Nursing care for patients with heart failure: An integrative review

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ABSTRACT

Introduction: Heart Failure (HF) is a complex clinical syndrome in which the heart is ventricular involved and unable to meet the body's metabolic demands. In Brazil, the main cause of rehospitalizations is due to difficulties in adhering to the therapy implemented. Objective: To provide evidence of nursing care for HF patients based on scientific publications. Method: This is an integrative review of the literature, developed from searches in the National Library of Medicine (PubMed), Web of Science and Virtual Health Library (VHL) databases. To elaborate the guiding question, the PICo strategy was used. Thus, the following guiding question was defined: what does the scientific evidence available in the literature address about nursing care for patients with heart failure? Searches were limited to the period between 2018 and 2023, in the languages Portuguese, Spanish and English. Results: The final sample consisted of nine articles, out of a total of 2,579 initially listed. The studies were grouped by similarities, defining the following categories: Marjory Gordon and Callista Roy's models of care, health education, and the use of technologies in self-management and HF monitoring. Conclusions : This study made it possible to analyze what the scientific evidence addresses about nursing care for patients with HF. It has been demonstrated that further research is needed on this topic, since HF is prevalent in thousands of individuals around the world and that some of them do not fully understand the diagnosis, symptoms, self-care and the importance of treatment adherence.

Keywords: Heart failure, Nursing, Health education.

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INTRODUCTION

Heart Failure (HF) is a complex clinical syndrome in which the heart is ventricular compromised and unable to meet the body's metabolic demands (Rohde *et al*., 2018).

This condition occurs due to structural or functional abnormalities of the heart, resulting from reduced cardiac output, because of changes in systolic function and/or increased filling pressure, either during rest or exercise (Ponikowski *et al*., 2016).

Even with advances in therapeutics, HF affects more than 23 million individuals worldwide, whose survival after five years of diagnosis can be 35%, with a prevalence that increases according to age group (about 1% in individuals between 55 and 64 years of age, reaching 17.4% in those aged 85 years or older) (Rohde *et al*., 2018).

In Latin America, low investment in health, inadequate access to care, and insufficient follow-up in primary or tertiary care are potential risk factors and, consequently, countless pathophysiological processes favor the development of HF. In Brazil, the main cause of rehospitalizations is due to difficulties in adhering to the treatment implemented. In addition, Brazil has inadequate control of chronic diseases often associated with HF (Rohde *et al*., 2018).

Nursing interventions are essential for disease prevention and health promotion for these patients, and such interventions should be developed based on individual follow-up, considering the specificities of each patient, thus promoting self-care and self-responsibility. Health monitoring and education for HF patients has great potential to achieve attitudinal and behavioral changes to cope with the disease (Diniz *et al*, 2021).

The organization of nursing work depends on a framework of theoretical and practical knowledge, so that nursing care is adequate, safe, and focused on the demands of patients through the nursing process (Oliveira *et al*, 2019).

Based on the understanding of nursing care and its importance through HF, the following question was asked: "what does the available scientific evidence address about nursing care for patients with heart failure?" Thus, the objective of this study was to provide evidence of nursing care for HF patients based on scientific publications.

METHOD

This is an integrative review of the literature. This method included the analysis of research that will support the advancement of clinical practice, enabling the synthesis of the state of knowledge on the analyzed theme, in addition to pointing out gaps in knowledge to be filled with the development of new investigations (Mendes *et al*, 2008).

To this end, six stages were followed: 1) identification of the theme and elaboration of the guiding question; 2) establishment of criteria for inclusion and exclusion of studies; 3) categorization

of studies; 4) evaluation of the studies included in the integrative review; 5) interpretation of results; 6) presentation of the review (Mendes *et al*, 2008).

To define the guiding question, we used the PICo strategy, which represents an acronym: P (population): Patients; I (interest): Nursing Care; Co (context): IC. Thus, the following guiding question was defined: what does the scientific evidence available in the literature address about nursing care for patients with heart failure?

