

# CUIDADO É FUNDAMENTAL

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RESEARCH

DOI: 10.9789/2175-5361.rpcfo.v12.8625

## EDUCATIONAL TECHNOLOGIES FOR CARDIOPATHY

Tecnologias educativas direcionadas à cardiopatas

Tecnologías educativas dirigidas a las cardiopatas

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### How to cite this article:

Farias MS, Silva LF, Silva AL, Barros LBF, Pinheiro HS. Educational technologies for cardiopathy. Rev Fun Care Online. 2020 jan/dez; 12:525-530. DOI: <http://dx.doi.org/0.9789/2175-5361.rpcfo.v12.8625>.

### ABSTRACT

**Objective:** to identify the technologies used by nurses in the educational process of people with heart disease in the hospital environment. **Method:** it is an integrative review carried out in the virtual databases Pubmed, Scielo and Lilacs. Ten publications were selected and at the end, an analysis of the selected studies was carried out to identify their relevance and applicability. **Results:** there is a great diversity of technologies developed and implemented, varying between educational programs with the use of videos, questionnaires and instruments, tracking programs, follow-up after hospital discharge, group meetings and educational moments directed to patients in the research environment. **Conclusion:** a great variety of technologies used by nurses in the educational process of people with cardiopathy in the hospital environment was identified, which contributes to a reduction in hospitalization time, lower readmissions and recidivism rates for Cardiovascular Diseases, and also to cardiovascular rehabilitation patient.

**Descriptors:** Health technology; Cardiovascular diseases; Nursing; Caution; Health education.

### RESUMO

**Objetivo:** identificar as tecnologias utilizadas por enfermeiros no processo educativo de pessoas com cardiopatia no ambiente hospitalar. **Método:** trata-se de uma revisão integrativa realizada nas bases de dados virtuais Pubmed, Scielo e Lilacs. Foram selecionados dez publicações e ao final, foi realizado uma análise dos estudos selecionados a fim de identificar sua relevância e aplicabilidade. **Resultados:** verifica-se a grande diversidade de tecnologias elaboradas e implementadas, variando entre programas educativos com a utilização de vídeos, questionários e instrumentos, programas de rastreamento, de acompanhamento após alta hospitalar, encontros grupais e momentos educativos direcionados aos pacientes no ambiente da pesquisa. **Conclusão:** foi identificado uma grande variedade de

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tecnologias utilizadas por enfermeiros no processo educativo de pessoas com cardiopatia no ambiente hospitalar, o que contribui para diminuição do tempo de internação hospitalar, menores índices de reinternações e reincidências por Doenças Cardiovasculares, atuando ainda na reabilitação cardiovascular do paciente.

**Descritores:** Tecnologia em saúde; Doenças cardiovasculares; Enfermagem; Cuidado; Educação em saúde.

## RESUMÉN

**Objetivo:** identificar las tecnologías utilizadas por enfermeros en el proceso educativo de personas con cardiopatía en el ambiente hospitalario. **Método:** se trata de una revisión integrativa realizada en las bases de datos virtuales Pubmed, Scielo y Lilacs. Se seleccionaron diez publicaciones y al final se realizó un análisis de los estudios seleccionados para identificar su relevancia y aplicabilidad. **Resultados:** se verifica la gran diversidad de tecnologías elaboradas e implementadas, variando entre programas educativos con la utilización de videos, cuestionarios e instrumentos, programas de rastreo, de seguimiento tras alta hospitalaria, encuentros grupales y momentos educativos dirigidos a los pacientes en el ambiente de la investigación. **Conclusión:** se identificó una gran variedad de tecnologías utilizadas por enfermeros en el proceso educativo de personas con cardiopatía en el ambiente hospitalario, lo que contribuye a disminuir el tiempo de internación hospitalaria, menores índices de reinternaciones y reincidencias por Enfermedades Cardiovasculares, actuando aún en la rehabilitación cardiovascular del paciente.

**Descriptor:** Tecnología en salud; Enfermedades cardiovasculares; enfermería; cuidado; Educación en salud.

## INTRODUCTION

Cardiovascular diseases (CVD) are currently considered the main cause of morbidity and mortality in Brazil and worldwide. They accounted for 17.7 million deaths in 2015, representing 31% of all global deaths. These diseases together constitute the main basis for health care expenses, accounting for more than 10% of the annual admissions in the Brazilian public health system.<sup>1</sup>

Given this scenario, it is necessary to implement measures that promote population health in order to decrease the morbidity and mortality rates due to CVD. However, in situations where people are affected by the disease, it is necessary to perform care focused on their effective treatment and rapid rehabilitation, including in hospital environment.

