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Decreasing Thirty-Day Readmissions for Heart Failure Patients

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This is to certify that the doctoral study by

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has been found to be complete and satisfactory in all respects,
and that any and all revisions required by
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2020

Abstract

Systematic Review: Decreasing Thirty-Day Readmissions for Heart Failure Patients

by

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MS, University of Texas Arlington

BS, University of Texas Arlington

Project Submitted in Partial Fulfillment

of the Requirements for the Degree of

Doctor of Nursing Practice

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Abstract

Heart failure (HF) patients have a 20-25% hospital readmission rate within the first month of discharge. Patients experiencing HF often have a decline in health resulting in frequent hospitalizations and encumbering symptoms including dyspnea, fluid retention, and orthopnea. HF is a common condition in nursing homes and accounts for a significant proportion of resident transfers to emergency departments. HF is considered one of the costliest diagnoses in the United States, estimated to cost the healthcare system billions of dollars annually. The purpose of this systematic review was to provide a synthesis of evidence-based literature on the current recommendations and strategies for reducing 30-day readmission for nursing home HF patients and to recommend effective strategies to address the problem. Kurt Lewin's force field theory was used to frame this project. A review of CINAHL, Medline, and ProQuest Nursing & Allied Health Source resulted in 7 evidence-based articles. Evidence was appraised and graded according to the levels of evidence identified by Fineout-Overholt and colleagues. Results of this systematic review demonstrated that home telemonitoring was unable to reduce HF readmission within 30-days of discharge. The strategies of utilizing structured home visits, improving nurse-physician communication, and improving staff knowledge on HF showed a reduction of HF patient readmission within 30-days of discharge. Recommendations from this SR can improve the quality of life of HF patients and their families, and reduce the high financial burden to patients, their families and the healthcare system.

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Dedication

I dedicate this project to Elvis Ngyia, FNP, PhD., who was very significant during my practicum rotation.

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I am eternally grateful to God Almighty for seeing me through this journey. His grace and love have shown like a torch light through my path. I would like to thank all the faculty members at Walden University who have contributed to my growth through this journey. A special thank you to Dr. Diane Whitehead who saw a lot of potential in me, and for her ceaseless encouragements and support. I would also like to acknowledge my wife and kids for continues support and love, which gave me the momentum for this journey. To the rest of my family and friends, thank you for all the encouraging words.

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Section 1: Nature of the Project

Introduction

More than 5.7 million adults suffer from heart failure (HF) in the United States and 50% of these die within 5 years from initial diagnosis (CDC, 2019). HF patients have the highest hospital readmission rate (20%-25%) within the first month of discharge when compared to other medical conditions (Messina, 2016). Patients experiencing HF often have a decline in health resulting in frequent hospitalizations and encumbering symptoms including dyspnea, fluid retention, and orthopnea (Allen et al., 2018). Evidence suggests the effectiveness of a number of strategies in reducing hospital readmissions for HF, including discharge planning, patient education, telephone follow up (TFU), transition coaching, and home visits, but there has been no research showing the most effective approaches in reducing HF readmissions (Jayakody et al., 2016).

The purpose of the project was to provide a synthesis of evidence-based literature on the current recommendations and strategies for reducing 30-day readmission for HF patients and to recommend effective strategies to address the problem. This project may create positive social change by providing information for clinical decision making to clinicians who care for HF patients, with the goal of enhancing patients and families' quality of life and reducing health care costs. The recommendations from this systematic review may allow nursing care facilities to explore strategies for improving quality of life (QOL) to patients and their families, and decreasing the high financial burden to patients, their families and the healthcare system (Messina, 2016; Whitaker-Brown et al., 2017).

The project may also be used to produce reduction in caregiver burden and improve family financial status by allowing more time for family members to work.

Problem Statement

A nursing home with a 206-bed capacity in a large metropolitan area in the Southern United States voiced concerns through its director of nursing (DON) about high readmission rates of HF patients within the first month of their discharge to the facility. The financial consequences to this facility were enormous, as they had received several penalties and were losing reimbursement from Medicare due to poor performance. Patient surveys also revealed a fall in patient satisfaction scores. The facility was concerned about the quality of care that had been provided to its HF patients and was searching for best evidence-based practices to improve on their QOL, reduce care giver burden, and reduce the family's financial burden. The facility also intended to meet quality improvement benchmarks for HF and avoid financial loss due to penalties and non-reimbursements from Medicare. Nursing homes and other long-term care facilities provide 24/7 care and personal support to people who are unable to dwell in the community due to several coexisting conditions and frailty.

HF is a common condition in nursing homes, with a 20% prevalence (range 15% to 45%), a 1-year mortality over 50%, and accounts for a significant proportion of resident transfers to emergency departments (Boscart et al., 2017). Considerable attention has been focused on early readmission in the past decade "after an index admission of HF, especially since the inclusion of 30-day all-cause readmission or death as a major focus of quality improvement and payment reform" (Huynh et al., 2019, pp.1). Evidence

suggests that hospital readmissions are often linked with health service deficiencies such as poor discharge orders, incomplete verbal and written instructions of patient care needs, and preventable adverse events related to medication administration or omission (Messina, 2016). Heart failure is considered one of the costliest diagnoses in the United States, estimated at $32 billion annually (CDC, 2019) This impelled the Centers for Medicare and Medicaid Services (CMS) to start tracking 30-day readmission rates as part of the Hospital Readmission Reduction Program of the Affordable Care Act (Whitaker-Brown et al., 2017). HF readmission decrease QOL for patients and family members, and better management has shown favorable outcomes, particularly with symptoms, wellbeing, and functionality (Rice, Say, & Betihavas, 2018). In this systematic review, I addressed the following practice question: What are the current recommendations and strategies for reducing 30-day readmissions for nursing home patients with HF?

Purpose

The purpose of this project was to conduct a systematic review of the literature to identify current recommendations and strategies for reducing 30-day readmission for HF patients and to determine the most effective methods to address this problem. The gap in practice that I addressed was consistency in care by identifying the most effective approaches in reducing HF readmissions. I integrated scholarship into practice by conducting a literature review from all disciplines. The project also aligned with *Essential VII: Clinical Prevention and Population Health for Improving the Nation's Health,* which incorporated leadership from the DNP prepared clinician to integrate evidence-based clinical prevention and population health services for individuals such as

those suffering from HF (ACCN, 2006). In this SR, I addressed the following practice question: What are the current recommendations and strategies for reducing 30-day readmissions for nursing home patients with HF?