Original productions, free or paid for by the research institution, indexed and published in full, in the period from 2018 to 2023, in languages Portuguese, Spanish and English, whose comprehensive population were adults and elderly with HF, were adopted as inclusion criteria. Secondary studies, theses and dissertations, monographs and term papers, editorials, case and experience reports, research protocols, response letters and letters to the editor, manuals, duplicate articles, those with languages other than Portuguese, Spanish and English, non-eligible population (age < 18 years), those that did not portray the theme and published before 2018 or with data collected before this period were excluded.

Electronic databases were used for the selection of articles *National Library of Medicine* (PUBMED) and *Web of Science* and also the Virtual Health Library (VHL), with no specifications regarding the databases, based on the descriptors selected from the Health Sciences Descriptors (DeCS) and the *Medical Subject Headings* (*MeSH*).

Based on the PICo strategy, the descriptors that were directed by the DECS and *MeSH* and alternative terms are listed. Regarding the population, the word patient was selected in the Portuguese language, whose alternative terms are clients, patient, sick, sick, patient, sick, sick, sick, sick, On the other hand, in the Spanish language, patient and patients and its English version by the *MeSH, patients*.

Regarding the interest, nursing care was listed, which has as alternative terms nursing care, nursing care, nursing care, nursing care management and systematization of nursing care, described by the *MeSH, nursing care*. In its Spanish version, atención de enfermería, whose alternative terms are cuidado de enfermería and cuidados de enfermería. In addition, the selected context was Heart Failure, whose term alternatives are cardiac decompensation, heart failure and congestive heart failure, described by the *MeSH* how *heart failure* and its Spanish version, heart failure.

After searching and defining the descriptors, the following crossings were performed in Portuguese: "Nursing care" AND "Heart failure" AND patients; Nursing care AND "Heart failure". In Spanish: "Cuidados de enfermería" AND "Indeficiencia coração" AND patients; patient AND "Nursing Care" AND "Congestive Cardiac". Finally, in English: *patients* AND "*Nursing Care*" AND "*Heart Failure*"; *Patients* AND "*Nursing care*" AND "*Cardiac Failure*"; *Patient* AND *Nursing Care Management* AND *Cardiac Failure*; *Patients* AND *Nursing Care* AND *Heart Failure*.

