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The Impact of Nurse-Led Discharge Teaching on Readmission Rates in Postoperative Patients

A Literature Review

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Abstract

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Post-surgical hospital readmissions represent a significant challenge for the healthcare sector. Effective discharge education is crucial for supporting the transition from hospital to home and reducing postoperative complications that can lead to readmissions. Patient guidance and the transfer of information during discharge highlight the important role of nurses as frontline caregivers and providers of discharge teaching. The purpose of this study is to describe the impact of nurse-led discharge teaching methods on readmissions in postoperative surgical patients. The aim is to provide insight into nurse-led discharge teaching and its relationship to hospital readmission rates.

Relevant scientific studies for the thesis were identified by searches in two scientific databases; PubMed and CINAHL, as well as through Google Scholar and snowballing through citations. A total of 14 primary studies were selected and analyzed using inductive qualitative content analysis to answer the two research questions posed in this thesis: (1) What are the different types of nurse-led discharge education provided to adult postoperative patients? And (2) How does nurse-led discharge education influence the rate of hospital readmissions?

This literature review was executed as a final thesis for the Degree Program in Nursing at Metropolia University of Applied Sciences, Helsinki. Results from the data analysis revealed several nurse-led discharge teaching methods, including follow-up-based, technological, multi-modal, structured, and individualized. The influence of these was demonstrated as reduced or increased readmissions, other positive effects, other negative effects, or no effect. The results indicate that nurse-led discharge education has the potential to reduce readmissions and improve post-operative patient outcomes. The effects of nurse-led discharge teaching varied according to the method; however, the majority led to a reduction in readmissions as well as other positive effects such as enhanced patient readiness, improved communication, and enhanced continuity of care. Although a few interventions showed no significant impact and one resulted in increased readmissions under specific conditions, results suggest that the types of nurse-led discharge education applied in the studies can be considered a valuable tool for supporting patients in the early post-discharge period.

Keywords: Nurse-led, discharge teaching, postoperative, readmission

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Leikkauksen jälkeiset sairaalaan palaamiset ovat merkittävä haaste terveydenhuoltoalalle. Tehokas kotiutusopetus on ratkaisevan tärkeää, jotta potilas voi siirtyä sairaalasta kotiin ja leikkauksen jälkeiset komplikaatiot, jotka voivat johtaa sairaalaan palaamiseen, vähenevät. Potilaan opastaminen ja tiedon välittäminen kotiutuksen yhteydessä korostavat hoitajien tärkeää roolia ensisijaisina hoitajina ja kotiutusopetuksen antajina. Tämän tutkimuksen tarkoituksena on kuvata hoitajien johtamien kotiutusopetuksen menetelmien vaikutusta leikkauksen jälkeisten potilaiden sairaalaan palaamisiin. Tavoitteena on tarjota tietoa sairaanhoitajien johtamasta kotiutusopetuksesta ja sen suhteesta sairaalaan palaamisen määrään.

Opinnäytetyöhön liittyviä tieteellisiä tutkimuksia etsittiin kahdesta tieteellisestä tietokannasta, PubMedista ja CINAHLista, sekä Google Scholarin avulla ja lumipallomenetelmällä viitteiden kautta. Yhteensä 14 primaarista tutkimusta valittiin ja analysoitiin induktiivisella kvalitatiivisella sisällönanalyysillä, jotta voitiin vastata tämän opinnäytetyön kahteen tutkimuskysymykseen: (1) Millaisia hoitajien johtamia kotiutusopetuksen muotoja annetaan aikuisille leikkaukspotilaille? Ja (2) Miten hoitajien johtama kotiutusopetus vaikuttaa sairaalaan palaavien potilaiden määrään?

Tämä tutkimus toteutettiin lopputyönä Metropolia-ammattikorkeakoulun hoitotyön koulutusohjelmassa Helsingissä. Analysoinnin tulokset paljastivat useita hoitajien johtamia kotiutusopetuksen menetelmiä, mukaan lukien seurantapohjaiset, teknologiset, multimodaaliset, jäsennellyt ja yksilölliset menetelmät. Näiden menetelmien vaikutukset ilmenivät uudelleenottojen vähenemisenä tai lisääntymisenä, muina positiivisina vaikutuksina, muina negatiivisina vaikutuksina tai ilman vaikutusta. Tulokset osoittavat, että hoitajien johtamalla kotiutusopetuksella on potentiaalia vähentää uudelleenottoja ja parantaa potilaiden leikkauksen jälkeisiä tuloksia. Hoitajien johtaman kotiutusopetuksen vaikutukset vaihtelivat menetelmän mukaan, mutta suurin osa johti uudelleensairaalahoitojen vähenemiseen sekä muihin positiivisiin vaikutuksiin, kuten potilaiden valmiuden parantumiseen, viestinnän parantumiseen ja hoidon jatkuvuuden parantumiseen. Vaikka muutamilla interventioilla ei ollut merkittävää vaikutusta ja yksi johti uudelleensairaalahoitojen lisääntymiseen tietyissä olosuhteissa, tulokset viittaavat siihen, että tutkimuksissa sovelletut hoitajien johtaman kotiutusopetuksen tyypit voidaan pitää arvokkaana välineenä potilaiden tukemisessa.

Avainsanat: Hoitajien johtama, kotiutusopetus leikkauksen jälkeinen, uudelleensairaalahoito

Tämän opinnäytetyön alkuperä on tarkastettu Turnitin Originality Check -ohjelmalla.

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1 Introduction

The increase in life expectancy in the general population has resulted in a higher number of people living with chronic disease, and subsequently, a rising number of hospitalizations and surgeries (Patel and Bechmann 2023). Inpatient stays post-operatively have also been shortened with many healthcare institutions now applying the evidence-based enhanced recovery after surgery (ERAS) approach (Zhou et al. 2021; Aljubouri et al. 2025). This means that patient outcome has become largely dependent on the patient's capability to care for themselves at home. The ability to do so requires the transfer of information and skills, a process commonly referred to as discharge education. Successful discharge education ensures a smooth transition from inpatient to outpatient, improves patient outcome and minimizes hospital readmissions. (Mao, Xie, Shen, Wang and Luo 2022.)

Especially the first 30 days after a surgical procedure are crucial to recovery, as this is when the largest percentage of complications occur, particularly after discharge (Dharap, Barbaniya and Navgale 2022). These complications can affect patient outcomes by for example delayed wound healing and increased long-term use of healthcare resources (Mao et al. 2022). As healthcare providers face increasing pressure to reduce costs, prevent complications, and improve outcomes, effective patient education in the postoperative period is gaining recognition as an important part of the care process (Groenen et al. 2024). Because the rate of post-surgical complications can reach 31.5% following general surgery, early recognition and management of these issues are essential for a successful recovery and reduction of readmissions (Nepogodiev, Martin, Biccard, Makupe and Bhangu 2019; Dharap et al. 2022).

Nurses are in a unique position as frontline healthcare providers to provide information, education, support and guidance to their patients. It is especially important for the patient in the post-operative period to understand and manage their recovery process (Mao et al. 2022). This teaching can include verbal and written instructions, online resources, hands-on demonstrations, contact information, and follow-up information to confirm understanding (Groenen et al. 2024; Mao et al. 2022). These interventions aim to improve patient adherence to the given care instructions, thereby reducing the risk of postoperative complications and readmissions.

