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Nursing interventions and 30 days hospital readmissions: Scoping Review

Sara Valente * 0000-0001-6690-7172
Marisa Lopes * 0000-0003-0805-0531
Salomé Sobral Sousa * 0000-0002-1316-1394
Sílvia Ribeiro * 0000-0002-9996-7857
Nuno Abreu * 0000-0002-0418-6135
Eduardo Alves * 0000-0001-8739-8864
Rosário Caetano Pereira * 0009-0009-2397-6456

* Centro Hospitalar e Universitário de Santo António, Unidade Local de Saúde de Santo António

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Corresponding Author:
Sara Valente, Centro Hospitalar e Universitário de Santo António, Unidade Local de Saúde de Santo António, u09992@chporto.min-saude.pt

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ABSTRACT

Introduction: Chronic diseases impact morbidity and mortality and are associated with frequent use of health services. Nursing interventions can contribute to reducing hospital readmissions.
Objectives: This study aims to map the literature on nursing interventions and their impact on 30-day hospital readmissions.
Methodology: A scoping review was conducted according to the Joanna Briggs Institute model, with the research question supported by the acronym PCC - population: adults readmitted within 30 days; concept: nursing care; context: hospital. Scielo, EBSCOhost, PubMED, and Web of Science were the databases used for the search, including articles published between 2019 and 2023, in Portuguese and English. The relevance of the studies, data extraction, and synthesis were performed by two independent blind reviewers.
Results: Of the 125 articles identified, 11 were included in the review. Nursing interventions were found for disease self-management, care transition, home hospitalization, and the bell test as a predictor of readmissions. Telehealth and case management were also utilized strategies. The interventions had an impact on reducing hospital readmissions, emergency visits, mortality, costs, and improving quality of life.
Conclusion: Nursing interventions reduce 30-day hospital readmissions.

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Autora correspondente:
Sara Valente, Centro Hospitalar e Universitário de Santo António, Unidade Local de Saúde de Santo António, u09992@chporto.min-saude.pt

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RESUMO

Introdução: As doenças crónicas têm impacto na morbimortalidade, associando-se à frequente utilização dos serviços de saúde. Intervenções de enfermagem podem contribuir para a redução das readmissões hospitalares.
Objetivos: Este estudo pretende mapear a literatura sobre as intervenções de enfermagem com impacto nas readmissões hospitalares a 30 dias
Metodologia: Scoping review conduzida de acordo com o modelo do Joanna Briggs Institute, com a questão de investigação, sustentada no acrónimo PCC – população: adultos readmitidos em 30 dias; conceito: cuidados de enfermagem; contexto: hospital. Scielo, EBSCOhost, PubMED e Web of Science foram as bases de dados utilizadas para a pesquisa, incluindo-se artigos publicados entre 2019 e 2023, em português e inglês. A relevância dos estudos, a extração e a síntese dos dados foi realizada por dois revisores independentes de forma cega.
Resultados: Dos 125 artigos identificados, incluíram-se 11 na revisão. Encontraram-se intervenções de enfermagem para a autogestão da doença, transição de cuidados, hospitalização domiciliária e o teste de campainha como preditor de readmissões. A telehealth e gestão de casos foram estratégias utilizadas. As intervenções tiveram impacto na redução das readmissões hospitalares, idas à urgência, mortalidade, custos e melhoria da qualidade de vida.
Conclusões: Intervenções de enfermagem reduzem as readmissões hospitalares a 30 dias.

Introduction

Globally, the population's health has improved significantly over the last 20 years, which is reflected in longevity. However, the aging population and reduction in healthy life years represent a major challenge for society.[1] Oncological diseases and chronic diseases such as diabetes, cardiovascular, respiratory have a substantial impact on morbidity and mortality, dependency levels, and quality of life, implying a recurrent use of health services and hospital admissions, with an impact on the sustainability of the entire system.[1]

In this context, it is important to address hospital readmissions, which are defined as a new admission, days after discharge from a first episode of hospitalization.[2] Although the time between these two moments may vary, readmissions at 30 days are the most studied. This type of admission is an indicator of the quality of care provided, with direct implications for patient safety.[2,3] The length of the stay exposes the patient to the risk of adverse events, such as healthcare-associated infections and complications from procedures, potentially avoidable treatments, exacerbations of the disease, as well as functional decline.[3] Portugal outperforms the majority of European Union countries in preventing hospitalization for the treatment of diseases requiring outpatient care;[1] even so, looking at the data published in Benchmarking Hospitals on the care performance of group E, the HR rate ranged from 3.63% to 7.44%.[4] These data show that it is essential to understand the factors that contribute to the increase in these rates.