The studies were analyzed and classified according to the Level of Evidence (NE) classification system: (I) evidence resulting from the meta-analysis of multiple randomized controlled clinical trials; (II) evidence obtained in individual studies with an experimental design; (III) evidence from quasi-experimental studies; (IV) evidence from descriptive (non-experimental) studies or studies with a qualitative approach; (V) evidence from case reports or experience; (VI) evidence based on expert opinions (Souza *et al*, 2010).
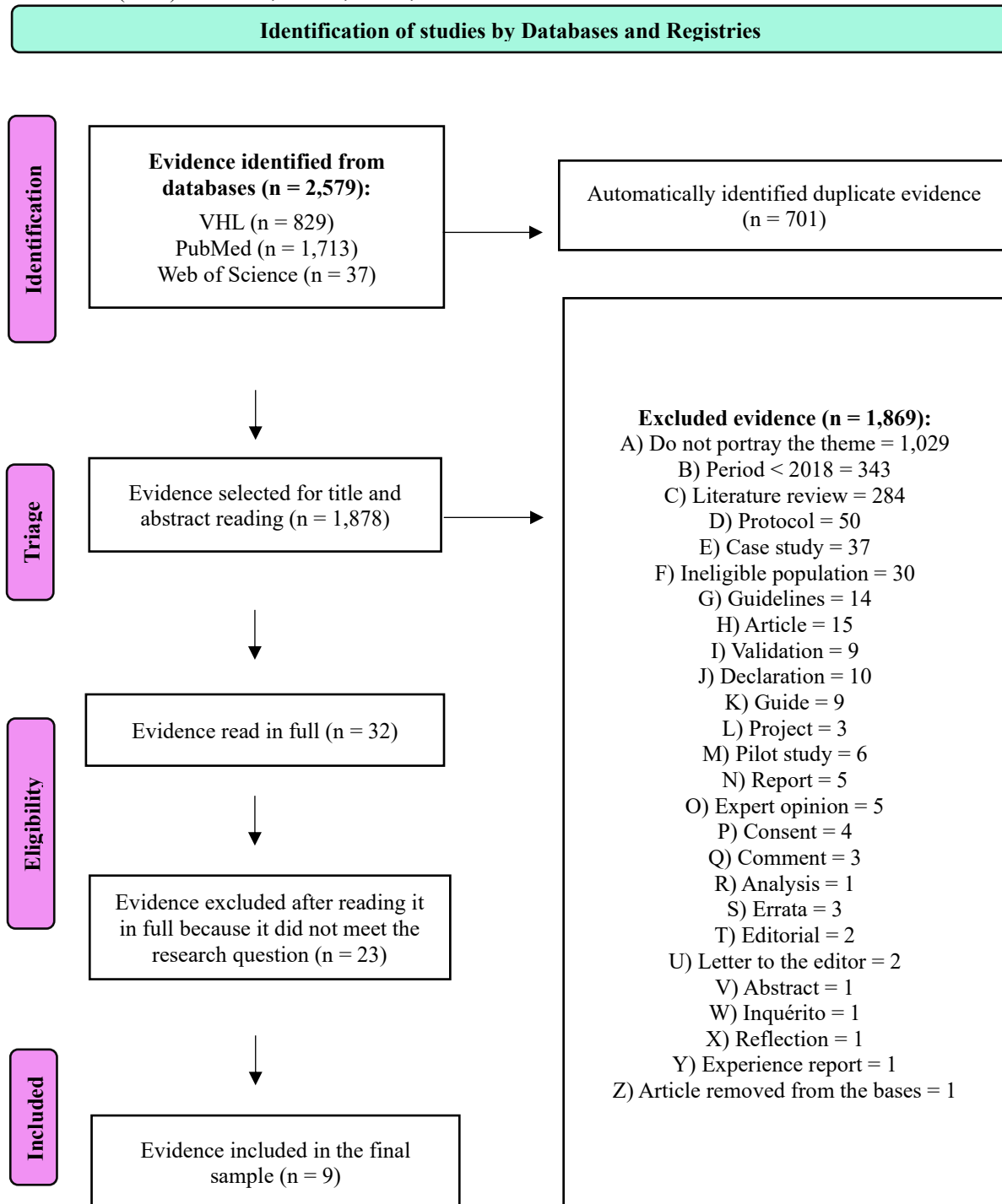
RESULTS

By cross-referencing the descriptors in the databases, 2,579 studies were found. After using the Rayyan® App/Website (Ouzzani *et al*., 2016), 701 posts were removed for duplication.

The inclusion and exclusion criteria were applied, 1,029 studies were excluded because they did not address the research theme, 343 evidences were disregarded due to the development period being prior to 2018, and a total of 496 articles due to the study design.

In addition, one article was disregarded, as it was unavailable in the databases. Then, after the exclusions and acceptance in Rayyan, the analysis of the final sample began, consisting of nine studies, as shown in Figure 1.

The results were systematized through an adapted flowchart, based on the *Preferred Reporting Items for Systematic and Meta – Analyses*, 2018 (PRISMA), following the steps: (1) Identification; (2) Screening; (3) Eligibility; (4) Included (Tricco *et al*, 2018).

Figure 1 – Flowchart of the selection process of studies on nursing care for patients with heart failure, adapted from *PRISMA-ScR* (2018). Londrina, Paraná, Brazil, 2024.

Identification of studies by Databases and Registries

Identification

Evidence identified from databases (n = 2,579):
VHL (n = 829)
PubMed (n = 1,713)
Web of Science (n = 37)

Automatically identified duplicate evidence (n = 701)

Triage

Evidence selected for title and abstract reading (n = 1,878)

Excluded evidence (n = 1,869):
A) Do not portray the theme = 1,029
B) Period < 2018 = 343
C) Literature review = 284
D) Protocol = 50
E) Case study = 37
F) Ineligible population = 30
G) Guidelines = 14
H) Article = 15
I) Validation = 9
J) Declaration = 10
K) Guide = 9
L) Project = 3
M) Pilot study = 6
N) Report = 5
O) Expert opinion = 5
P) Consent = 4
Q) Comment = 3
R) Analysis = 1
S) Errata = 3
T) Editorial = 2
U) Letter to the editor = 2
V) Abstract = 1
W) Inquérito = 1
X) Reflection = 1
Y) Experience report = 1
Z) Article removed from the bases = 1