This narrative literature review aims to provide a concise overview of the existing research on the effect of nurse-led education in postoperative patients on hospital

readmissions. More specifically, the review will examine the types and key components of globally implemented nurse-led discharge methods from selected primary studies. It will look at the existing research on the effectiveness of these methods, measured by the rate of readmissions. It will also discuss the reasons for readmission in the control and intervention groups. Finally, the review will reveal gaps in knowledge related to the impact of nurse-led discharge teaching on rehospitalization.

2 Background

2.1 Nurse Led Discharge Methods

Keywords: Nurse-led, discharge teaching

The patient discharge process is recognized as a multi-step procedure that ensures continuous care postoperatively (Hayajneh, Hweidi and Abu Dieh 2020). Nurses play a central role in preparing the patient for discharge, communicating with the multidisciplinary care team, as well as ensuring that the patient and family have sufficient knowledge to independently manage their care at home (Saunders, Dineen, Gullick, Graham and Finlay 2022). Most commonly, the physician assesses the patient and whether they meet the criteria to be able to cope outside the hospital. The more in-depth process of discharge is usually completed by a nurse, who ensures that the patient has the necessary information to continue their care as an outpatient (Patel and Bechmann 2023).

In the context of postoperative discharge, nurses in charge of discharge planning instruct the patient in their care and simultaneously assess the patient's functional ability for self-care and evaluation (Hayajneh et al. 2020). They review and communicate factors such as medication and nutritional status to ensure that care after discharge will have a positive outcome. Discharge education should also ensure continuity of care by providing information on follow-up appointments, as well as clear instructions for addressing potential complications, such as a suspected surgical site infection. (Patel and Bechmann 2023.)

Studies emphasize that depending on the situation, discharge planning can start from admission or well before during the inpatient period, and that the rate of readmissions is heavily influenced by the discharge process (Saunders et al. 2022). The problems hospitals experience with the discharge process are numerous. There are many factors contributing to these issues, like confusion about assigned roles, disruption in coordination, emphasis on quickly moving patients through the system and the necessity to complete workload demands causing last minute teaching prior to discharge (Opper, Beiler, Yakusheva and Weiss 2019).

A key theoretical framework that focuses on the role of the nurse in providing discharge teaching is Orem's self-care deficit nursing theory. The unique role of nurses as primary recipients of information on a patient's self-care abilities, and the provider of

appropriate teaching, is highlighted in the theory. (Hartweg and Metcalfe 2021.) The theory has been successfully applied worldwide as a structural and functional foundation for understanding the role of nurses in effective patient education. (Hartweg and Metcalfe 2021.) Orem's theory is supported by several reviews showing a positive connection between the application of the theory's principles and enhanced patient outcomes and quality of life (Khademian, Ara and Gholamzadeh 2020). The results give some insight into the role of nurses as more than mere providers of information and teaching but as assessors of the patient's individual abilities. Although this all highlights the importance of nurse-led education, specific research linking postoperative teaching and Orem's theory was not found.

In this thesis, nurse-led discharge refers to the various researched methods of nurse-led teaching that have been studied. Previous related reviews have compared nurse-led teaching methods implemented in an intervention group to compare outcomes with the control group participants. Some primary studies examined in the reviews focused on nurse-led continuous care in the form of telephone calls, or a follow-up visit. Other studies focused on a structured discharge service provided by trained nurses. (Mao et al., 2022.) Generally, the nurse-led services in intervention groups focused on a tangible implemented method of discharge teaching, which could have numerous components. For example, one study compared the outcomes for patients who received a comprehensive nurse-centered discharge protocol with the control group. The protocol had many components, such as a nurse visit within 48 hours of admission, a home visit and weekly telephone contact post-discharge. (Zhu et al. 2015.)

Prior reviews on nurse-led discharge teaching and patient outcomes have generally demonstrated a positive relationship between the two. One study comparing the results from 12 clinical trials looked at different interventions in the nurse-led discharge process and found that they were linked to better outcomes. (Mao et al. 2022.) Another systematic review comparing nurse-led discharge planning and hospital readmissions found a reduction in readmissions of 28% (Zhu et al. 2015). A review and meta-analysis on the effectiveness of nurse-led transitional programs for patients discharged from acute care compared results from 16 primary studies. It found nurse-led programs to effectively reduce readmission and emergency care visits post discharge. (Sakashita, Endo, Ota and Oku 2025.) Although the studies were not focused on surgical patients, they underline the importance of nurse-led discharge planning.

2.2 Postoperative Readmission Rates

Keywords: Postoperative, readmission

Hospital readmissions represent a significant challenge for the healthcare system, particularly in surgical patients (Oppen et al. 2019). In the context of this review, readmission is defined as rehospitalization due to surgical complications in the 30 days after postoperative discharge. In fact, 30 days has become a globally accepted benchmark for measuring readmissions. (Lucas and Pawlik 2014.) Depending on the type of surgery, there are significant differences in the postoperative complications that can potentially lead to readmissions; however, certain complications are documented more routinely. Wound healing issues such as surgical site infection are seen frequently, as well as infections that occur not at the surgical site but in deeper tissues or distant organs. Other documented complications seen in readmissions are bleeding and hemorrhage as well as organ dysfunction. (Javed et al. 2022.)

Readmission rates are generally well documented; however, substantial differences in numbers are recorded based on location, surgery and many other contributing factors. A study conducted in the United States recorded post-surgical readmission rates of 15.6% (Lucas and Pawlik 2014). Another study also based in the US showed a surgical readmission rate of 5.7% from a study involving 498 875 participants (Merkow et al. 2015). Although the numbers vary from study to study, there is consensus that rehospitalization represents a significant issue and obstacle in patient outcomes, as well as a costly burden for the healthcare system (Lucas and Pawlik 2014).

A qualitative initiative of The Royal Brompton and Harefield NHS Trust (RBHT) aimed at improving their hospital protocols, demonstrated that even when surgical site infection rates were below national average levels, the rate of readmissions due to the infection of the surgical site stayed static at 0.9%. An underlying investigation was completed on superficial and deep incisional surgical site infections. It revealed that major contributors to patient readmissions were deficiencies in wound assessment at discharge, ambiguous documentation and limited communication with discharge care providers - all areas where nurses play a big role. This demonstrates the significant impact that discharge teaching has on post-operative readmission rates. (Melissa et al. 2016.)

From examining the common reasons of readmissions, it can be concluded that effective discharge education is critical, especially when poor predictive factors are

present such as complex wound care, extensive medications or comorbid conditions, all of which can make discharge teaching more challenging (Lucas and Pawlik 2014). Research has shown that inadequate discharge education is a leading cause of severe consequences such as medication errors, flawed wound care practices and unmanaged pain, potentially leading to unplanned hospital readmissions.

One study identified the importance of clear communication between the discharge nurse and family members. It also investigated the different forms of communication and concluded that verbal communication of instruction is the most ineffective. It was demonstrated that post-discharge patients were prone to forget information if not reinforced with written materials. (Saunders et al. 2022.) Another relevant study demonstrated that three out of 29 patients who contracted a surgical site infection after hospital discharge following general surgery, were readmitted. This raises the question of whether patients received adequate teaching on their care postoperatively, or whether there is possibly room for improvement (Badia et al. 2017). These findings highlight the role of comprehensive, clearly communicated discharge education in preventing post-discharge complications and therefore reducing the risk of hospital readmissions.