Hospital readmissions can be classified as preventable and non-preventable. Avoidable hospital readmissions are those associated with the quality of healthcare, while non-avoidable HR are related to the patient's own risk factors, both of which contribute independently or simultaneously to a new hospitalization.[2] Readmissions are also due to individual and organizational factors and can be related to the entire period between admission and discharge. Individual factors are understood as those relating to the person and their state of health,[2] such as chronic diseases, comorbidities, the severity of illness, socioeconomic status,[3] level of health literacy, and adherence to the treatment regimen.[2] Organizational factors include the quality of care provided during hospitalization,[3] communication deficits, failures in preparation and follow-up after discharge.[5] Acording to the literature, strategies in the field of patient education, pre-discharge assessment, post-discharge home care,[2] as well as self-management nursing interventions[6] prevent hospital readmissions. Identifying and recognizing the patients and health conditions in which readmissions occur most allows us to define strategies to prevent these readmissions, with a view to maximizing the quality of care and reducing hospital costs.[3]

This study aims to map the literature on nursing interventions that have an impact on 30-day hospital readmissions. It aims to answer the research question: Which nursing interventions have an impact on 30-day hospital readmissions?

Methodology

The choice of a scoping review is based on the need to map the literature on the subject described above, providing a basis for the design of a primary study to be carried out later with the aim of correlating nursing interventions and 30-day hospital readmissions in a university hospital. The protocol for this scoping review is in the Open Science Framework (OSF).

This literature review follows the Joanna Briggs Institute guidelines[7], identifying the inclusion and exclusion criteria according to the acronym PCC (Population, Concept, and Context) - Population: studies involving people over the age of 18 readmitted within 30 days; Concept: nursing care; Context: hospital.

The development and implementation of the search strategy took place in three stages: 1) Preliminary search in the PubMed and EBSCOhost databases, and analysis of the title, abstract, and key terms of each study. 2) Search in the PubMed, Scielo, Web of Science, and EBSCOhost databases, limited to primary studies, with full text available, in Portuguese and English, from 2019 to 2023. The Boolean sentence – "(patient readmission) and (hospitals) and (nursing care)" was constructed from a combination of descriptors/medical subject headings (MeSH) and used in all the databases mentioned. The search took place in September 2023. 3) The bibliographic references of the identified studies were analyzed to identify additional studies.

The articles were selected systematically. Duplicate studies were eliminated using EndNote software. The Rayyan® software facilitated the screening of articles by title and abstract, carried out blindly and independently by two reviewers. Consensus meetings served to reach agreement between the researchers on the articles that met the inclusion and exclusion criteria. This process was repeated in a second stage when the articles were read in full. The reason for exclusion was recorded.

The information was organized according to the recommendations presented in PRISMA-ScR (PRISMA Extension for Scoping Reviews) for writing articles.[8] The Prisma® diagram (Figure 1) summarizes the entire study selection process.

The data extracted was organized according to the objective of the study and presented in the form of a table, which includes the authors of the article, the year, the objective, the intervention, the outcome measures, and the main conclusions.

Results

The search identified 125 articles, 11 of which were included in this review (Figure 1).

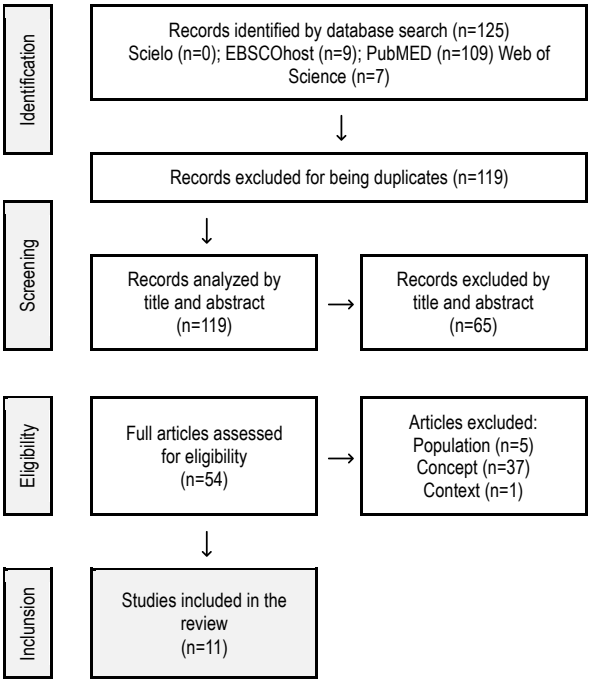

Figure 1: Prisma diagram

The publications took place between 2019 and 2023. Around two-thirds of the articles come from North America,[9–15] with publications also coming from European countries,[16] Asia[17,18] and Oceania.[19] Studies included one randomized clinical trial,[17] five clinical trials without randomization,[9–11,15,18] one case-control study,[12] one cohort study,[14] one descriptive correlational study[19] and two qualitative descriptive studies.[13,16]