Eligibility

Evidence read in full (n = 32)

Evidence excluded after reading it in full because it did not meet the research question (n = 23)

Included

Evidence included in the final sample (n = 9)

Source: Own authorship

The articles included in the final sample (n = 9) were studied in South Korea (n = 2; 22%), followed by China (n = 2; 22%), Singapore (n = 1; 11%), Turkey (n = 1; 11%), Ethiopia (n = 1; 11%), Iran (n = 1; 11%) and the United Kingdom (n = 1; 11%).

The selected evidences were published in 2020, 2021 and 2023, so that in the synthesis matrix, the year 2023 predominated (n = 4; 44%) in the English language.

The studies are randomized controlled (n = 4; 44%), experimental (n = 1; 11%), quasi-experimental (n = 1; 11%), parallel clinical trial (n = 1; 11%), randomized clinical trial (n = 1; 11%) and mixed method (n = 1; 11%) (Chart 3).

Regarding the level of evidence (NE), the following were characterized as (II) evidence obtained in individual studies with an experimental design (n = 1; 11%), (III) evidence from quasi-experimental studies (n = 1; 11%) and (IV) evidence from descriptive studies (non-experimental) or with a qualitative approach (n = 7; 77%).

Chart 1 – Categorization of studies on nursing care for patients with heart failure, organized by reference, year, place of publication and language, design and level of evidence, database and objective. Londrina, Paraná, Brazil, 2024. (N=9)

Study	Reference	Year, location, and language	Design and Level of Evidence	Database	Objective
E1	Türen, Sevda; Enç, Nuray. *A comparison off Gordon's functional health patterns model and standard nursing care in symptomatic heart failure patientis: A randomized controlled trial. Applied Nursing Research*, 2020. Doi: 10.1016/j.apnr.2020.151247	2020 Turkey English	Randomized controlled trial NE: IV	*PubMed*	OBJECTIVE: To investigate the effect of the application of Gordon's Functional Health Standard (PFS) Model in nursing care for symptomatic patients with Heart Failure (HF) on quality of life and morbidity and mortality in the 30 days after discharge.
E2	Oh, E. G. *et al. Effects of discharge education using teach-back methods in patients with heart failure: A randomized controlled trial. International Journal of Nursing Studies*, 2023. Doi: https://doi.org/10.1016/j.ijnurstu.2023.104453	2023 South Korea English	Prospective randomized controlled trial NE: IV	*PubMed*	OBJECTIVE: To evaluate the effects of education on hospital discharge performed by nurses using the teaching method on self-care, whether in terms of its effectiveness, symptoms, caregiver dependence, and inadequate use of health resources among HF patients.
E3	Choi, E. Y. *et al. Heart Failure-Smart Life: a randomized controlled trial of a mobile app for self-management in patients with heart failure. BMC Cardiovascular Disorders*, 2023. Doi: 10.1186/s12872-023-03039-8	2023 South Korea English	Randomized clinical trial NE: IV	*PubMed*	Develop a self-management mobile app program for HF patients and identify the impact of the mobile app program, "*Heart*