2.3 Research Gaps

Although nurse-led discharge teaching has been researched in various settings, there was a limited number of studies found comparing nurse-led discharge teaching to outcomes in a postoperative environment. One review studied the relationship between nurse-led discharge planning and patient outcomes. It included primary studies that focused on chronic disease, not postoperative patients. (Zhu et al. 2015.) Another review compared the effectiveness of nurse-led transitional care in adults in acute care. Although the effects of the interventions were measured in terms of readmissions, the studies selected were focused on acute care, not postoperative. (Sakashita et al. 2025.)

On the other hand, studies that were focused on post-surgical outcome did not always measure this in the context of readmissions. A review was found that examined the effect of different nurse-led discharge services on surgical patients; however, the study focused on quality of life and activities of daily life as the indicators of success. Readmission was only presented in a select number of studies as the assessment tool for whether the interventions made an impact. (Mao et al., 2022.) In this case, the

information in many of the primary studies was relevant; however, the conclusions drawn in the review were not.

Previous research was also found comparing postoperative discharge teaching and the effect on readmission rates. Although the reviews mention that generally nurses are tasked with discharge teaching, the studies did not focus on nurse-centered discharge specifically (Tobiano et al. 2023). As the topic is focused on nurse-led teaching, education given, for example by multidisciplinary teams or a separate discharge team would not be relevant for this study. In conclusion, although studies were available, they lacked one or more of the key components in the chosen topic. More detailed studies are needed to truly understand the link between effective nurse discharge education to readmissions in the postoperative environment.

3 Purpose, Aim and Research Questions

The purpose of this study is to describe the impact of nurse-led discharge teaching methods on readmissions in postoperative surgical patients.

The aim of this study is to provide insight into nurse-led discharge teaching and its relationship to hospital readmission rates.

The research questions that this study seeks to answer are:

- 1. What are the different types of nurse-led discharge education provided to adult postoperative patients?*
- 2. How does nurse-led discharge education influence the rate of hospital readmissions?*

4 Methodology and Methods

This study is a qualitative literature review that explores the impact of nurse-led discharge teaching on readmissions in postoperative patients. A literature review is a systematic way of gathering information and research on a topic and integrating those findings to answer research questions. It can additionally be used to find research gaps or to examine questions that a single study would not be able to. (Snyder 2019.)

Because the aim of the study was to provide insight into the topic, a literature review was an appropriate methodology. The goal was not to create new information, but to consolidate and analyze studies that were already available (Lau and Kuziemyky 2017).

Several steps were taken in the literature review process, which will be detailed in the following chapters. To analyze existing information, relevant primary studies were identified by searches in two scientific databases; PubMed and CINAHL. Additional relevant studies were found through Google Scholar, as well as snowballing through citations. For a literature review to be successful, adequate relevant studies must be available for analysis. Without these, consolidating findings and results would be unproductive, and conclusions drawn potentially misleading (Snyder 2019). The chosen studies were screened using inclusion and exclusion criteria and assessed for relevance according to title, abstract and full text by the authors of the thesis. The selected studies formed the basis for analysis and synthesis of data (Lau and Kuziemyky 2017).

4.1 The PICo Framework

The PICo framework was used to understand and structure the research, and to guide the process of searching for relevant articles. Identifying the population (participants), interest (the interventions used in the studies), and the context (possible outcomes of the research that are relevant to the topic), served as a reminder of the scope of research and helped set relevant research questions (Higgins, Thomas, Chandler, Cumpston and Li 2024).

Table 1. PICO framework

P – population / problem	Who is the population? What is the issue?	Postoperative adult patients Does nurse-led discharge education influence the rate of readmissions?
I - interest	What is being studied? (experience, intervention...)	In what forms discharge teaching takes place. If the discharge teaching effects rate of readmissions.
Co - context	In what setting or situation?	At home, post-discharge recovery

4.2 Data Collection Method

Data was collected from the PubMed and CINAHL databases. Additionally, primary studies were found using other methods such as snowballing through citations from related studies. Additional sources were found through Google Scholar. Boolean operators were used to find relevant results. The results were refined using set criteria and then screened by the authors. The PICO framework was used to ensure that primary studies were relevant to the topic and research questions.

4.2.1 Inclusion and Exclusion Criteria

Inclusion and exclusion criteria were used to refine the search for studies to be used in the literature review. The criteria ensured that the search remained unbiased, and primary studies were not included because they were anticipated to show a particular result (Higgins et al. 2024). The table below clarifies the reasoning for each inclusion and exclusion criteria.

Table 2. Inclusion and exclusion criteria

Inclusion	Exclusion	Reason
10 years	+10 years	To use updated information
Peer reviewed	Non peer reviewed	To use reliable sources
Full text	Only abstract available or inaccessible full text	No funding
English and Spanish	Other languages	Own readability
Primary studies	Reviews, systematic review, books & documents	To use data from previous primary studies
Studies that report on hospital readmissions rates	Studies that don't report on hospital readmission outcome	Topic is based on readmission rates
Adult post-surgical patients (+18)	Pediatric patients (-18) or non-surgical patients	Topic is focused on adult postoperative patients
Studies focused on nurse-led discharge methods	Studies that discuss improving discharge methods by anyone	Focus of thesis is on discharge provided by nurses
Studies with quantitative outcome measures	Studies with no quantitative outcome measures	To focus on measurable effects.

4.2.2 The Search Table

In the data search, different search words were used to identify relevant studies, and results were refined from the beginning to include only English or Spanish results within the past 10 years. Full text inclusion was not always used as a criterion for searches as article access could be potentially granted through the school library.