For a long time, hospital environment was not considered as a strategic space for health education interventions, but as a way to reform the health system, it began to be seen as an adequate space, because it is a virgin territory in terms of humanization of care and the defense of life and states that it is possible to think about health promotion, health education, bonding, in the hospital space.<sup>2</sup>

In this sense, the use of educational technologies is necessary and contributes to the promotion of healthy behaviors through learning skills for health care in

copied with the health-disease process. Thus, educational technology provides education and health promotion to the population by allowing systematic identification of the development, organization or use of educational resources and handling of these processes, as well as the use of equipment-oriented techniques or audio-visual aids in the educational setting.<sup>2</sup>

From this perspective, nurses that have health care as the basis of their work, using educational technologies in the hospital environment, provide guidance, clarify doubts on certain issues, help to find meanings and answers to process questions on life, getting sick, cure and death and to implement measures to promote life or relieve suffering, contributing to the improvement of clinical care.

Thus, this research aims to identify the technologies used by nurses in the educational process of people with heart disease in the hospital environment.

## METHODOLOGY

This is an integrative review on educational technologies aimed at heart disease patients in a hospital setting. The integrative review determines the current knowledge about a specific theme contributing to possible beneficial repercussions on the quality of patient care. It is the broadest methodological approach to reviews and has six phases: Phase 1 - elaboration of the guiding question, Phase 2 - search or sampling in the literature, Phase 3 - data collection, Phase 4 - critical analysis of studies included, Phase 5 - discussion of results and Phase 6 - presentation of the integrative review.<sup>3</sup> This research followed all the recommended steps.

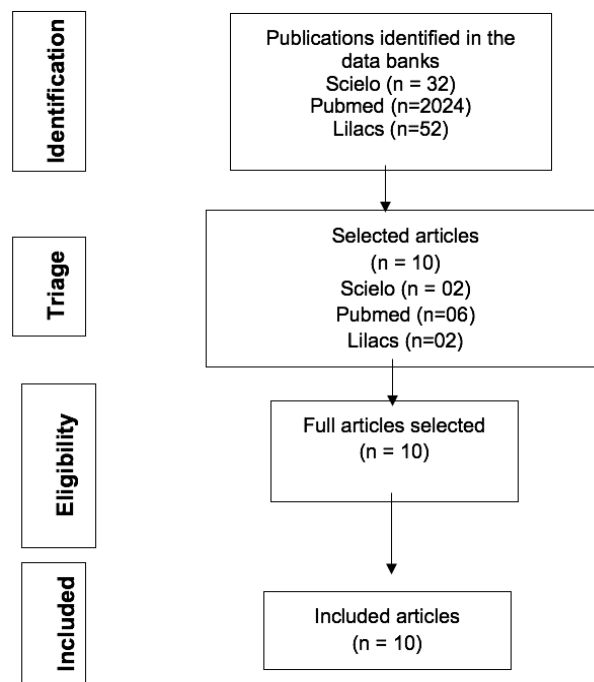
In this sense, we delimited the following guiding question for the integrative review: what are the technologies used by nurses in the educational process of people with heart disease in the hospital environment?

The searches were performed in the Pubmed, Scielo and Lilacs virtual databases, using as keywords Heart Diseases, Health Education, Heart Diseases, based on the consultation in Desc and using the Boolean operator 'and'. The referred databases were searched for research published in the last 10 years, open access, with full texts, performed on human beings and excluding those duplicated and not corresponding to the guiding question of the present study.

In the Scielo database, 36 studies were found, but after reading them, only two publications clearly presented the educational technology used in the hospital environment.

Regarding Pubmed, 2024 studies were located, but only six were used because they demonstrated the application of educational technologies in hospital environments. Finally, in the Lilacs database, 52 articles were identified, but after reading them and excluding the repeated ones, only two corresponded to the guiding question of this study.

**Figure 1** - Flowchart of study selection according to PRISMA. Fortaleza, CE, Brazil, 2017.



As a result, ten publications that demonstrated the use of educational technologies in a hospital environment focused on heart disease were selected. Finally, the analysis of the selected studies was performed in order to identify their relevance and applicability.

## RESULTS

After reading the selected studies in full, Table 01 presents their description by country where research was performed; target population of the research; the educational technology implemented, and the results achieved through its use.