Nature of the Doctoral Project

In this project, I followed the Walden University DNP Manual for Systematic Review. A detailed search of the literature for evidence-based studies specific to HF patient 30-day readmissions provided the sources of evidence. In the search, I focused on recommendations and strategies in reducing 30-day readmissions for HF patients. The databases that I explored included: CINAHL, EMBASE, MEDLINE, Google Scholar, and PubMed. I reviewed literature from the past 5 years written in English. Key words included but were not limited to *heart failure, heart failure and readmissions, heart failure and programs, heart failure and 30-day readmissions, heart failure,* and *nursing homes*. Inclusion criteria included peer-reviewed articles written in English published from 2014-2019. Exclusion criteria included non-peer reviewed articles not written in English or articles published prior to 2014. I reviewed Cochrane systematic reviews published in English from 2014-2019 and published guideline.

I followed the SQUIRE 2.0 Standards for Quality Improvement Reporting Excellence (SQUIRE 2.0, 2019) . I presented the literature the PRISMA flow diagram (PRISMA, 2015). I graded the literature using the Fineout-Overholt and Melnyk's critical appraisal evidence form (2010). I organized the literature on a Microsoft Excel spreadsheet; it included:

- Study title, Author and date of publication

- Problem description
- Aim of the Study, Setting and Sample
- Study Design and Intervention
- Ethical considerations
- Results
- Limitations
- Conclusion (SQUIRE, 2019)

I provided a summary of available evidence-based practice recommendations and strategies to reduce 30-day readmissions for HF patients. I provided recommendations to the key stakeholders at the nursing home.

Significance

Key stakeholders for this project included the HF patients, their families, and the nursing home administration. Addressing this problem will improve QOL for patients and family members. Family members will be relieved from caregiver stress and can return to other activities. Due to penalties and the financial affliction from HF readmissions, the nursing home administration had developed a sense of urgency to deal with this problem; this project can help the facility recover from its financial difficulties and improve on the quality of nursing care. This project contributes to the body of nursing by providing effective practice change recommendations to clinicians who manage HF patients. It can be transferable to HF readmission in the acute care setting.

Summary

In Section 1, I introduced the problem of 30-day readmissions. Thirty-day readmission rates for HF patients are the highest (20%-25%) when compared to any other chronic condition in the United States (Messina, 2016). HF has 20% prevalence in nursing homes, with a 1-year 50% mortality rate (Boscart et al., 2017). The purpose of this project was to identify current recommendations and strategies for reducing 30-day readmission for HF patient and to determine the most effective strategies to address this problem. In this SR, I addressed the following practice question: What are the current recommendations and strategies for reducing 30-day readmissions for nursing home patients with HF? In Section 2, I will introduce the model supporting this project, the relevance to nursing practice, and my role in the project.

Section 2: Background and Context

Introduction

The practice problem that I addressed in this SR was the escalating rate of HF patient readmissions in nursing homes and other long-term care facilities. Interventions focused on discharge planning, patient education, TFU, transition coaching, and home visits have been shown to be effective; however, no most effective methods had been identified for reducing 30-day readmissions (Jayakody et al., 2016). My goal for this project was to provide a synthesis of evidence-based literature on the up-to-date recommendations and strategies that can be used in decreasing 30-day readmission for HF patients and to determine the most applicable approaches to address the problem. In this section, I focus on the theoretical framework to address the problem, its relevance to nursing practice, the local background and context, and my role as the researcher.

Concepts, Models, and Theories

I used Kurt Lewin's force field theory to guide the change efforts toward the implementation of current strategies to decrease 30-day hospital readmissions. Several change theories were considered for use from the nursing literature, including Lewin's model and Kotter's Eight-Step Change Model. Lewin's theory was selected over Kotter's Eight-Step Change Model because of its ease of use and because it allows progress through the stages to be identified; the latter has a disadvantage in that all eight steps must be completed in a limited period (Schriner et al., 2010). Lewin's theory has a three-phase change model, which provides a general framework for understanding change in dynamic systems (White, Dudley-Brown, & Terhaar, 2016). Lewin discussed forces that

can affect change: he viewed behaviors as a dynamic balance of forces, the driving forces and the restraining forces that work in the opposing direction. Driving forces facilitate change because they push the system in the desired direction, pushing it forward for a change. The restraining forces hinder change because they push it in the opposite direction; they maintain status quo of the system (White et al., 2016

Phase 1 of the model involves *unfreezing* the current situation (destabilizing equilibrium) so that old behaviors can be rejected for the adoption of new ones. The second phase involves *changing* (when change is initiated), in which change participants at the facility identify the plan for change and implementation strategies and will have to increase the driving forces or decrease the restraining forces toward change. The final phase is *refreezing* (when equilibrium is reestablished), in which changes are implemented, integrated, and evaluated (Schriner et al., 2010). Lewin's theory is appropriate for implementation of EBP because it emphasizes that behavior is as a result of an individual and his interaction with his entire field or environment. For the nursing home to decrease its 30-day HF patient readmissions, the total situation (patients, family members, nurses, physicians, processes and the environment of the nursing home) must be considered. If only a part of the situation is considered, a misrepresented picture is likely to develop that will hinder the entire change process.

Relevance to Nursing Practice

Heart Failure Readmissions

Regardless of the type of therapy or pharmacological intervention used in the treatment of HF, the prognosis remains generally poor and is characterized by

readmissions, encumbering symptoms, poor QOL, and increased mortality (Rice et al., 2018). Additionally, HF readmission creates a huge psychological and financial burden to patients and their families (Messina, 2016; Whitaker-Brown et al., 2017). It is estimated that 26 million people have HF globally, with the incidence projected to increase 25% by 2030 (Ambrosy et al., 2014). Approximately $32 billion is spent on heart failure management annually in the United States. For this reason, the Centers for Medicare and Medicaid Services (CMS) now tracks 30-day readmission rates as part of the Hospital Readmission Reduction Program of the Affordable Care Act (Whitaker-Brown et al., 2017). According to the Healthcare Cost and Utilization Project (HCUP; 2017), HF was ranked first amongst all-cause 30-day readmission for private pay, second for Medicaid, and fifth for Medicare. When compared to all-cause 30-day readmission, HF patients account for the most hospital readmission rate (20%-25%;Messina, 2016); ranked above schizophrenia and other psychotic disorders, respiratory failure, and alcohol related disorders respectively (HCUP, 2017).