The majority of articles included interventions implemented by nursing staff, [9,11,13,15–18] although some included multidisciplinary teams.[10,19,12,14] This review involved 414.441 participants with an average age of 68 years, suffering from chronic diseases such as heart failure (HF),[9–13,16,18,19] Chronic Obstructive Pulmonary Disease (COPD),[9–11,13] Diabetes Mellitus (DM),[9,12,15] Pneumonia,[11] and Acute Myocardial Infarction (AMI).[14] One study points to self-care dependency as a condition requiring long-term care.[17]

A reduction in hospital readmissions at 30 days was seen in six of the studies analyzed,[9,11,12,14,15,18] three of which correspond to care transition interventions,[9,11,18] two to case management[12,15] and one to home hospitalization.[14] In two studies, readmission rates remained similar in the control and intervention groups.[10,17] The bell test, as a predictor of hospital readmissions, showed an increase in readmissions in people with the worst performance.[19] The two qualitative studies included in this review suggest strategies for reducing readmissions.[13,16]

Other indicators, such as visits to the emergency room, were analyzed, and one study found a significant decrease in access to this health resource.[17] With regard to length of stay, one article showed a significant increase associated with time spent preparing for discharge, in patients with a complex therapeutic regime.[12] Mortality was also significantly reduced with interventions to promote self-management.[17] In turn, quality of life was another indicator with a significant variation after these interventions.[17,18] The result was a reduction in costs and an increase in health savings.[9–11] The detailed analysis is shown in Table 1.

Table 1. Analyzed article

Author, year	Type of study /Objective	Intervention	Results	Conclusions
Arcilla et al., 2019	Clinical trial without randomization/ To evaluate the effect of a care transition program on readmissions at 30 and 90 days in people with multiple chronic diseases.	Care transition program for safe discharge.	Readmission rate at 30 days: 7.8%; ≤10% in PI. Number of hospitalizations at 90 days: decreases in PI (p<0.0001). Program costs at 1 year: U$100,170. Estimated savings: U$735,120.	The implementation of the program resulted in a significant decrease in the 30-day readmission rate, validating the importance of training health professionals to empower people with chronic illnesses.
Cai et al., 2021	Clinical trial without randomization/ To evaluate the effect of a home hospitalization program on people with multiple chronic diseases.	Home hospitalization program.	Readmission rate at 30 and 90 days: similar in IG and CG. Length of stay: decreased by 1.6 days in the IG (p=0.16). Use of nursing homes at 90 days: decreased by 88% in the IG (p=0.02); Days at home after discharge: increased by 18% in the IG (p=0.01). Mortality: similar in IG and CG. Savings: 22% at 30 days (U$7002) and 12% at 90 days (U$6016) in the IG.	Home hospitalization programs make it possible to optimize hospital resources, reduce the length of stay, and cut costs, although there is no impact on readmissions at 30 and 90 days.
Gunton et al., 2020	Descriptive correlational study/ To evaluate the association of the bell test at discharge with readmissions at 30 days and 1 year in people with HF.	Application of the bell test at the time of discharge: get up from a lying position, walk 10 meters and pick up an object from the floor.	Rate of readmissions at 30 days for HF: increased in those with the highest test score/worst performance (p < 0.001). 30-day readmission rate for cardiovascular diseases: increased in those with the highest test score/worst performance (p=0.02). Major events: increased in those with the highest test score/worst performance (p=0.02).	A higher score/worse performance on the bell test at discharge was associated with higher readmission rates at 30 days and 1 year.
Kripalani et al., 2019	Clinical trial without randomization/ To evaluate the effect of a nursing program on the transition from care to safe discharge in people with multiple chronic diseases.	Nursing care transition program for safe discharge.	Readmission rate at 30 days: decreased in IG (p<0.001). Rate of readmissions at 90 days: decreased in IG (p<0.001). Emergency room visits at 30 and 90 days: similar in IG and CG. Savings at 30 days: U$5524 in the IG (p<0.001). Savings at 90 days: U$8779 in IG (p<0.001).	The nurse-led safe discharge care transition program reduced 30- and 90-day readmissions and associated healthcare costs. Post-discharge telehealth programs may have similar effectiveness to hospital-initiated preparation programs.
Liang et al., 2021	Randomized clinical trial/To evaluate the effect of a nurse-led telehealth program on people with multiple chronic diseases.	A telehealth program led by nurses to promote self-management of the disease.	Readmission rate: similar in the IG and CG. Emergency room visits: increased in the CG (p=0.013). Quality of life: increased in the IG (p=0.003). Adherence to medication: similar in the IG and CG. Dependence in life activities: similar in the IG and CG. Self-perception of health status: similar in the IG and CG. Mortality: decreased by 11% in the IG (p=0.027).	The telehealth program led by nurses for people with chronic illnesses reduced mortality and emergency room visits but had no significant effect on hospital readmissions. The quality of life of people under this program improved.
McCants et al., 2019	Case-control study/ To determine the impact of nurse-led integrated case management programs for people with multiple chronic diseases.	Nurse-led integrated case management program.	Readmission rate: decreased by 34.2% in IG (p = 0.012). Length of stay: increased by 4 days in IG (p < 0.0005). Destination after discharge: similar in IG and CG.	Nurse-led integrated case management programs have reduced hospital readmissions. Increasing the length of stay to prepare for discharge should be considered, as there is evidence of reduced hospital readmissions.
Mo et al., 2021	Non-randomized clinical trial/ To evaluate the effect of a nurse-led program for people with HF on mental health, quality of life and hospital readmissions.	Health education program led by care transition nurses for safe discharge; and telehealth follow-up.	Readmission rate: decreased by 4.5% in IG (p<0.05). Mental health: increased in IG (p<0.05). Quality of life: increased in the IG (p<0.05).	The nurse-led program increased the mental health levels and quality of life of people with HF and decreased the rate of hospital readmissions.
Schario et al., 2022	Qualitative descriptive study/ To describe the experiences of nurse case managers in using the chatbot application for people with multiple chronic illnesses.	Case management program via chatbot.	Adherence to healthcare: increased. Relationship with health professionals: improved. Use of differentiated healthcare: may decrease.	Chatbots have made it possible to overcome obstacles to self-management of the disease. It can reduce the likelihood of readmissions and increase proximity and trust with the healthcare team.