Table 3. Search table

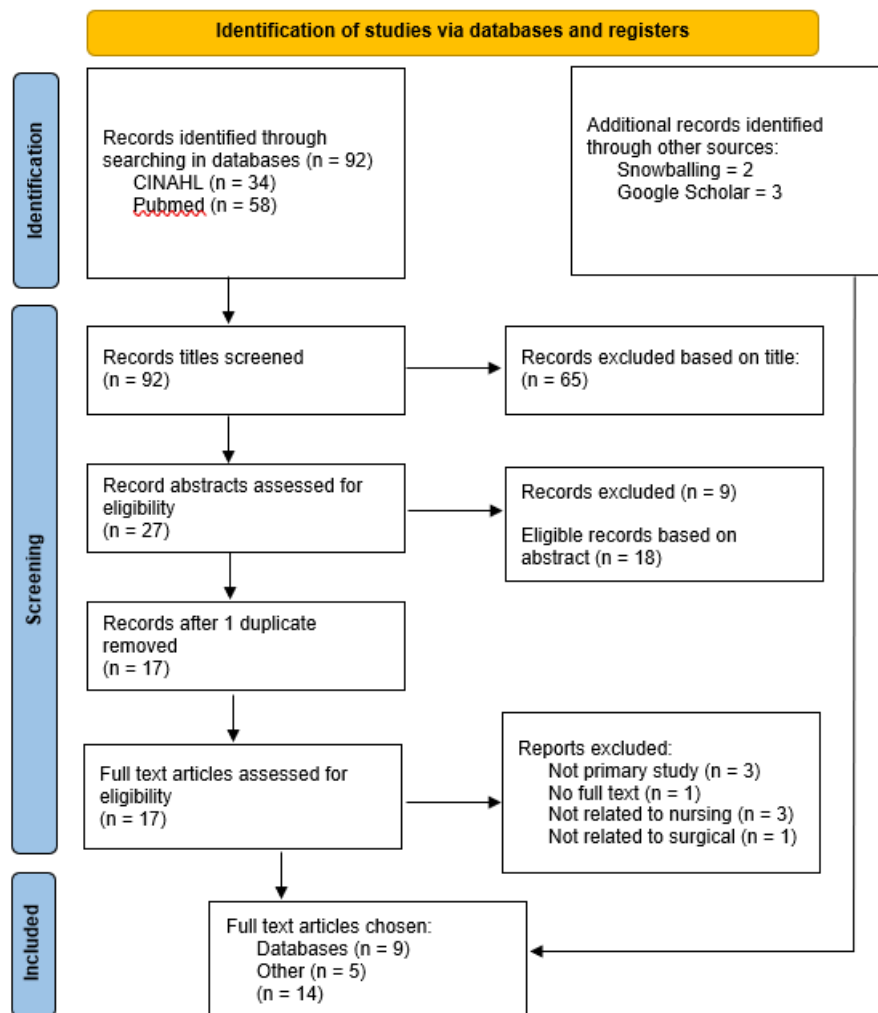
Database / Date / Limits	Search Phrase	Total number of hits / citations	Papers/ records included based on the title	Papers/ records included based on abstract	Papers/ records included based on full text
PubMed (20 August 2025) English language 2015-2025 Primary studies	nurs* AND (discharge education OR discharge) AND (postoperative OR surgical OR post-surgical) AND (readmissions OR rehospitalization)	58	14	11	3
CINAHL (20 August 2025) 2015-2025 English language Peer reviewed	nurs* AND (discharge education OR discharge instructions OR discharge teaching) AND (postoperative OR surgical OR post surgical) AND (readmissions OR rehospitalizations)	30	9	5	4
CINAHL (20 August 2025) 2015-2025 English Language Peer Reviewed Full text	(nurse-led education or discharge education or discharge teaching) AND (readmission or rehospitalization) AND (surgical wound or postoperative wound or surgical wound infection)	4	4	3	2
Records in total		92	27	18	9
Records after duplicates removed				1	
Total number of included studies					9

Table 4. Boolean operators

Concept 1	Concept 2	Concept 3
nurs* AND discharge education OR discharge) AND postoperative OR surgical OR post-surgical AND readmissions OR rehospitalization	nurs* AND discharge education OR discharge instructions OR discharge teaching AND postoperative OR surgical OR post-surgical AND readmissions OR rehospitalizations	nurse-led education OR discharge education OR discharge teaching AND readmission OR rehospitalization) AND surgical wound OR postoperative wound OR surgical wound infection

Prisma Diagram

The prisma diagram was made using a flowchart template (Prisma Executive 2025). Records identified had already been narrowed down using the search criteria in the search table. Records were first identified in the databases, then screened according to the title. Record abstracts were then read, and chosen records were added to a shared file where duplicates were removed ($n = 1$). Full texts of the remaining 17 records were studied for relevance and 9 were chosen for the review. 5 records were selected through Google Scholar and through citations from reviews on similar topics. See appendix 1 for the complete list of chosen articles.



4.3 Limitations

Qualitative analysis and literature reviews can present with limitations. Snyder (2019) states that a qualitative study must be replicable to be considered reliable, however, the human factor is involved in every step of analysis. Inclusion and exclusion criteria selection could differ according to the researcher and therefore could influence the selected studies, and consequently the results of the review (Snyder 2019). Lack of replicability is also listed as a limitation by other studies, citing poor transparency in the methodology used as a common reason for this (Haddaway et al. 2020). Haddaway et al. (2020) also lists other common issues with literature reviews, such as selection bias and lack of comprehensiveness. In the case of this review, the writers were limited for example in their selection due to language and access to articles. It is also possible that studies for the review are overlooked due to an almost endless list of possible search term synonyms. The limitations of the individual studies chosen also contribute to potential limitations of this review. These are listed by study in appendix 1. Common limitations in the studies were limited geographic location, small sample size, and difficulty separating data from control and intervention groups. During data analysis, the issue of inappropriate synthesis can be considered a possible limitation (Haddaway et al. 2020). The meaning units are selected according to their relevance to the research question, however, the understanding of which specific unit is relevant can differ according to the individual. In the case of this review, both authors were involved in every part of study selection and data collection and analysis.

4.4 Data Analysis

This thesis employs qualitative inductive content analysis as the method of data analysis. Unlike deductive content analysis, which begins with a predetermined hypothesis, the inductive approach is guided by specific research questions (Bengtsson 2016). In inductive content analysis, data reduction constitutes the initial phase, during which a potentially large number of related studies are screened for relevant information. In the context of this thesis, this process involved applying inclusion and exclusion criteria, followed by a thorough review of study abstracts and full texts. The subsequent phase, data grouping, entailed organizing and categorizing data from the selected studies. Finally, during the concept formation stage, recurring themes were identified, leading to the development of results and conclusions that directly address the research questions (Kyngäs, Mikkonen & Kääriäinen 2014).

It is important that the data is assessed without preconceived ideas and chosen because it is related to the key themes. In this case, key themes as outlined in the PICO framework were postoperative patients, nurse-led discharge, and readmissions. By using inductive content analysis, the data from selected studies is merged to form new concepts and ideas to answer the research questions (Bengtsson 2016).

The grouping or organization of data begins with careful assessment of the selected studies. Important phrases or meaning units are outlined in the studies – this is the data that answers the research questions, such as which nurse-led teaching methods the study implemented. The data is condensed or summarized in simpler language, and coded and allocated to subcategories, and then generic categories. The generic categories answer the question posed in the research question, while the subcategories are a header for grouping codes which share a theme. (Vears and Gillam 2022) This is a systematic method of analyzing qualitative data that may otherwise be difficult to organize into a format that allows for interpretation. Whatever method is used for data analysis, it should provide some format that serves as a guideline for the thinking process. See appendix 2 and 3 for the complete content analysis for research question 1 and 2.