Previous studies have shown that HF readmissions are high in both developed and developing countries. In Alberta, Canada, 18% of HF patients admitted between 2004 and 2008 experienced spontaneous readmission within 30 days (Eastwood et al., 2017). In a study by Kaneko et al. (2015), they found that in Japanese patients with acute HF, the cumulative rates of readmission into the hospital were 17.5% at 1 year, 21.4% at 2 years, and 25.5% at 3 years. In a nationwide, retrospective, observational study in HF patients hospitalized in Slovania between 2004–2012, the rate of readmissions after initial

hospitalization were 11.7%, 17.2%, 20.9%, and 37.5% at 30, 60, 90 days and at 1 year respectively (Omersa et al., 2016).

Heart Failure Readmissions and Nursing Homes

A significant number of seniors with HF are eventually admitted into nursing homes. HF is prevalent by 20% in nursing homes, with a 1-year 50% mortality rate, and high rates of transfers to acute care (Boscart et al., 2017). Herrin et al., (2015) found evidence that suggest that there is increased risk of hospital readmission when HF patients are discharged to nursing home care, and that quality of the care provided at a nursing home is inversely associated to the likelihood that patients at that nursing home will be readmitted; thus nursing home measures influence the likelihood of readmissions. HF management in nursing homes does not always meet the standard established in HF guidelines set forth by reputable professional associations and the federal government (Heckman et al., 2017). Nursing home residents with HF are less likely to obtain important early detection of HF such as regular weight monitoring to detect early fluid retention (Heckman et al., 2017).). Previous studies found that the most significant impediment to ideal HF care in nursing homes is feeble interprofessional communication and collaboration (Heckman et al., 2017; Strachan et al., 2014). Other barriers include limited knowledge and ability amongst nursing home staff to properly diagnose HF and a narrow understanding of its management amongst nursing home residents (Boscart et al., 2017). The sequelae of HF readmission for nursing home residents are critical: many experience delirium and faster functional decline, and many of those discharged back to nursing home do not survive the year (Heckman et al.2017).

Heart Failure Programs to Decrease 30-Day Readmissions

The literature indicates many strategies and programs that have been used to decrease 30-day readmissions for HF, including but not limited to telehealth programs, pharmacy-driven discharge programs, and transitional care programs. Telehealth programs are a growing phenomenon in the United States and may integrate audio-video consultation, remote patient assessment and monitoring (Phelps, 2018). "Patients with HF may be discharged with multiple transition care services, including integrated home health services, phone consults with health coaches, and self-monitoring via remote monitoring devices supported by eHealth applications" (Phelps, 2018, p.154). Telerehabilitation is another area of telehealth that can be used for the rehabilitation of HF patients once discharged home. Cardiac rehabilitation (CR) through exercise training helps patients with HF to improve functional capacity and symptoms. Hospital-based CR has proven to be effective, however, attendance rate at sessions is usually very low. Telerehabilitation increases attendance rates at CR sessions because patients can implement the program by incorporating it with their daily routines at home; they are not restricted to the hospital environment (Frederix et al., 2015).

Pharmacist-led discharge programs are common and have shown benefits in decreasing discharge medication errors. Pharmacists' inclusion to HF management could potentially improve patient outcomes and reduce hospital readmissions. "Studies have demonstrated that pharmacists can contribute to improved medication adherence as well as reductions in readmissions, mortality, and hospital length of stay" (Moye et al., 2018, p.184). There are a significant number of unexpected readmissions owing to medication-

related problems, including inappropriate medication management, drug-related issues, and failure to stick to drug regimens (Moye et al., 2018; Warden et al., 2014). Moye et al., 2018 demonstrated in a randomized clinical trial (RCT) that home-based intervention for HF patients with pharmacist participation reduced 30-day readmission rates. Pharmacist participation in education and discharge instructions for HF patients is associated with a significant increase in medication adherence, a significant decrease in 30-day all-cause readmissions, and increase patient satisfaction (Warden et al., 2014; Gunadi et al., 2015).

According to Albert (2016), all clinically based health care providers have a critical role in reducing HF readmission by enhancing the assessment, management, evaluation, and communication of patients' care when transitioning from hospital to home. Poor transitioning contributes to increased healthcare spending and gaps in quality and safety and are related to increased rates of readmission. The Patient Protection and Affordable Care Act has introduced the Community-Based Care Transitions Program the goal of reducing HF readmissions, improve care, and document savings to the Medicare with(Stamp, Machado, & Allen, 2014). As we already know, readmission may reflect a failure in transitional care; hence, transitional care should start at the time of admission and continue at home. Other than standard education, most transitional care programs integrate the nurses' role to include coordination of multidisciplinary referrals according to patient's needs, enhance communication among the inpatient team members as well as home care personnel. Nurses also play a role in developing and implementing personalized care plans to incorporate patient and family education, medication

management, and increasing the patient's activity levels/functional capacity (Stamp et al., 2014).

Nurses will be supported through this project by understanding the problem of HF, how it affects nursing homes and other long-term care facilities and identifying strategies that can be used to solve this problem.

Local Background and Context

Readmission of HF patients within 30 days of discharge is a significant problem for the healthcare system in the United States. HF is a chronic disease affecting more than 5.7 million adults in the United States, with half this number dying within 5 years of initial diagnosis (CDC, 2019). HF is "a complex clinical syndrome of signs and symptoms that are caused by defects in cardiac structure, function, or both, and ultimately leads to impaired peripheral circulation and organ oxygenation" (Albert, 2016, p.100). Patients with HF often have deterioration in health, leading to recurrent hospitalizations and impeding symptoms including dyspnea, fluid retention, and orthopnea (Allen et al., 2018). HF patients have the most hospital readmission rate (20%-25%), when compared to all-cause 30-day readmission (Messina, 2016). This compelled the Centers for Medicare and Medicaid Services (CMS) to start monitoring 30-day readmission rates as part of the Hospital Readmission Reduction Program of the Affordable Care Act (Whitaker-Brown et al., 2017). The United States is experiencing a steady rise in the incidence of HF, with an estimated 825,000 new cases each that is predicted to cost the healthcare system 69.8 billion dollars by 2030 (Tanna et al., 2015).