Sheikh et al., 2021	Cohort study / To evaluate the impact of a home hospitalization program on readmissions in people with AMI.	Home hospitalization program.	Rate of readmissions at 30 days: decreased by 3% in IG (p<0.001). Predictors of readmissions at 30 days: Age (per decade RR=1.2), HF (RR=5.8), DM (RR=1.4).	The home hospitalization program has been shown to reduce the rate of hospital readmissions. Age and comorbidities are risk predictors for 30-day readmissions.
Sousa & Santos, 2019	Qualitative descriptive study/ To understand the reasons for not contacting health professionals when HF symptoms worsen.	No intervention.	People with HF find it difficult to manage their therapeutic regimen. Three categories were identified: health management, behavioral management, and support and follow-up from health professionals.	The study demonstrates the importance of educational programs for people with HF, providing training on signs and symptoms and seeking health services in order to avoid hospital readmissions.
Sullivan et al., 2019	Clinical trial without randomization/ Promoting self-management and reducing 30-day readmissions in people with DM.	Case management program.	Readmissions at 30 days: 20% of people were readmitted. Costs: the intervention cost 53000US/year. Health knowledge: increased by 40% in the PI.	The case management program has improved self-management of the disease, adherence to healthy lifestyle habits, and reduced readmissions to 30 days.

Discussion

This scoping review identified programs with an impact on 30-day hospital readmissions. Nursing interventions focused on disease self-management, transition of care, home hospitalization, and the use of the bell test were found to be effective in reducing the hospital readmissions rates.

Nurse-led care models are based on their autonomous dimension and aim to involve patients and their families/caregivers in the management of their health condition/illness.[20] This was the reality found in this review, where interventions to promote disease management and the transition to discharge take place with empowerment processes, a core area of the nursing discipline. Lack of knowledge about disease management has been associated with increased use of health services. Nurses have the skills to adapt these programs to each person's cultural context, literacy level, and clinical condition.[16]

Four articles included in this review studied the impact of disease self-management programs, in which health education plays an important role.[12,13,15,17] The reduction in the risk of readmission associated with this strategy is based on effective control of the health condition,[21] involving support and training for the person, focusing care on their actual needs.[15,22]

The first 30 days after discharge are a vulnerable period with high readmission rates,[9,20] the inadequate transition from hospital to home being one of the possible causes of this outcome.[20,23] Premature discharge, poor communication between health professionals and the person/family, lack of understanding about self-management of the disease and/or poorly adapted treatment options are some of the causes cited as reasons for readmission.[24] This situation is particularly relevant in an aging population, such as the one found in this review, where readmissions are associated with frailty and the worsening of chronic diseases rather than acute events. In order to avoid these negative outcomes, it is necessary to develop preventive health strategies.[1]