Table 5. Example of content analysis for research question 1

Study	Meaning Unit	Condensed Meaning Unit	Code	Subcategory	Generic Category	Main Category
#2	Earlier studies also indicate the benefit of timing the follow-up phone call to take place within the first 7– 10 days after discharge and that the call can be handled by a nurse.	Call timing was studied and determined to be most successful within 7-10 days post discharge and when handled by a nurse.	Optimally timed telephone-follow up calls	Telephone	Technological	Types of nurse-led discharge education provided to adult post-operative patients
#10	Both the registered nurse and patient sign the 'Home Discharge Checklist' and a copy is given to the patient.	Home discharge checklist was used and given to the patient by the nurse.	Patient and nurse signed discharge checklist	Checklists	Structured	

Table 6. Example of content analysis for research question 2

Study	Meaning Unit	Condensed Meaning Unit	Code	Subcategory	Generic Category	Main Category
#1	It has been concluded that the healthcare services offered within the scope of the Nurse Led TCM improved the functional autonomy and quality of life levels of patients undergoing open heart surgery and decreased the patients' post-discharge hospital readmission and rehospitalization rates.	Nurse-led TCM improved functional autonomy and quality of life levels in open heart surgery patients while reducing post-discharge readmissions and rehospitalizations.	Functional autonomy improvement	Autonomy and readiness	Other positive effects	Influence of nurse-led discharge education on hospital readmission rates
#3	Another important finding of our research was that the 30- and 90-day readmission rates in the intervention group were significantly lower than those in the control group, which is consistent with the results of previous studies.	Research showed that 30- and 90-day readmission rates in the intervention group were significantly lower than in the control group.	Short-term readmission reduction	Reduced readmissions	Reduced readmissions	

5 Results

5.1 Summary of Results

In this literature review, 14 primary studies were included in the analysis. A table of all studies can be found in appendix 1. The studies were conducted across a number of countries: Denmark (n=1), Turkey (n=1), China (n=4), Australia (n=2), South Korea (n=1), Spain (n=1), the United States (n=3), and the United Kingdom (n=1). One study, which was conducted across 31 Magnet hospitals in the United States, also included data from two hospitals in Saudi Arabia. All studies examined the effects of implementing various types or methods of nurse-led discharge education for postoperative patients. The specific surgical procedures represented in these studies included open-heart surgery, thoracic surgery, kidney transplantation, general surgery, heart transplantation, cardiac surgery, colorectal surgery, bariatric surgery, orthopedic surgery, biliary surgery, and laparoscopic surgery. Three studies did not specify a particular type of surgery but applied the intervention across all adult surgical units. The research designs of the studies included in the analysis for this literature review were as follows: randomized controlled trial (n=5), qualitative intervention study (n=1), retrospective cohort study (n=3), quasi-experimental study (n=2), prospective surveillance study (n=1), descriptive qualitative study (n=1), and failure mode and effects analysis (n=1).

Data analysis revealed five generic categories answering research question 1: *What are the different types of nurse-led discharge education provided to adult postoperative patients?*

The majority of the studies included in the analysis were associated with multiple generic- and subcategories. Many implemented various forms of nurse-led discharge education as components of their interventions. Three studies employed a nurse-led post-discharge education model, while one applied a transitional care model. These studies introduced many approaches to discharge education as a part of the intervention. Furthermore, studies that involved communication redesigns or other assessment-based interventions also integrated multiple educational and supportive strategies within their framework

Table 7. Categories formed for research question 1

Subcategory	Generic Category	Main Category
Customized plan	Individualized	Types of nurse-led discharge education provided to adult post-operative patients
Continuous care		
Discharge counselling		
Home visits	Follow-up	
Outpatient visits		
Post-operative clinic		
Scales and assessments	Structured	
Checklists		
Telephone	Technological	
Digital		
Online		
Specialized	Multi-modal	
Verbal + written		
Photo/visual		
Verbal		
Team-based		

Data analysis yielded five generic categories and 10 subcategories answering question 2: *How does nurse-led discharge education influence the rate of hospital readmissions?*

Reduced or increased readmission rates were reported as numerical outcomes in the study results. Several studies also identified additional effects associated with the types of nurse-led discharge education implemented, such as reductions in emergency department visits and improvements in patient support or education. Although these outcomes were not directly related to readmission rates, they are presented in the results as factors potentially contributing to reduced or increased readmissions and overall patient outcomes.

Table 8. Categories formed for research question 2

Subcategory	Generic category	Main category
Reduced readmissions	Reduced readmissions	Influence of nurse-led discharge education on hospital readmission rates
Increased readmissions	Increased readmissions	
Engagement and outcomes	Other positive effects	
Support and communication		
Teaching quality		
Standardization		
Complication reduction		
Autonomy and readiness	Other negative effects	
Support and communication		
No effect	No effect	

5.2 Types of Nurse-Led Discharge Education

The types of nurse-led discharge education that appeared in the 14 studies examined in this literature review have been divided into five generic categories. The following chapter discusses these categories and their corresponding subcategories in the context of the studies analyzed.

5.2.1 Follow-Up

Three studies in this literature review included follow-up as a type of nurse-led education (Coskun and Duygulu 2022; Lee, Kang, Kim and Chu 2021; Wang, Hua, Liu and Liang 2023). The study by Coskun and Duygulu (2022) explored the effects of a nurse-led transitional care model on elderly patients undergoing open-heart surgery in Turkey. To ensure continuity of care after discharge, an allocated coordinator nurse conducted home visits at 24 hours, and 2-, 6- and 9-weeks post-discharge. Telephone follow-up was also conducted after this period - this aspect is examined in more detail in the Technology chapter. The aims of the home visits were to assess the patient's living conditions, ensure understanding of the treatment and medication regimen, evaluate recovery progress, and follow up on any potential problems or complications. (Coskun and Duygulu, 2022: 50.)

A study by Lee et al. (2021) explored the effects of a nurse-led post-discharge education program for heart transplant patients in South Korea. Follow-up in the form of outpatient visits was provided to the intervention group of nurse-led program with

post-discharge education (NLP + PE). Patients received continuous support and education, beginning at 2 months post-discharge, and continuing for one year. At the outpatient clinics provided, patients were given individual education and guidance to post-transplant care procedures. They were also given assessments on adherence to the medication plan and overall physical and psychosocial wellbeing. (Lee et al. 2021: 3.)

A post-operative clinic served as another form of follow-up-based, nurse-led discharge education in the study by Wang et al. (2023). The clinic was part of a nurse-led transitional care program implemented for the intervention group in China, involving patients discharged with T-tubes after biliary surgery. In addition to other educational methods, the post-operative clinic ensured that patients had reliable access to support medication adjustments, catheter maintenance, drainage bag changes, and related consultations. (Wang et al. 2023: 4572.) The clinic also aimed to provide an opportunity for patient feedback and to enhance compliance to the care plan (Wang et al. 2023: 4575).

5.2.2 Technological

Technological nurse-led teaching methods appeared in the form of telephone calls and messages, digital format and online programs. Technological teaching methods were used in the studies as a form of discharge of transitional care to ensure that patients could have support and ways to answer their questions from their homes.

Nine studies in this literature review utilized technology as a part of their nurse-led discharge education (Donsel and Missel, 2021; Hu et al. 2020; Kang, Chaboyer, Tobiano and Gillespie 2022; Lee et al. 2021; Lin et al. 2024; Maqueda-Martínez et al. 2024; Opper et al. 2019; Thomas et al. 2017; Wang et al. 2023). The study by Donsel and Missel (2021) investigates postoperative patient experiences of systematic phone calls handled by nurses in Denmark. To ensure optimal results, they timed the follow-up telephone calls within 7 to 10 days after discharge. The aim of the telephone calls was to provide patients with the opportunity to talk over their concerns directly with a health care professional, to receive reassurance of their symptoms and how to act upon them if these were atypical. Nurse-led phone calls were seen as a form of continuous care. (Donsel and Missel, 2021: 1696.)