In the development of this DNP project, I was approached by the director of nursing (DON) of a nursing home with a 206-bed capacity in a large metropolitan area in the Southern United States, voicing his concerns about high readmission rates of HF patients within the first month of their discharge to the facility. This nursing home facility was not meeting quality improvement benchmarks for HF readmission despite all the efforts of various stakeholders. The high rates of HF readmission within 30 days of discharge become a burden to this facility from several penalties and loss of reimbursement from Medicare due to poor performance. A recent survey carried out at this facility indicated a decline in patient satisfaction scores. Stakeholders were apprehensive about the situation and were searching for best evidence-based practices to improve on patients' QOL and satisfaction scores, and curb on the facility's financial losses; thus they aimed at meeting quality improvement benchmarks for HF and avoid financial loss due to penalties and non-reimbursements from Medicare. Management of HF in nursing homes is suboptimal to that recommended in guidelines (Heckman et al., 2017). HF patients discharged to nursing homes have an increased risk of hospital readmission; readmission rate is inversely associated to the quality of care provided (Herrin et al., 2015).

I am an advanced practice registered nurse who cares for patients with HF in the community, it was important to understand and establish relevance to the problem faced by the nursing home facility. My role in this SR was to appraise the current literature to identify current recommendations and strategies for reducing 30-day readmission for HF patients and to determine the most effective methods to address this problem. I integrated

scholarship into practice by reviewing literature from all discipline to find the best available evidence to help improve patient outcomes at this nursing home facility and other healthcare settings. During my doctoral practicum experience, I helped a team of healthcare providers manage HF patients in an outpatient setting. Currently, I care for HF patients in their homes, nursing homes, and other long-term care facilities both in urban and rural areas. HF is more prevalent in nursing homes than acute care facilities by 20% i (Boscart et al., 2017). I was able to relate to the concerns and request of the DON at the nursing home; hence, my motivation for this project.

I saw this as an opportunity to impact social change by providing information for clinical decision making to clinicians who care for HF patients, to improve the patients' quality of life, and reduce the financial burden on both the patients' family and the health care facilities. Working in both urban and rural areas might have skewed my perspectives and created potential bias, as the urban population turn to be more educated and financially upright than the rural population. However, working with both populations gave me the opportunity to incorporate different perspectives toward the accomplishment of this DNP project.

Summary

HF readmissions remain a burden to patients, their families and the healthcare system. Lack in consistency of care such as poor discharge planning, patient education, telephone follow up (TFU), transition coaching, and home visits, have been highlighted as leading factors for 30-day HF readmission (Jayakody et al., 2016). Section 2 introduced Kurt Lewin's force field theory framing this project, the evidence supporting

the need for the project, and my role in developing this systematic review. The practice question was: What are the current recommendations and strategies for reducing 30-day readmissions for nursing home patients with HF? Section 3 explored the development of this systematic review and the analysis and synthesis of the evidence.

Section 3: Collection and Analysis of Evidence

Introduction

The purpose of this SR was to evaluate the literature to identify current recommendations and strategies for reducing 30-day readmission for HF patients and to determine the most effective methods to address this problem. Change efforts toward the implementation of current strategies to decrease 30-day hospital readmissions were framed using Kurt Lewin's force field theory. Section 3 includes the steps to be followed for this systematic review, following the guidelines in the Walden University DNP Manual for Systematic Review.

Practice-focused Question

The practice question was: What are the current recommendations and strategies for reducing 30-day readmissions for nursing home patients with HF?

Sources of Evidence

The following databases and search engines were explored: CINAHL Plus with full text, Embase, Medline, ProQuest Nursing & Allied Health Source, PubMed, Cochrane Database of Systematic Reviews, Google Scholar and TRIP. Inclusion criteria included evidence from peer-reviewed sources, written in English for the past 5 years. Exclusion criteria included non-peer reviewed articles not written in English or older than 5 years. Search terms included: (a) *heart failure, cardiac failure, chf, chronic heart failure, or congestive heart failure;* (b) *readmission, rehospitalization, readmittance, re-hospitalization, re-admittance, or re-admission;* (c) *nursing homes, care homes, long term care, or residential care;* and (d) *strategies, best practices, or guidelines*. The most

current guidelines from the American Heart Association and the American College of Cardiology were reviewed. This systematic review followed the Walden University DNP Manual for Systematic Review. Walden University IRB approval was obtained.

Analysis and Synthesis

Evidence was recorded on a Microsoft Excel spreadsheet with the following headings:

- Study title, Author and date of publication
- Problem description
- Aim of the study, setting, and sample
- Study design and intervention
- Ethical considerations
- Results
- Limitations
- Conclusions
- Level of evidence
- Comments

Each article was reviewed using the PRISMA checklist (Moher, Liberati, Tetzlaff, & Altma, 2009). Evidence was graded according to the levels of evidence identified by Fineout-Overholt and colleagues (Fineout-Overholt, Melynk, Stillwell, & Williamson, 2010). Final analysis was reported on the PRISMA flow diagram (Moher, Liberati, Tetzlaff, & Altma, 2009). A synthesis of all evidence was reported in Section 4 according to the levels of evidence (Fineout-Overholt et al., 2010) and following guidelines from

the SQUIRE 2.0 revised standards for quality improvement reporting excellence (2016). Results of the analysis were described to determine applicability of the results to the project question. Limitations of the results that impact the applicability of the results to the project question were reported. Results of the SR and recommendations for improving HF readmissions were presented to the DON in the nursing home.

Summary

Section 3 described the process of implementation, analysis and synthesis of evidence for this SR following the guidelines set forth in the Walden University DNP Manual for Systematic Review. The practice question was: What are the current recommendations and strategies for reducing 30-day readmissions for nursing home patients with HF? Section 4 described the finding, implications, and recommendations for reducing 30-day HF readmissions at the identified facility.