					failure-Smart Life".
E4	Wu, J. F.; Yu, Y.; Xu, H. *Influence of targeted motivational interviewing on self-care level and prognosis during nursing care of chronic heart failure. American Journal of Translation Research*, 2021. PMCID: PMC8290814	2021 China English	Randomized controlled trial NE: IV	*PubMed*	OBJECTIVE: To analyze the effects of targeted motivational interviewing during nursing care for chronic heart failure (CHF).
E5	Jiang, Y. *et al. Patients' Experiences of a Nurse-Led, Home-Based Heart Failure Self-Management Program: Findings From a Qualitative Process Evaluation. Journal of Medical Internet Research*, 2021. Doi: https://doi.org/10.2196/28216	2021 Singapore English	Randomized controlled trial NE: IV	*PubMed*	To explore participants' perspectives on a nurse-led home-based HF self-management program to gain insight into the effectiveness of the study intervention.
E6	Auton, A. *et al. Smartphone-Based Remote Monitoring for Chronic Heart Failure: Mixed Methods Analysis of User Experience From Patient and Nurse Perspectives. Journal of Medical Internet Research,* 2023. Doi: https://doi.org/10.2196/44630	2023. United Kingdom English	Mixed Method Study NE: IV	*PubMed*	To evaluate how HF patients and nurses use remote monitoring (RM) of patients with reduced ejection fraction heart failure (HFrEF), to evaluate user *feedback* on this type of experience, and, in detail, to compare the type of use and user experience of patients and nurses using the RM platform at the same time.
E7	Abdolahi, M.; Doustmohamadi, M. M.; Sheikbardsiri, H. *The Effect of an Educational Plan Based on the Roy Adaptation Model for Fatigue and Activities of Daily Living of Patients with Heart Failure Disease. Ethiopian Journal of Health Sciences*, 2020. Doi: 10.4314/ejhs.v30i4.11.	2020 Ethiopia English	Experimental study NE: II	*PubMed*	To determine the effect of an educational plan based on the Roy adaptation model (MAR) on fatigue and daily activities in HF patients.
E8	Eimer, S, *et al. The Effect of Self-Care Education on Adherence to Treatment in Elderly Patients with Heart Failure: A Randomized Clinical Trial. Iranian Journal of Nursing and Midwifery Research*. Irã, 2023. Doi: 10.4103/ijnmr.ijnmr_315_20.	2023 Iran English	Parallel Clinical Trial NE: IV	*PubMed*	To determine the effect of self-care education on treatment adherence among elderly HF patients.
E9	Wang, X. Y, *et al. Theory-guided interventions for Chinese patients to adapt to heart failure: A quasi-experimental study. International Journal of Nursing Sciences* 7, 391-400. China, 2020. Doi: 10.1016/j.ijnss.2020.09.004.	2020 China English	Quasi-experimental study NE: III	*PubMed*	To examine the effects of MAR-based interventions on adaptation in people with HF.

Note: Heart Failure (HF); Congestive Heart Failure (CHF); Heart Failure with Reduced Ejection Fraction (HFrEF); Remote Monitoring (MR); Functional Health Standards (PFS); Roy's Adaptation Model (MAR).

Chart 2 – Categorization of the main findings on nursing care for patients with heart failure. Londrina, Paraná, Brazil, 2024. (N=9)

Study	Key findings
E1	Gordon's PFS model assists nurses in providing nursing care to HF patients. The results found were associated with a significant improvement in quality of life and a reduction in hospital readmission on the 30th day. The mortality rate decreased, although it was not statistically significant.
E2	The discharge education program, called *HEART* structured and led by nurses, used printed booklets that included: definition of HF; medications; symptom control; weight/dietary management; and physical activity. Discharge content included topics similar to *HEART:* HF definition; medications; symptom management; weight and diet management; physical activity; vaccination; alcoholism, and tobacco. It was understood that education at discharge through the teaching method for HF patients is effective in improving self-care and the effectiveness of self-care.
E3	The participation of nurses in the use of the application helped to encourage patients' self-management regarding the disease, as well as facilitated the monitoring of patients' basic health status and the worsening of signs and symptoms. It offered convenience to access health exams and increased communication between the patient and health providers.
E4	After nursing care and the elaboration of the plan to improve adverse behaviors with the patients, there was evidence of an improvement in the level of self-care, medication adherence, quality of life and prognosis, and an increase in the relationship of trust between nurse and patient due to the implementation of targeted motivational interviewing.
E5	The importance of training on weight monitoring and control of fluid and salt intake, active participation of members, was evidenced; Nursing visits increased understanding, allowing for depth of discussion and reassurance for patients and families. It enabled the recognition of self-responsibility, self-care and self-discipline and greater control of the participants in the management of symptoms, increasing the effectiveness of HF care.
E6	MR has combined three modules into a single *smartphone* app. Patients received a digital sphygmomanometer, pulse rate monitor, and body mass scale connected to the *smartphone app* via *Bluetooth*. In the self-care module, they understood about HF medication, information from cardiac investigations, and device therapy. The messaging module allowed free text comments according to the measurements, so that it allowed the early detection of abnormalities, increased the involvement and understanding of HFrEF, improved communication with the specialist nurses. As a negative point, there was the overload of information and the lack of human interaction compared to face-to-face consultations.
E7	The educational plan based on the MAR can influence the maladaptive behaviors of HF patients in all physiological modes, self-concept, role function, and interdependence. A significant reduction in the number of maladaptive behaviors was observed after the intervention compared to before. The implementation of a MAR-based program, tailored to their educational needs, was significantly effective on patients' fatigue and activity level of daily living.
E8	The intervention group received training from the ward before discharge and at home for the following two months, through an educational package and *an educational Compact Disc* (CD). The control group received routine training without the supervision of the researcher after discharge. It was evidenced that education was effective in treatment adherence in the intervention group, the mean adherence went from 39.71 to 78.32 after the intervention.
E9	MAR-based interventions, aligned with treatment plans, have had significant benefits in promoting HF patients' adaptation. The *RHPT* (Return Home Planning Model), a communication plan with nurses, telephone follow-up and weekly online consultations favored the development of patients' adaptive capacities to manage HF, as well as coping and self-care skills.