The results of this review are in line with other studies showing that care transition programs reduce hospital readmissions[20,23] and length of stay.[20] Curiously, they do not have the same impact on emergency room visits, and may even increase them, which can be explained by the early detection of worsening signs and symptoms that require differentiated assessment.[20,23] In this review, the results of the bell test were used to promote a safe hospital-home transition, with worse scores being associated with more readmissions.[19] Although care transition programs involve different health professionals at various levels of care, it was found that nurses play a coordinating role, with interventions in areas such as symptom monitoring and management, outpatient follow-up, promotion of self-care, and health education.[9,11,18,20,23] Therapeutic education is a structured, person-centered learning process that helps individuals living with chronic illnesses to self-manage their own health, using their own resources, with the support of their carers and family members.[25] In this regard, the World Health Organization has drawn up a guide to therapeutic education, reinforcing the idea that this intervention is effective and proves that it helps these people to better manage their illness and thus achieve better results in terms of health and quality of life. It has great potential to optimize resources, reducing pressure on health systems.[22] For people with complex health conditions who frequently use health services, the use of case management programs contributes to better integration of care and self-management of the disease, reducing hospital readmissions.[24,26] These results were also found in this review.[12,13,15]

Telehealth has emerged as a strategy to improve self-management, enhancing accessibility to health care and addressing issues of geographical and time inequality.[27] In this way, greater follow-up is promoted through regular monitoring, with a view to providing timely patient-centered healthcare and optimizing resources.[27] In this study, the use of telehealth was found in four articles,[11,13,17,18] two of which showed a reduction in hospital readmissions. This health technology has also been associated with improving users' quality of life[17,18] and increased trust and proximity to the health

team.[13] In Portugal, the experience of the pandemic has encouraged interest and growth in the adoption of telehealth; however, there are still few people covered by this type of intervention as a result of low digital literacy, a lack of integration of care, and a shortage of resources, making it difficult to expand pilot projects in this area.[28]

Another alternative for continuity of care is home hospitalization, characterized by highly specialized health interventions in acute and complex conditions at home, in a personalized way in the living context.[29]

With the guarantee of quality and safety, the interconnection between the health team and the person and family outside the hospital environment makes it possible to reinforce the humanization of care, improve the perception of the disease and create opportunities for health education centered on the person and their family.[29] It usually results in better or similar clinical outcomes and is a strategy to reduce hospital overcrowding, having a special effect on preventing readmissions and early discharge with potential economic benefits.[29] In this study, home hospitalization was associated with a reduction in the rate of hospital readmissions,[14] an increase in days at home, shorter hospital stays, and less need for institutionalization in older adults, without implying an increase in health costs.[10]

In this review, nursing interventions for disease self-management, preparation for discharge, and home hospitalization are of great importance as strategies for reducing readmissions, contributing to the reduction of potentially avoidable costs.[9,10,15] Hospitalizations have very high costs, not only in terms of people's quality of life and the care process, but they also have a considerable economic impact on institutions and society.[30] Financial resources can be minimized by investing in nursing programs aimed at reducing hospital readmissions.

This study has limitations, namely that it only included primary studies in Portuguese or English over a limited period of time, which may have excluded evidence that is relevant to the study.

Conclusion

The hospital readmission rate is often used as a health indicator, reflecting the quality of care provided. This review mapped the literature and found that nursing interventions for self-management of the disease, preparation for discharge, and home hospitalization have an impact on reducing 30-day readmissions. The different interventions also reduce emergency room visits, improve quality of life, reduce mortality, and play a key role in reducing potentially avoidable costs. The exacerbation of chronic diseases such as HF, DM, and COPD is one of the main causes of readmissions, especially in older populations. The results of this study highlight the importance of the role of nurses in the multidisciplinary team and in adopting innovative strategies such as telehealth and case management. It was also possible to verify the importance of health education and self-management training, which are autonomous areas of the nursing profession.

A safe hospital-to-home transition was relevant to reducing hospital readmissions, with the home setting being a valid alternative, even in the face of complex care, with close monitoring by the healthcare team.

These interventions have advantages in reducing hospital overcrowding and the use of health services, and are effective in reducing costs and 30-day hospital readmissions. This mapping of the literature is a fundamental basis for carrying out a primary study whose objective will be to correlate nursing interventions and 30-day hospital readmissions in a university hospital.

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