Section 4: Findings and Recommendations

Introduction

Hospital readmission rates for HF patients within the first month of discharge are at 20% to 25%, which is the highest when compared to other medical conditions (Messina, 2016). In nursing homes, HF is a common condition, with 20% prevalence, and a 1-year mortality over 50% that leads to significant transfers of residents to the emergency department (Boscart et al., 2017). A nursing home with a 206 beds capacity in a large metropolitan area in the southern United States has had high readmission rates for its HF patients within the first month of discharge and has realized significant financial losses and penalties. The purpose of this project was to conduct a systematic review of the literature to identify current recommendations and strategies for reducing 30-day readmission for HF patients and to determine effective methods to address this problem. The gap in practice addressed is consistency in care by identifying successful methods in reducing HF readmissions. This systematic review addressed the following practice question: What are the current recommendations and strategies for reducing 30-day readmissions for nursing home patients with HF?

Evidence for this project was gathered using databases such as CINAHL Plus with full text, Medline, and ProQuest Nursing & Allied Health Source. Articles included were peer-reviewed, written in English for the past 5 years. Boolean search terms included: *heart failure or cardiac failure or chf or chronic heart failure or congestive heart failure AND readmission or rehospitalization or readmittance or re-hospitalization or re-admittance or re-admission AND nursing homes or care homes or long term care*

or residential care AND strategies or best practices or guidelines. To focus more on the nursing home aspect, I limited that search field to *SU Subject terms* so that it will only return the articles that are primarily about patients in nursing homes, long-term care, and residential care. Initial search of the databases yielded a total of 534 articles. After applying inclusion and exclusion criteria, 112 articles were identified for inclusion. Selected articles were arranged in a table and scored according to level of evidence (Appendix A). After reviewing the abstracts of all 112 articles, only seven were considered for inclusion in this systematic review. Appendix B outlined the process of selection using the PRISMA flow diagram.

Findings and Implications

A total of seven articles were included in this systematic review. Evidence was appraised and graded according to the levels of evidence identified by Fineout-Overholt and colleagues (2010;Table 1). Two were Level I, one Level II, one Level IV, one Level V, and two Level VI. To help reduce 30-day HF readmission, strategies that have proven successful are imperative. Five themes were identified from these articles: (a) knowledge and skill enhancement (b) post discharge home visits (c) improvement in communication among providers (d) home telemonitoring (e) poor discharge instructions.

Table 1

Levels of Evidence

Level of Evidence	Description	Number of Articles
I	A synthesis of evidence from all relevant randomized controlled trials.	2
II	An experiment in which subjects are randomized to a treatment group or control group.	1
III	An experiment in which subjects are nonrandomly assigned to a treatment or control group.	0
IV	Case-control study: a comparison of subjects with a condition (case) with those who don't have the condition (control) to determine characteristics that might predict the condition. Cohort study: an observation of a group(s) (cohort[s]) to determine the development of an outcome(s) such as disease.	1
V	A synthesis of evidence from qualitative or descriptive studies to answer a clinical question.	1
VI	Qualitative study: gathers data on human behavior to understand *why* and *how* decisions are made. Descriptive study: provides background information on the *what*, *where*, and *when* of a topic of interest.	2
VII	Authoritative opinion of expert committee.	0

Adapted from Fineout-Overholt and Melnyk's critical appraisal evidence (2010).

Level I Study

Pekmezaris et al. (2018) conducted a meta-analysis of 26 randomized controlled trials (RCT) to determine the effectiveness of home telemonitoring (HTM) in decreasing mortality and hospital readmission in patients. Data for this study was extracted independently and limited to RCT conducted between January 2001 and November 2016

(Pekmezaris et al., 2018). The authors were able to demonstrate a reduction in HF mortality using HTM; this was time dependent. They found that HTM reduced the chances of all-cause mortality by 40% [odd ratio (OR): 0.60] and heart-related mortality by 61% (OR: 0.39) at 180 days respectively. At 365 days, the decrease in all-cause mortality was not significant (OR: 0.85; $p = 0.461$; Pekmezaris et al., 2018). The impact of HTM on all-cause hospitalization was not significant at 180 days (OR): 0.97; $p = 0.902$) or at 90 days (OR: 0.81; $p = 0.472$). There was also no significant decrease in heart failure-related hospitalization with HTM at 180 days (OR: 0.69; $p = 0.112$) (Pekmezaris et al., 2018). A significant increase in the odds of all-cause emergency department visits at 180 days was identified with HTM. The study also found out that home care provisions did not significantly moderate the effects of HTM on all-cause hospitalization from 60 to 180 days (OR: 1.45; $p = 0.217$; Pekmezaris et al., 2018). This study provided evidence that HTM reduces the odds for all-cause mortality and heart failure related mortality. However, it also demonstrated that decrease mortality is not necessarily associated with decrease utilization or readmission. HTM can help with early recognition of HF exacerbation, which prompts early intervention, and for some this intervention requires a visit to the emergency department (Pekmezaris et al., 2018).

Bauce et al. (2018), in an integrative review, described the usefulness of HTM (videoconferencing) with HF patients on improving the outcomes of service utilization (inpatient and/or emergency department), self-care, and QOL. Video conferencing included the use of monitoring or videophone technologies permitting two-way communication; most of these systems also had built-in capabilities that allowed for

transmission of physiologic data such as pulse, weight, blood pressure, and electrocardiographic tracings (Bauce et al., 2018). Eleven studies met inclusion criteria, "nine were randomized controlled trials (RCT; two were pilot studies), one was a one-group design, and one was a matched-cohort design" (Bauce et al., 2018, p.47). Seven studies measured hospital service use as a primary outcome, with five reporting significant decrease in HF readmissions and emergency department visits (Bauce et al., 2018). Four studies measured outcomes related to self-care abilities. The authors found that video conferencing was significant in improving clinical symptoms related to blood pressure and weight at 60 and 120 days; however, it was less effective in improving HF patients' self-assessment of symptoms related to diet and medication when compared to asynchronous monitoring (Bauce et al., 2018). Five of the studies measured QOL; three of them showed significant improvement in QOL with video conferencing, although "QOL was broadly conceptualized and inconsistently measured" (Bauce et al., 2018, p.50). Most of the studies used in this integrative review showed a decrease in hospital service utilization and an increase in QOL, suggesting that video conferencing when combined with physiologic monitoring could be used for early detection of exacerbating symptoms, hence prompting early intervention at home and reduce hospital readmission and emergency department visits.