Note: Heart Failure (HF); Heart Failure with Reduced Ejection Fraction (HFrEF); Remote Monitoring (MR); Functional Health Standards (PFS); Roy's Adaptation Model (MAR); Return Home Planning Template (*RHPT).*

DISCUSSION

This review explored the published scientific evidence regarding nursing care for adult and elderly HF patients. After reading the studies, the following categories were grouped by similarity and defined : Marjory Gordon and Callista Roy's models of care; Health education; The use of technologies in the self-management and monitoring of CI.

MARJORY GORDON AND CALLISTA ROY'S MODELS OF CARE IN LIGHT

The model developed by Marjory Gordon, called "Functional Health Patterns (PFS)", explains the individual's needs from eleven (11) functional areas: health perception and management, nutritional-metabolic, elimination, activity-exercise, cognitive-perceptual, sleep and rest, self-perception and self-concept, role and relationship performance, sexual-reproductive, stress tolerance, belief, and value (Türen *et al*, 2020).

Study 1 (E1) highlighted that PFS directed nurses in the care of HF patients in a systematic and uniform manner, significantly improved quality of life, and reduced readmission rates, as well as the mortality rate (Türen *et al*, 2020).

In this context, a study conducted in Iran, similar to E1, corroborated that the use of methods based on PFS contributes to the development of professional skills and attitudes in the nursing process (NP) (Khatiban *et al*, 2019).

Accordingly, an Ecuadorian study showed that such a model allowed for more holistic and patient-centered care, with improvements in the quality of nursing care and contributions to patients in their treatment and disease management (Ledesma *et al*., 2023).

In Italy, on the other hand, it was observed that the analysis of data collected from the PFS allowed the evaluation and enunciation of nursing diagnoses, analysis of the objectives to be achieved, evaluation and execution of relevant interventions to achieve the pre-established objectives (Iannicelli *et al*., 2019).

Similarly to E1, this research demonstrated that the use of a care plan developed according to Gordon's model, applied to cardiac rehabilitation, was able to meet the health needs in the physiological and psychosocial spheres of patients (Iannicelli *et al*., 2019).

On the other hand, the nursing model developed by theorist Callista Roy, called Roy's Adaptation Model (MAR), explores the relationships and interrelationships between humanism, health and the environment, according to E9. It describes theoretical concepts of stimuli, coping with processes, adaptive modes such as physical, self-concept, role function, and interdependence, such as an adaptive response, including adaptive/ineffective behavior (Wang *et al*., 2020).

According to Wang *et al*. (2020), in their quasi-experimental study, developed in Hangzhou, nursing interventions may be promising for the adaptation process of individuals by providing HF patients with coping strategies, knowledge about HF, and self-care skills to deal with stressful challenges.