**Chart 01** - Description of studies on educational technologies focused on heart disease patients in a hospital environment. Fortaleza CE, Brazil, 2017

Country	Target population	Educational technology	Results Obtained
Brazil	Acute Myocardial Infarction (AMI)	Cardiac Patients Learning Needs Inventory (CPLNI) Validation	Semantic validation shows that it encourages the patient who suffered acute myocardial infarction (AMI) to know the factors that caused the infarction and the guidelines for prevention of new ischemic episodes.
China	Children undergoing surgery for congenital heart disease (CHD)	Training Program	The intervention group had significantly higher Left Ventricular Ejection Fraction (LVEF) and Peripheral Oxygen Saturation (SpO <sub>2</sub> ) values than the control group.
Brazil	Cardiac rehabilitation patients	CADE-Q (Coronary Artery Disease Education Questionnaire)	After analysis, it was found that CADE-Q has validity and reliability to be used in the Brazilian population in future research.
Poland	Patients hospitalized for Acute Coronary Syndrome (ACS)	Patient's Club	Patients showed significant benefits in terms of healthy lifestyle changes and more recommended guidelines for managing cardiovascular risk factors.
United States	Heart disease	Kaua'i Care Intervention Intervention (KCTI)	Was able to reduce readmission rates in a facility with a relatively high readmission rate
Korea	Acute Coronary Syndrome Patients for the First Time	Risk factor-adapted small group education and periodic text messaging	It was an effective strategy to lessen depression and increase self-efficacy and long-term compliance with lifestyle changes in ACS patients for the first time.
United States	Heart Failure (HF) Patients	Shared decision making and protocol educational video to engage CI providers	It is feasible to implement a hospital-based intervention that utilizes non-clinical health educators.

Country	Target population	Educational technology	Results Obtained
Sweden	Patients with acute coronary syndrome	Secondary prevention program conducted through a nursing intervention to limit disease progression	Nursing telephone follow-up after ACS can be applied to a large extent in an unselected clinical setting.
Paraguay	Patients discharged for outpatient follow-up	Educational program	Even with patients' difficulty to adhere to, a simple and basic educational program can improve cardiovascular symptoms and risk factors in an outpatient population.
China	Chronic Congenital Heart Disease	Screening Program for Chronic Congenital Heart Disease and Newborn	The protocol outlined in this report could provide a community-based model for worldwide implementation.

Source: authors

Looking at Table 01, we see a variety of countries that developed and implemented educational technologies aimed at heart disease patients in a hospital environment that were identified in this review. Thus, two technologies were developed and implemented in Brazil, two in the United States, two in China, one in Poland, one in Paraguay, one in Sweden and one in Korea.

By analyzing the target population that was the focus of the technologies, we see that they were conducted for various age groups, ranging from newborn to adult, and covered congenital heart disease, acute myocardial infarction, cardiovascular rehabilitation, acute coronary syndrome and cardiac insufficiency, that is, aimed at heart diseases that need patient-focused care, seeking a quick discharge from the hospital, with a patient in rehabilitation and with a good return to activities of daily living.

Table 01 also presents diverse technologies developed and implemented, ranging from educational programs with the use of videos, questionnaires and instruments, tracking programs, follow-up after hospital discharge, group meetings and educational moments directed to patients in the research environment.

## DISCUSSION

The diversity of technologies and their use in the health context have led to paradigm shifts in the prevention, control and treatment of chronic diseases, whether communicable or not. In chronic noncommunicable diseases, these technologies have promoted the dissemination of knowledge in the population, the exchange of experiences and the search for new forms of care.<sup>2</sup>

In this sense, the Validation of the Cardiac Patient Learning Needs Inventory (CPLNI) directed to patients who had AMI was designed to assess the learning need for coronary disease. This inventory was developed in the United States in the 1980s and validated in other countries, such as Brazil, and applied to 40 patients with coronary artery disease and contributed to reduce the lack of valid instruments to measure the learning needs of patients with common characteristics.<sup>4</sup>

Instruments to measure patients' knowledge regarding their current pathological condition is important and

necessary, as it will serve as subsidies for the practice of care, having significant implications for clinical nursing care.

Health education program for children undergoing surgery for congenital heart disease was conducted in a Chinese Hospital and aimed to promote health education to improve caregiving knowledge, promote behavioral changes and parental self-efficacy in child care after corrective surgery for congenital heart disease.<sup>5</sup>

The provision of health education is relevant for both the caregiving team and the parents, as they will continue to care for patients after hospital discharge. Thus, health education based on the training education model can help caregivers develop self-management skills.