Level II Study

In a randomized clinical trial (RCT), Hägglund et al. (2015) evaluated the effects of a home intervention systemon self-care, quality of life, knowledge, and hospital readmission of patients discharged home with HF. The intervention consisted of "a

specialized software, a tablet computer wirelessly connected to a weight scale" (Hägglund et al., 2015, p.193). Eighty-two patients with HF were recruited between February 22, 2013 and June 18, 2013 from three university hospitals in Stockholm, Sweden and randomized to either an intervention group (IG) (n=42) or a control group (CG; n=40); patients receiving any structured follow-up from the HF-clinic were excluded from this study (Hägglund et al., 2015). The IG received a basal information sheet and an installed HIS in their homes. The HIS was pre-programed with HF advises according to guidelines for diuretics in the case of weight gain. The tablet had four different views: (a) First view (actual day weight, drug dose, and brief information to improve HF); (b) second view (overview of HF, lifestyle modifications [e.g. Exercise, smoking, fluid restriction, vaccinations]); (c) third view (graphical representation of variations in weight, medication and wellbeing over time); and (d) fourth view (contact details of nurses and doctors at the HF center and of technical support). The CG received only the basic information sheet (Hägglund et al., 2015). At 3 months of implementation, there was a significant improvement in self-care with the IG $p < 0.05$ (median IG: 17 [IQR: 13, 22] and CG: 21 [IQR: 17, 25]). The health-related quality of life (HRQoL) measured by the Kansas City Cardiomyopathy Questionnaire noted a significant higher score with the IG $p < 0.05$ (median IG: 65.1 [IQR: 38.5, 83.3] and CG: 52.1 [IQR: 41.1, 64.1]); physical limitation was also improved with the IG $p < 0.05$ (median IG: 54.2 [IQR: 37.7, 83.3] and CG: 45.8 [IQR: 25.0, 54.2]). There were only 1.3 HF hospital days for the IG versus 3.5 for the CG; this represented a 62% decrease in the IG (risk ratio: 0.38, 95% confidence interval: 0.31 – 0.46, $p < 0.05$). Knowledge was improved in both

groups, but no significant difference was noted in median scores (IG: 13 [IQR: 12, 14] and CG: 13 [IQR: 12, 14]; $p = 0.4$; Hägglund et al., 2015). Patients in the IG who received the HIS intervention had an improved self-care and disease specific HRQoL. This study also demonstrated a reduction in HF-related hospital days for patients in the IG (Hägglund et al., 2015).

Level IV Study

Smith et al. (2016) conducted a case-control study at 192-bed community hospital by targeting a home visit intervention (PACT) program to high-risk patients discharged from the medical/surgical unit of the hospital. Four variables (Length of stay, acuity of visit, a modified Charlson comorbidity index, and number of emergency room visits in the 6 months before the index admission [LACE]) were found to be the most prevailing predictors of 30-day risk of readmission or death. Scores in the LACE tool range from 0 to 19 of risk of readmission (0-6 = low risk; 7-10 = intermediate risk; 11-15 = high risk; and > 15 = very high risk; Smith et al., 2016). On the day of discharge, all patients were scored using the LACE tool; only those with a LACE score of 11-15 (high risk for readmission), discharged home, and receiving no chemotherapy, radiation therapy or hospice care were included in the study. Those who met inclusion criteria ($n = 532$) received a post-acute care transition (PACT) home visit and were seen within 72 hours of discharge. The control group ($n = 144$) met inclusion criteria but did not receive the PACT visit (Smith et al., 2016). The PACT home visit is highly structured and "was designed to assess continuing clinical improvement; ensure post-hospitalization medication understanding and compliance; resolve medication discrepancies and

misconceptions; provide referral to ongoing, supportive resources; and provide adjustments to the clinical care plan if required" (Smith et al., 2016, p.312). All participants were followed for 30 days. Those who received the PACT intervention had a 30-day readmission rate of 12.22%, significantly lower than that of the control group at 23.61%; a relative reduction rate between 42% and 53.9% ($p < 0.05$) for the intervention group (Smith et al., 2016). A powerful readmission prediction tool like the LACE and a highly structure home visit program like the PACT can be used together in a focused area like HF, by targeting interventions to patients at high risk for readmissions.

Level V Study

In a literature review of mixed studies (qualitative, descriptive, and RCT), Renz and Carrington (2016) explored nurse-physician communication barriers and communication protocols that may impair or improve patient outcome in a long-term care facility. Physicians perceived nursing experience and competency as a significant impediment to proper communication (Renz & Carrington, 2016). According to nurses' perspectives, some communication barriers included: lack of physician openness to communication (unpleasant, rude, and hurried), lack of physician professionalism, and logistical challenges (Renz & Carrington, 2016). "Nurses also identified their own barriers, including lack of skills in collecting and disseminating assessment data, time constraints, and environmental noise" (Renz & Carrington, 2016, p.35). Five studies noted that when structured communication protocols (Situation, Background, Assessment, and Recommendation [SBAR] and Communicating Health Assessment by Telephone [CHAT]) were implemented in a long-term care facility as an intervention to

enhance nurse-physician communication, nurses expressed increased satisfaction with communication and improvements in clinical outcomes were noted (Renz & Carrington, 2016). There were reports in reductions of hospital transfers over a 6-month period compared to the same period in the previous year: "the rate of 30-day readmission also showed steady decline (Renz & Carrington, 2016, p.35). There were also reports in reductions of preventable adverse events and changes in care practices (physician responsiveness to nurses' phone call and treatment decision toward changes in patients' clinical conditions) (Renz & Carrington, 2016). The results of these findings could be used in the area of HF. Evidence showed that improving nurse-physician communication in the long-term care setting can significantly impact patient outcome and safety, and provider and patient satisfaction (Renz & Carrington, 2016).