In addition, E7 showed that the MAR influences the promotion of the daily activities of HF patients (Abdolahi *et al*, 2020). In addition, research E7 and E9 converged on the benefits of an educational plan, based on this model, to influence adaptation behaviors.

These behaviors were described in study E9 as physical, which extends to an individual's physical and chemical processes; self-concept refers to the patient's perception of the impact of HF and its treatment; role function refers to self-care activities and interdependence, which is related to communication, family and social support (Wang *et al*, 2020).

In an experience report developed in the Brazilian Northeast, it was identified that the NP based on Roy's theory subsidized effective nursing care based on the observation of stimuli that triggered the necessary responses to adaptation. In accordance with studies E7 and E9, this study showed that the care implemented according to the MAR directed the nursing interventions to the adaptation problems expressed by the patient and contributed to her adaptation (Costa *et al*., 2016).

HEALTH EDUCATION

Study E2 showed that nursing played an essential role in the health education of HF patients during hospital discharge, maximizing the effectiveness of self-care through the application of teaching methods (Oh *et al*., 2023).

Similarly, E8 demonstrated that health education on self-care implemented prior to discharge, as well as homeschooling with the provision of educational materials, contributed to the development of self-care and treatment adherence among HF patients (Eimer *et al*., 2023).

A study carried out in the South of Brazil converged with data from E2 and E8 and found that the educational process elaborated by the nurse in the discharge orientations to patients resulted in better adherence to the necessary care. It also showed that communication stood out as an essential competence to ensure understanding in the educational process (Inácio *et al*., 2014).

In addition, nurses play a fundamental role in the transition of care and in the implementation of health education actions for patients discharged from hospital (Acosta *et al*., 2018).

Thus, the exchange of information between patients and the health team proved to be imperative, especially at the time of hospital discharge, in relation to home care (hygiene, medication, food, physical efforts and self-care) (Chahin *et al*., 2013).

USE OF TECHNOLOGIES IN SELF-MANAGEMENT AND MONITORING OF CI

The E3 survey showed benefits in the use of a mobile application based on self-management in the treatment of HF, related to improvements in lifestyle, enabling patients to the development of that skill.

In addition, the use of the app provided continuous monitoring, allowed effective communication between health professionals and the patient, and mutual collaboration to achieve HF treatment goals (Choi *et al*., 2023).

Study E4, on the other hand, revealed that motivational interviewing, the distribution of health education manuals to patients, along with out-of-hospital contact via the app contributed to self-care, medication adherence, improved quality of life, and prognosis of patients with HF (Wu *et al,* 2021).

In addition, E5 indicated that, in addition to the app, educational didactic material for self-care strengthened knowledge and interpretation of HF symptoms for better self-care (Choi *et al*., 2023).

The E6, developed in the United Kingdom, also revealed that remote monitoring of vital signs by *smartphone*, performed by nurses specialized in HF, brought positive impacts to the patient, increased safety and self-care. It also demonstrated a significant reduction in blood pressure and heart rate (Auton *et al*., 2023).

In studies E3, E4, E5 and E6, the use of technologies for nursing teleconsultation was highlighted, as it is efficient in health education. In addition, it was shown to be positive in contributing to health promotion, evaluation, diagnosis of diseases, monitoring and adherence to treatment of patients.

The use of technologies can directly assist in the efficacy, effectiveness, quality and safety of patient care. On the other hand, the insertion of new technologies can increase the demands, with intensification of the work of both the team and the patient and his family (Cargnin *et al*., 2016).

CONCLUSIONS

This study made it possible to analyze what the scientific evidence addresses about nursing care for patients with IC. Two of the following stood out: philosophical models of care developed by nurses, in addition to health education and the use of technologies in self-management and monitoring of HF. However, there were gaps in this area.

There was a lack of studies that discuss nursing care for patients with cardiac pathologies, specifically HF, both internationally and nationally. It was necessary to develop further research on this topic, since HF is prevalent in thousands of individuals around the world and that some of these people do not fully understand the diagnosis, symptoms, self-care and the importance of treatment adherence.

In addition, with more studies on the subject, it is expected that the most qualified nurses will provide care efficiently to the population with HF, regardless of the field of activity.

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