Telephone and digital methods were used in the study by Hu et al. (2020). The study explored the effectiveness of various nurse-led education methods and patient

satisfaction. One of them was a technological transitional care program that consisted of a weekly telephone call as well as digital WeChat access to allow patients to contact nurses, and doctors if needed, to discuss any problem they experienced. The purpose was to provide support and continuity of care. (Hu et al. 2020: 3.)

The study by Kang et al. (2022) evaluated the feasibility of an online education method. This consisted of a web-based discharge education program which was implemented before and after hospital discharge of general surgery patients. The online program included information on post-surgical warning signs (with a traffic light system for possible complications), post-surgical daily care instructions, a video of surgical wound care, and signs of wound complications (Kang et al. 2022: 3). With this program, they intended to provide active learning and self-assessment on their symptoms and recovery. (Kang et al. 2022: 2.)

The study by Lee et al. (2021) also used telephone as an additional teaching method to their follow-up and multi-modal methods. Their nurse-led program (NLP) group received telephone access in case of any problems while the nurse-led program + post-discharge education (NLP+PE) group was offered telephone counselling by a transplant coordinator (Lee et al. 2021: 2). The goal of this counselling telephone call was to support earlier identifications of symptoms possibly related to immunosuppressants as well as establishing proper self-care and treatment adherence. (Lee et al. 2021: 5.)

Telephone communications in the form of calls and WeChat messaging were utilized in the study by Lin et al. (2024). The plan was divided into 4 stages. Stage 4 made use of telephone teaching methods and began after discharge was completed. For 90 days, ongoing information support was given to patients via telephone calls, outpatient visits and WeChat check-ins. (Lin et al. 2024: 3.)

Telephone discharge teaching was also used in the study by Maqueda-Martinez et al. (2024). Both the control and the intervention groups received a multi-modal nurse-led teaching, which will be discussed in more detail in the next chapter. The intervention group obtained 24/7 access to contact the specialist nurse via WhatsApp messages or phone calls in the event of any concerns or incidents. Nurses triaged calls and messages, and if there was a need for a doctor's assessment, they were referred to the emergency department. (Maqueda-Martínez et al. 2024: 4.)

The study by Opper et al. (2019) whose objective was to improve overall discharge experience and effectiveness for the patient and healthcare team, used multi-modal, structured and technological nurse-led discharge teaching methods. The specific technological teaching method was telephone, which, although it was not the main strategy of the three, still had an important impact on follow-up. The telephone calls were made two weeks post-discharge with the purpose of assessing the current condition of the patient. (Opper et al. 2019: 124.)

In the study by Thomas et al. (2017) The hospital standardized a 48-hour post-discharge phone call process to patients or caregivers to allow nurses to reinforce discharge plans, identify problems early, answer questions, and clarify confusion. (Thomas et al. 2017: 78.)

The digital method served as a technological nurse-led discharge teaching approach in the study by Wang et al. (2023). This type of teaching had a significant impact, especially after discharge when patients had to manage their self-care plans and follow care instructions. The digital communication was implemented via WeChat, using text consultations, prompts, voice messages, and photos. (Wang et al. 2023: 4572.)

5.2.3 Multi-Modal

In this literature review, multi-modal refers to the studies which specifically assessed the effectiveness of nurse-led discharge education in various modes such as verbal and visual, or using specific teaching approaches such as specialized or team-based education. The allocation of individual units to categories was determined by the primary focus and objectives of each study.

Six studies used multi-modal types of nurse-led postoperative education (Lee et al. 2021; Lin et al. 2024; Maqueda-Martínez et al. 2024; Opper et al. 2019; Ronchon et al. 2016; Saunders et al. 2022). From these studies, multi-modal methods were further divided into verbal teaching, a combination of verbal + written methods, teaching using visual materials and photos, team-based teaching and specialized education depending on the surgical procedure the patient was recovering from.

The study by Lee et al. (2021) focused on a combination of verbal and written teaching as well as specialized education. The patients enrolled in the intervention group of nurse-led program (NLP), received specialized education, all having undergone heart transplantation. The nurses responsible for postoperative education were educated

transplant coordinators, who were trained to provide teaching related to the specific surgery and possible complications. This was one of the foundations of the study when considering the NLP group. The teaching was a combination of verbal and written, as the trained coordinators educated patients using verbal instruction, and an informational brochure on post-heart transplantation care, medication management, signs of rejection or infection and instruction of post-discharge care. (Lee et al. 2021: 2.)

Multi-modal discharge teaching was also used in the study by Lin et al. (2024). The randomized controlled trial used both verbal and written education, as well as specialized teaching focused on the surgical procedure, in this case colorectal surgery with enterostomy to create a stoma. As in the study by Lee et al. (2021), specialized education was delivered by specially trained nurses, in this case, either a nurse enterostomist or the primary nurse who had received specific training related to the surgery. The trial incorporated several other forms of discharge education, as its focus was creating a nurse-led discharge planning program that extended across the patient's journey from screening to follow-up. Specialized education included providing information on the digestive system, different surgical techniques and ostomies, the ostomy procedure itself, guidance on lifestyle adjustments, psychological recovery and diet and medication management. Specialized training was also provided on stoma pouching care and recognizing possible complications. Verbal and written teaching were used in combination as the primary nurse used demonstrations, videos, and a health handbook to convey information. (Lin et al. 2024: 3.)

Verbal and written discharge education were also used in the study by Maqueda-Martínez et al. (2024). Although the study measured the effectiveness of a telecare program on the follow-up of bariatric postoperative patients, the control and intervention group both received verbal and written instructions on their postoperative care. Information was provided verbally and in written form on wound management and drainage, diet and supplement recommendations, exercise, post-discharge appointments and what complications can come up. (Maqueda-Martínez et al. 2024: 4.)

The study by Opper et al. (2019) based in the United States, investigated the effect of implementing a communications redesign on readmissions. The type of nurse-led discharge education that was implemented in the study was a team-based multi-modal education. Components of the intervention group were briefing checklists and a whiteboard checklist in the patient room for use during bedside rounds. The goal of

using these was to improve communication during the discharge process related to the discharge-related goals. (Opper et al. 2019: 124.)

Multi-modal discharge education was also implemented in the UK based study by Rochon et al. (2016). The intervention in the study, known as Photo at Discharge (PaD), involved the nurse taking a color photograph of the surgical wound at the time of discharge and including it in the patient file along with individualized wound care advice. A wound care plan was also included in the same file. The photograph was used to provide a baseline visual reference of the wound to support assessment and documentation. (Rochon et al. 2016: 27.) Additionally, the photo helped patients visualize their own healing process, as well as to pinpoint signs of surgical site infection and therefore potentially reduce rates of readmissions (Rochon et al. 2016: 28).

The study conducted in Australia by Saunders et al. (2022) included multi-modal types of nurse-led discharge education in the form of verbal and written. The registered nurse communicated with the patient (or family member) about the post-discharge care, such as physical activity, pain management, medications and diet, wound care, signs and symptoms of potential complications and follow-up appointments. The written information provided to the patients was verified by nurses, physiotherapists and pharmacists during the discharge process. (Saunders et al. 2022: 79.)