Level VI Study

Heckman et al. (2018) examined the impact of improving knowledge and interprofessional (IP) communication of staff caring for HF patients through a pilot study on single units in two long-term care facilities for over six months. Study objects were addressed using a mixed-method repeated-measures design. Qualitative data was obtained through focus groups, interviews, and observations; meanwhile, quantitative data was collected using surveys and scales. A convenience sample was used to purposely recruit all working group participants that were actively engaged in all phases of the project for interviews (Heckman et al., 2018). The project was named 'enhancing knowledge and interprofessional care for heart failure (EKWIP-HF)', and had five phases: (a) address knowledge gaps in staff; (b) develop communication processes for

HF; (c) implement communication processes and consolidate knowledge; (d) address knowledge gaps; and (e) full interprofessional integration (Heckman et al., 2018). Both study sites showed an improvement in HF-specific knowledge and IP communication. Staff was able to identify patients with potential HF through IP collaboration. "Results indicate a perceived increase in staff confidence and self-efficacy, strengthened assessment and clinical proficiency skills, and more effective IP collaboration" (Heckman et al., 2018, p.1). This study highlighted the importance of knowledge improvement and IP communication in the improvement of HF outcomes. It could be used to identify and communicate worsening signs of HF that could quickly be addressed and prevent readmission.

Sevilla-Cazes et al. (2018) in an observational qualitative study examined the challenges to HF faced by patients and caregivers, and the perceived reasons for readmission. Data was collected interviewing patients and their caregivers on the challenges in home HF management. A purposive sampling was done to recruit two groups of HF patients discharged home from two different hospitals, for a one-time interview: "(1) patients with a readmission following a prior heart failure admission (readmission group) and (2) patients recently discharged from a heart failure admission (index admission group)" (Sevilla-Cazes et al., 2018, p.1701). Patients in the readmission group had been readmitted for HF after at least one hospitalization in the preceding 30-days; patients in the index group had been recently discharge home subsequent to their first diagnoses with HF (Sevilla-Cazes et al., 2018). New groups of patients were recruited to participate in two focus groups; one for the patients and another for their

caregivers to internally validate the results of the interviews (Sevilla-Cazes et al., 2018). Physical and socio-emotional factors were identified influencing patients' HF home management and readmissions. Patients identified problems with adapting to HF recommendations as opposed to adherence. Reasons for poor adaptation stemmed from ambiguity regarding recommendations, due to vague instructions and temporal incongruence amid behavior and symptom onset. HF management decision-making ability was impaired due to uncertainty with recommendations, leading to decrease adherence and worsening of symptoms. Patients therefore viewed the hospital as the safest place for recovery of these worsening symptoms (Sevilla-Cazes et al., 2018).

Finding Summary

Analysis of articles included in this systematic review presented mixed result to the intervention of HTM. Evidence from Pekmezaris et al. (2018) provided that HTM reduces the odds for all-cause mortality and heart failure related mortality; however, it also demonstrated an increase in service utilization or readmission. On the other hand, two of the studies were able to demonstrate a reduction in HF readmission using HTM (Bauce et al., 2018; Hägglund et al., 2015). The evidence available on the strategy of HTM was limited in demonstrating a reduction in HF readmission within 30-days of hospital discharge. The strategy of utilizing a highly structured home visit program to reduce 30-day hospital readmission was shown to be successful, especially when coupled with a tool like the LACE (Smith et l., 2016). This could be successfully implemented in the area of HF to reduce 30-day readmission. There was evidence that showed improving nurse-physician communication and instituting better communication protocols can

improve patient outcome in a long-term care facility (Renz & Carrington, 2016; Heckman et al., 2018). This strategy is imperative across all healthcare settings. If implemented in the area of HF, it could improve outcomes and reduce readmission. Evidence also showed that improving staffs' knowledge of HF can improve outcome and reduce readmission (Heckman et al., 2018). One of the studies showed that when HF patients and caregivers had uncertainty about HF recommendations or found the HF discharge instructions to be vague, it impaired their HF management decision-making, hence, increasing HF readmission (Sevilla-Cazes et al., 2018).

Recommendations

After reviewing the current evidence, I made the following recommendations to the facility: (a) development of communication protocols and improving on inter-professional communication, (b) development of educational programs that improves nurses', patients', and caregivers' HF management knowledge, (c) implementation of a post-acute care transition (PACT) home visit within 72 hours of HF discharge, and (d) development of clear and easy to understand discharge instructions with the most current recommendations on post discharge HF management. The risk for HF readmission could be determined using a readmission prediction tool such as the LACE tool or similar. Such a tool allows for the stratification of every patient during hospital discharge, which could be useful in targeting interventions to HF patients who are at significant risk for readmission (Smith et al., 2016).

Strengths and Limitations of the Project

The strengths of this systematic review included the use of peer-reviewed articles over the past five years to identify strategies that could be used to reduce 30-day readmission of HF patients. This allowed for identification of solutions to the problem presented according to current research. There were many strategies noted to reduce HF readmission, however, HTM explored in Level I & II evidence-based practice was limited in demonstrating a reduction in HF readmission within 30-days of hospital discharge. Also, there was inconsistency in the definition of HTM. This study was limited to nursing homes and long-term care. This study was also limited to 30-day readmission for patients with HF only. Other healthcare settings and chronic illnesses could benefit from the strategies identified in this systematic review to reduce hospital readmissions. There was difficulty in finding articles focused on 30-day readmission in nursing homes and long-term care facilities, indicating a need for future research to be carried-out in these settings.

Summary

Evidence from this systematic review offered several strategies, which if implemented together could help reduce the problem of 30-day readmission of HF patients. These strategies included: (a) development of communication protocols and improving on inter-professional communication, (b) development of educational programs that improves nurses', patients', and caregivers' HF management knowledge, (c) implement a post-acute care transition (PACT) home visit within 72 hours of HF discharge, (d) administer clear and easy to understand discharge instructions with the

most current recommendations on post discharge HF management. There was inconsistency in the definition of HTM and evidence demonstrated mixed results in its impact for HF readmissions. Also, none of the studies on HTM were able to demonstrate a reduction of HF readmission within 30-days of discharge from the hospital. The findings of this study could be implemented in all healthcare settings and with other health diagnosis.

Section 5: Dissemination Plan

Introduction

The purpose of this systematic review was to identify current recommendations and strategies for reducing 30-day hospital readmission for HF patients. Kurt Lewin's force field theory was introduced to help guide the change efforts toward the implementation of the results of this systematic review. Lewin's theory has a three-phase change model, which offers a general structure for understanding change in the dynamic systems (White, Dudley-Brown, & Terhaar, 2016). The recommendations generated from this systematic review were provided to the nursing home concerned for evaluation and dissemination.

