronic conditions, the limited use of this level of care as the first point of contact with health services suggests weaknesses in the implementation of care pathways for heart failure.[14,21] Thus, strengthening the integration among PHC, specialized care, and the hospital network is essential to ensure continuity of care, longitudinal follow-up, and timely referral of people with heart failure.[14,21]

To achieve this integration, it is necessary to strengthen regulatory mechanisms, regional governance, and care coordination across the different points of the Health Care Network. The effectiveness of this process depends not only on the availability of health services but also on the health system's capacity to organize care flows, promote communication among health care teams, and ensure timely referrals, thereby reducing fragmentation of care.[14,21] Furthermore, the integrated work of health professionals, particularly nurses, together with improvements in referral and counter-referral processes, may facilitate the early recognition of episodes of decompensation, adherence to clinical follow-up, and the more appropriate use of the different levels of care, contributing to more effective and safer care.[20,21]

In summary, the findings of this study demonstrate that the therapeutic pathway of people with heart failure in the investigated region remains strongly centered on hospital-based care, highlighting the need to strengthen the lines of care for chronic conditions through greater integration among the different levels of care and timely access to services within the Health Care Network.[14,21] For nursing, these findings reinforce the importance of health education, risk stratification, clinical monitoring, promotion of treatment adherence, and care coordination across the different levels of health care, contributing to the early identification of episodes of decompensation, the prevention of avoidable hospitalizations, and comprehensive care for people with heart failure.[20,21]

This study presents limitations that should be considered when interpreting the results. The use of secondary data obtained from medical records resulted in missing or incomplete information, such as clinical complaints, comorbidities, and family history, which may have limited the analysis of some variables. In addition, because the study was conducted in a single municipality within a health region of northeastern Brazil, the findings reflect a local reality and should therefore be interpreted with caution regarding their generalizability to other health care settings.

This study contributes to the understanding of the therapeutic pathway of people with heart failure by highlighting challenges related to access to health services, continuity of care, and integration across the different levels of care. These findings may support the planning of interventions and the improvement of lines of care, thereby contributing to the strengthening of health care delivery and nursing practice in the care of people with heart failure.

CONCLUSION

This study made it possible to identify the therapeutic pathway of people with heart failure in a health region of the state of Ceará, Brazil, highlighting the hospital emergency department as the main point of entry for care and the reduced utilization of Primary Health Care (PHC) as the first point of contact with health services. These findings contribute to the understanding of the therapeutic pathway of this population and can subsidize the planning of strategies aimed at the improvement of the organization of the Health Care Network and of the care for people with heart failure.

CONTRIBUITIONS OF THE AUTHORS

Study conception or design: Ferreira LIC, Oliveira CJ. Data collection: Ferreira LIC, Oliveira CJ. Data analysis and interpretation: Ferreira LIC, Santos ATF, Oliveira CJ. Article writing or critical review: Ferreira LIC, Santos ATF, Rangel AVP, Oliveira CJ. Final approval of the version to be published: Ferreira LIC, Santos ATF, Rangel AVP, Oliveira CJ

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