With respect to the instrument named Coronary Patient Education Questionnaire (CADE-Q), as well as the Inventory of Cardiac Patient Learning Needs, it was built and validated in order to provide knowledge acquisition associated with multidisciplinary coronary artery disease (CAD) control programs, because it helps the patient to obtain an adequate perception of his/her health condition, allowing the modification of beliefs and behaviors.<sup>6</sup>

The use of assessment instruments or questionnaires is an important resource in health education programs, as they allow the measurement of the effects of teaching and learning process and possible changes in attitudes, considering that, for the cardiac patient to better understand their disease, it is necessary to evaluate how much the patient knows about their disease and, for this, the development and / or improvement of instruments capable of performing such an evaluation becomes essential.<sup>6</sup>

Activities performed in groups such as the Patient Club provided by the Outpatient Prevention Program based on educational actions after hospital discharge have the potential to ensure lifestyle changes for patients after acute coronary syndromes (ACS). In order to evaluate the effectiveness of the Patient Club initiative in terms of increasing knowledge about cardiovascular risk factors, it is clear that there were significant changes among the patients participating in the club.<sup>7</sup>

The Kaua'i Care Transition Intervention (KCTI) patient-centered intervention program has been put in place to reduce hospital readmission rates among patients 60 years and older. Thus, the patients selected were trained

and educated under the intervention program, which was successful in reducing hospital readmission rates.<sup>8</sup>

Risk factor-adapted group education for patients with acute coronary syndrome was conducted to assess their effects on anxiety and depression symptoms, self-efficacy and self-care in patients with acute coronary syndrome (ACS) for the first time in over 12 months. The educational proposal consisted of a multi-media video, including texts, flash animation and video clips, with the nurses' dialogue. Research proves that that risk-adapted group education should be provided to ACS patients for the first time for psychological support and behavioral change in clinical practice.<sup>9</sup>

Still with regard to group education, there is evidence of activities carried out through a program called the Advanced Health Care Program, which features educational videos on shared decision making and protocols for involving patients in decision-making after hospitalization. Practitioners of this program, before discharging the patient, discuss individualized prognosis and specific treatment options through videos and booklets, and at the end of the meetings patients are encouraged to discuss care in the home setting.<sup>10</sup>

We also identified a secondary prevention program conducted by nurses to limit the evolution of the disease, with patients admitted to the hospital unit for ACS, who are evaluated, interviewed and followed by the study nurses through contact, phone counseling and advice on healthy living and drug titration to achieve target values for blood pressure and blood lipids.<sup>11</sup>

Another educational intervention found in the articles analyzed is the Basic Educational Program for the prevention of cardiovascular disease that uses AsuRiesgo (acronym for *Asuncion modificacion de factores de Riesgo cardiovascular* - Modification of Cardiovascular Risk Factors) with cardiac patients. AsuRiesgo is a prospective study that estimates the prevalence of cardiovascular risk factors. In this program, patients attend an initial pedagogical meeting and are encouraged to attend similar meetings at each follow-up appointment after hospital discharge.<sup>12</sup>

Finally, the latest technology identified was the program for early detection of congenital heart disease (CCHD) that can significantly reduce morbidity and mortality among newborns. This investigates the feasibility of screening for congenital heart disease in newborns.<sup>13</sup>

By presenting the diversity of educational technologies directed to patients with heart disease in the hospital environment technology generates a significant impact on the work process in clinical nursing care, acting as a method of applying scientific knowledge systematically to help to better serve the patient.

In this sense, the use of educational technologies contributes to a shorter hospital stay, lower rates of readmissions and relapses due to CVD, also acting on the cardiovascular rehabilitation of the patient, which reflects the reduction in hospital costs and represents comprehensive and quality care.

## CONCLUSION

With this research we verified that there are several types of educational technologies focused on heart disease in the hospital environment. These activities are focused on the most diverse types of heart disease and all age groups that need them in order to contribute to the clinical care provided to these patients.

Some limitations were faced to achieve the study objective. The lack of clarity on the type of educational technology used was recurrent, given that many technologies are implemented but not recorded as part of care strategy.

Thus, we realize the importance of these technologies for clinical nursing care, in view of the benefits generated by their implementation and the need to increasingly elaborate and validate such tools that are used as potentializing instruments of the most qualified care.

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Received in: 15/03/2019

Required revisions: 14/08/2019

Approved in: 30/08/2019

Published in: 13/04/2020

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**Disclosure: The authors claim to have no conflict of interest.**