5.2.4 Structured

Structured care plan appeared in six studies of this in this literature review (Hu et al. 2020; Lin et al. 2024; Opper et al. 2019; Saunders et al. 2022; Wang et al. 2023; Weiss et al. 2019). These studies utilized methods such as checklists, scales and assessments to furthermore organize their plan.

The study conducted by Hu et al. (2020) mainly used technological and individualized methods but included one structured type of nurse-led discharge education in the form of assessment. The assessment was done specifically to target the risk of early readmission with the goal of identifying those of high-risk to deliver more targeted interventions. (Hu et al. 2020: 8.)

Structured education was also implemented in the study by Lin et al. (2024). The study was divided into 4 stages in which they implemented checklists, scales and assessments to the intervention group (Lin et al. 2024: 3). In stage 3, a discharge checklist that was about discharge verification and integration of medication was

utilized to help patients with their discharge referrals. In addition, they added into the plan 4 scales and one questionnaire: (1) Personal Information and Medical Data Questionnaire, (2) Quality of Discharge Teaching Scale, (3) Discharge Readiness Scale, (4) Stoma Self-Efficacy Scale and (5) Stoma Quality of Life Scale. (Lin et al. 2024: 4.)

The study by Opper et al. (2019) based in the United States, was focused on the Team Bedside Rounds (TBR) and nurses' Bedside Shift Handoff (BSR) where they incorporated an structured type of nurse-led discharge education in the form of briefing checklists and a whiteboard checklist in patients' room used to prompt patients and their families on the discharge goals. In this study there were also scales on quality of discharge teaching, readiness for hospital discharge and discharge coping difficulty to evaluate each patients' situation. (Opper et al. 2019: 122.)

A structured type of nurse-led discharge education was also present in Saunders et al. (2022) study. The method was a Home Discharge Checklist which both the nurse and the patient went through and later was given to the patient to take home. (Saunders et al. 2022: 79.)

In the study by Wang et al. (2023) based in China, a three-dimensional assessment was done in regards of the patients' preparedness for discharge done during the hospitalization period. These three dimensions included personal status, coping ability, and expected support. (Wang et al. 2023: 4572.)

Lastly, in the study done by Weiss et al. (2019) they used the structured method in the form of scales and assessments. Their objective was to evaluate the readiness and the discharge framework. To do this they created guidelines of 3 Readiness Evaluation and Discharge Interventions (READI) protocols (Weiss et al. 2019:2). READI1 instructed the nurse responsible for the discharge of the patient to fill in a patient readiness scale. In READI2, the patient filled in a self-assessment form which was reviewed by the discharging nurse before completing the readiness scale. Finally, READI3 directed that any score below 7/10 either on the patient's self-assessment or the nurse's patient discharge readiness scale demanded a documented intervention in order to increase readiness and lower the risk of readmission. (Weiss et al. 2019:3).

5.2.5 Individualized

Four studies in this literature review focused on an Individualized care plan as a type of discharge teaching (Coskun and Duygulu 2022; Hu et al. 2020; Lin et al. 2024; Yang et al. 2025). These studies emphasized providing personalized information according to the procedure the patient had undergone or based on other assessments of their health status or care capabilities.

The study by Coskun and Duygulu (2022) focused on developing a customized plan for each patient. The plan was formulated based on a detailed assessment of the patient's health status, as well as a comprehensive evaluation of individual needs using the OMAHA system—a framework for documenting patient care developed by the American Nurses Association (Coskun and Duygulu 2022: 49). The discharge education provided in the study was also individualized in terms of duration and timing, as patients in the intervention group were continuously assessed, and the transitional care model services were adjusted and extended according to each patient's recovery process (Coskun and Duygulu 2022: 47).

Individualized education was also implemented in the study by Hu et al. (2020). As in the study by Coskun and Duygulu (2022), Hu et al. (2020) also customized the duration of the transitional care program according to the needs of individual patients (Hu et al. 2020: 5). In the trial, participants in the intervention group received personalized support based on their self-care abilities as part of the discharge care plan. This approach enabled them to better comprehend and apply the self-care instructions (Hu et al. 2020: 8).

The study by Lin et al. (2024) also employed individualized education as a component of discharge teaching. The discharge planning program, implemented for colorectal cancer patients with stomas, was based on a comprehensive evaluation conducted by primary nurses and enterostomal therapy specialists. This evaluation formed the foundation of the personalized plan and was developed using various patient characteristics, including age, educational background, functional abilities, and levels of social and family support. Patients were additionally encouraged to express their own goals and preferences, which were incorporated into the discharge plan (Lin et al. 2024: 3).

Individualized education, provided in the form of discharge counseling, was the approach used in the study by Yang et al. (2025), which compared outcomes between

nurse-led and surgeon-led discharge. In the intervention group, which received nurse-led discharge, patients' cognitive functions were assessed prior to receiving discharge instructions. The final medical examination was conducted by a senior nurse, and the assessment results served as the foundation for the individualized discharge counseling (Yang et al. 2025: 2).

5.3 Influence on Readmission Rate

The interventions in the 14 studies analyzed have had several different effects, which have been divided into five generic categories. The following chapter discusses these categories and their corresponding subcategories in the context of the studies analyzed.

5.3.1 Reduced Readmissions

In the analysis, a reduction in readmissions was seen in ten studies when observing the effect of the intervention (Coskun and Duygulu 2022; Hu et al. 2020; Kang et al. 2022; Lee et al. 2021; Lin et al. 2024; Opper et al. 2019; Ronchon et al. 2016; Thomas and Siaki 2017; Weiss et al. 2019; Yang et al. 2025).

The study by Coskun and Duygulu (2022) showed a significantly lower rate of rehospitalizations in the intervention group compared to the control group receiving standard care. The study measured readmissions at six months post-surgery; however, the results did show strong support for a decrease in readmissions (Coskun and Duygulu 2022: 52). At follow-up, 6.3% of patients in the intervention group had been referred for rehospitalization, compared with 28.1% of the control group (Coskun and Duygulu 2022: 54).

The study observing the effects of a transitional care program by Hu et al. (2020) also found that readmission rates in the intervention group were substantially lower than in the control group. Within 30 days post-discharge, 6% of the study participants in the intervention group had been readmitted, compared with 15.3% in the control group. Results were also recorded at 90 days post-discharge, where readmissions for the intervention group were still 6%, but for the control group had increased to 17.4% (Hu et al. 2020: 6).

Lin et al. (2024) also observed a reduction in the rate of readmissions. Unplanned readmissions for the intervention group at 30 days post-surgery were recorded at 2.56%, and for the control group at 16% (Lin et al. 2024: 7). A significant decrease was also

seen in the study by Opper et al. (2019), where 30-day readmissions were recorded at 6.4 percentage points lower post-intervention implementation. The readmission rate for the intervention group was 12%, and for the control group 18.4% (Opper et al. 2019: 127).

Yang et al. (2025) reported lower rates of readmissions in the intervention group, or the cohort receiving nurse-led discharge. The rate of readmissions for this group was 3%, versus 8% for the cohort receiving surgeon-led discharge (Yang et al. 2025: 6). Thomas and Siaki (2017) also noted a reduction in 30-day readmissions in their study. Because the intervention was implemented across a U.S. Naval medical facility, the readmission rates are recorded pre- and post-intervention (Thomas and Siaki 2017: 78). Before the intervention, readmission rates for two consecutive years were 6%. After implementing an interdepartmental discharge process, the overall readmission rates decreased to 2.6% (Thomas and Siaki 2017: 84).