This project contributes to the body of nursing by providing effective practice change recommendations to clinicians and institutions that manage HF patients. Key audiences included the HF patients, caregivers and the institutions caring for these patients. My future goal is to reach as many of these audiences as possible by having this systematic review published in the *International journal of Nursing (IJN)*, a peer-reviewed journal.

Analysis of Self

As an advanced practice registered nurse who cares for patients with HF in the community, it was important to recognize and establish relevance to the problem of HF readmission; I saw this as an opportunity to impact social change. Throughout this research project, I have amassed a great deal of knowledge and experience in the areas of HF and chronic disease management. My doctoral clinical practicum experience

introduced me to a team of healthcare providers who managed patients with HF in the outpatient setting. This was significant in that it gave me a renewed perspective of interprofessional collaboration and HF management in the community. As a professional I intend to impact practice and improve HF patients' outcomes by integrating this knowledge and experience into the clinical setting. As a scholar, I was able to incorporate scholarship into practice by reviewing literature from all discipline and finding the best existing evidence to enhance clinical decision-making and improve outcomes for HF patients, related to *Essential III: Clinical Scholarship and Analytical Methods for Evidence-Based Practice* (ACCN, 2006). During this project, I developed growth in the research process in the areas of critical appraisal, analysis, and synthesis of research data. The most significant challenge was in finding articles that focused on 30-day readmission in nursing homes and long-term care facilities. Overall, completing this project has increased my confidence and enthusiasm in carrying out future evidenced-based research to help translate evidence into practice that will help improve patient outcomes.

Summary

This systematic review was conducted to identify strategies that can help reduce 30-day hospital readmissions. The evidence drawn from the literature corroborate the problem that led to carrying-out this systematic review, indicating a strong need to reduce 30-day hospital readmission and improve HF patient outcomes. This could be done by using strategies identified in the literature, which included: (a) development of communication protocols and improving on inter-professional communication, (b)

development of educational programs that improves nurses', patients', and caregivers' HF management knowledge, (c) implementation of a post-acute care transition (PACT) home visit within 72 hours of HF discharge, and (d) development of clear and easy to understand discharge instructions with the most current recommendations on post discharge HF management. Healthcare providers from acute, outpatient, and long-term care setting could all take advantage of the evidence in this systematic review to improve HF patient outcome and in any population.

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Appendix A: Summary of Articles included in the Systematic Review

Author/Year	Level of evidence	Study design	Setting	Participants	Outcome
Bauce et al., 2018.	Level I	Integrative review of RCT	N/A	N/A	It was found that HTM (video conferencing) was significant in improving clinical symptoms related to blood pressure and weight at 60 and 120 days; however, it was less effective in improving HF patients' self-assessment of symptoms related to diet and medication when compared to asynchronous monitoring. The research demonstrated a decrease in hospital service utilization and an increase in QOL.
Pekmezaris et al., 2018.	Level I	Systematic review and meta-analysis	N/A	N/A	They found out that HTM reduced the chances of all-cause mortality by 40% [odd ratio (OR): 0.60] and heart-related mortality by 61% (OR: 0.39) at 180 days

					respectively. At 365 days, the decrease in all-cause mortality was not significant (OR: 0.85; $p = 0.461$). The impact of HTM on all-cause hospitalization was not significant at 180 days (OR): 0.97; $p = 0.902$) or at 90 days (OR: 0.81; $p = 0.472$). There was also no significant decrease in heart failure-related hospitalization with HTM at 180 days (OR: 0.69; $p = 0.112$). A significant increase in the odds of all-cause emergency department visits at 180 days was identified with HTM.
Hägglund et al., 2015	Level II	RCT	Three university hospitals in Stockholm, Sweden & Participants home.	Participants, ($N = 82$). IG, $N = 42$. CG, $N = 40$	Patients in the IG who received the HIS intervention had an improved self-care and disease specific HRQoL. There were only 1.3 HF hospital days for the IG versus 3.5 for the CG;

					representing a 62% decrease in the IG (risk ratio: 0.38, 95% confidence interval: 0.31 – 0.46, $p < 0.05$). Knowledge was improved in both groups, but no significant difference was noted in median scores (IG: 13 [IQR: 12, 14] and CG: 13 [IQR: 12, 14]; $p = 0.4$).
Smith et al., 2016.	Level IV	Case-control	Community hospital located in suburban Denver, Colorado & participants' home.	Participants, ($N = 532$). Controls, ($N = 144$).	Those who received the PACT intervention had a 30-day readmission rate of 12.22%, significantly lower than that of the control group at 23.61%; a relative reduction rate between 42% and 53.9% ($p < 0.05$) for the intervention group.
Renz & Carrington, 2016	Level V	Systematic review of qualitative and descriptive studies.	N/A	N/A	There were reports in reductions of hospital transfers over a 6-month period compared to the same period in the

					previous year, "the rate of 30-day readmission also showed steady decline" (Renz & Carrington, 2016, p.35). There were also reports in reductions of preventable adverse events and changes in care practices.
Heckman et al., 2017.	Level VI	Mixed method.	Two units of two long-term care (LTC) homes in South Central Ontario, Canada.	Unit 1, *N*= 44 (32 residents, 8 PSWs, 2 RPNs, 1 RN, 1 MD). Unit 2, *N*= 41 (25 residents, 7 PSWs, 4 RPNs, 4 RN, 1 MD).	Both study sites showed an improvement in HF-specific knowledge and IP communication. Staff was able to identify patients with potential HF through IP collaboration. "Results indicate a perceived increase in staff confidence and self-efficacy, strengthened assessment and clinical proficiency skills, and more effective IP collaboration" (Heckman et al., 2018, p.1).

Sevilla-Cazes et al., 2018.	Level VI	Observational qualitative study.	Two hospitals (University of Pennsylvania hospital and Penn Presbyterian Medical Center)	Participants, (N = 31).	HF management decision-making ability was impaired due to uncertainty with recommendations, leading to decrease adherence and worsening of symptoms. There was increase in hospital service utilization as patients viewed the hospital as the safest place to take care of their worsening symptoms.

Appendix B: PRISMA Flow Chart