Kang et al. (2022) also found a reduction in readmissions in their study evaluating the feasibility of a web-based discharge education program. Although the study notes that the decrease may not be relevant, it is statistically demonstrated by a decrease in readmissions and other positive effects. Hospital readmissions within 30 days post-surgery were recorded at 2% for the intervention group, and 5% for the control group. The numbers were possibly not considered significant due to a relatively small number of participants (n=43 for the intervention group and n=40 for the control group) (Kang et al. 2022: 7).

Analysis of the results from the study by Lee et al. (2021) was more challenging. The study compared three participant groups and found that at one-year post-surgery, the standard care (control) group had the lowest rate of readmissions at 52%, compared to the two intervention groups. The rate of readmissions for the intervention group in the nurse-led program was 51.52%, and for the intervention group in the nurse-led program with post-discharge education was 48.89%. What makes the number significant is the average duration until rehospitalization: 43 days in the control group, 75 in the NLP group, and 126 in the NLP+PE group (Lee et al. 2021: 5). In this thesis, readmissions have been defined as rehospitalization due to surgical complications in the 30 days after postoperative discharge; therefore, the longer duration until readmissions in the intervention groups makes the results more relevant and significant.

Ronchon et al. (2016) noted a reduction in surgical site infection (SSI)-related readmissions in their study. The readmission rate for the control group was 0.34%, and for the intervention group 1.39%. The numbers of participants in the study were

significant (n=2669 for the control group and n=590 for the intervention group) (Ronchon et al. 2016: 30).

Weiss et al. (2019) presented mixed results that were more complicated to analyze, as the study included a baseline (control) group plus three consecutive implementations, essentially forming three separate intervention groups. The READI2 intervention group, which included a patient self-assessment, was found to reduce readmissions by 1.79 percentage points. The READI1 intervention group, which included the nurse assessment, and the READI2 protocol were both found to reduce readmissions by 3.05 percentage points in the TPP (treated per protocol) analysis. The only case where a consistent reduction in readmissions was seen was in the READI2 intervention implemented in high-readmission units, possibly reflecting the importance of the patient's own voice. (Weiss et al. 2019: 7.)

5.3.2 Increased Readmissions

Only one study concluded that their intervention, or one of the interventions, in fact increased the rate of readmissions. Weiss et al. (2019) found that in implementing the three interventions (READI1, READI2 and READI3), some increased the readmissions in specific units. In the ITT (intent to treat) analysis, the READI1 protocol, focusing on nurse assessment of patient readiness, slightly increased readmissions compared to the control group. In units where a low readmissions rate was already seen before the study, READI1 and READI2 (focused on patient self-assessment) interventions also led to increased readmissions. In the TPP (treated per protocol) assessment, READI1 also increased readmissions. Other increases from interventions were insignificant. (Weiss et al. 2019: 10.)

5.3.3 Other Positive Effects

In the analysis, twelve studies show other positive effects when assessing the intervention's impact (Coskun and Duygulu 2022; Donsen and Missel 2021; Hu et al. 2020; Kang et al. 2022; Lee et al. 2021; Lin et al. 2024; Maqueda-Martínez et al. 2024; Opper et al. 2019; Rochon et al. 2016; Saunders et al. 2022; Thomas and Siaki 2017; Wang et al. 2023).

The study by Coskun and Duygulu (2022) demonstrated not only reduced readmissions, but other positive effects from the intervention. These included improvements in medication management and functional autonomy. In the intervention group, only two patients (n=2) were rehospitalized due to anticoagulant drug

adjustment and hypertension, which were relatively easy to manage. On the other hand, the health services provided by the Nurse Led Transitional Care Model (Nurse-led TCM) increased self-sufficiency and overall quality of life, which also contributed to reduced readmissions. (Coskun and Duygulu 2022.)

The study by Donsel and Missel (2021) noted that offering patients the opportunity to speak directly with a nurse, without having to first contact the hospital department, was of major value, increasing communication and the feeling of support. While they also stated the aspect that rigid call schedules could potentially hinder the transition process, the accessibility provided through follow-up telephone calls proved to be a major positive effect in the intervention, benefiting both the patient and the hospital by reducing the risk of readmissions. (Donsel and Missel 2021.)

Hu et al. (2020) also found several other positive effects associated with their intervention. In their study, participants in the intervention group who went through transitional care showed improvement in discharge readiness, quality of transitional care, usage of healthcare resources and contentment with the overall transitional plan. The enhanced autonomy and readiness created by the care plan not only empowered patients but also played an important role in the reduction of readmissions observed in the study. (Hu et al. 2020.)

In the study by Kang et al. (2022), in addition to reducing readmissions, other positive effects were noted. Although there were no major improvements in self-care and healthcare utilizations, a significant increase in patient activation was observed. While these findings were exploratory and not powered for definitive conclusions, they suggest a potential link between patient activation and outcomes. (Kang et al. 2022.)

In the evaluation of the NLP+PE intervention, Lee et al. (2021) observed that the intervention group had a reduction in healthcare utilization. This was due to the lower number of outpatient visits and prolonged time till the first unanticipated rehospitalization. (Lee et al. 2021:5.)

Lin et al. (2024) observed that the positive effect of their intervention was reflected in the teaching quality achieved. According to the Mann-Whitney U test results, which measured variables like total score, achieved dimensions, teaching skills, efficiency in the quality of discharge teaching and overall readiness, the intervention group had significantly higher scores in comparison to the control group ($p < 0.05$) which indicated a more favorable outcome (Lin et al. 2024: 5). The median total score for the

intervention group was 147.00, whereas the control group was 100.00. (Lin et al. 2024: 7).

Maqueda-Martínez et al. (2024) reported various positive effects from their nurse-led telecare program, although not directly a reduction in readmissions. They found a significant difference in emergency department (ED) visits between the control group (n=24; 30%) and the intervention group (n=4; 4.9%) who participated in the telecare program. These results highlight the potential benefits from a telecare follow-up intervention on promoting engagement and improving outcomes. (Maqueda-Martínez et al. 2024:6). Another positive effect the researchers noticed was the number of on-call nurse consultations. Each bariatric surgery patient had an average consultation number of 4.3, primarily via WhatsApp. The fact that these were made via WhatsApp also reflects the level of concern patients had after the surgery. The main reason why the bariatric patients contacted nurses was related to dietary matters, followed by abdominal drainage, surgical wounds, pain, gastrointestinal motility concerns and vomiting; all which are main contributors to ED visits. This continuous nurse accessibility created support and communication which caused a reduction in ED visits. (Maqueda-Martínez et al. 2024: 8).

In the study conducted by Opper et al. (2019), the researchers observed that the evidence-based practices of Team Bedside Rounds (TBR) and nurses' Bedside Shift Handoff (BSR) were associated with enhanced support and communication within the healthcare team, which could potentially help reduce hospital readmissions. (Opper et al. 2019:126). Although not statistically significant, researchers also noted ED visits decrease by 2.8. (Opper et al. 2019: 125).

In the PaD scheme, Ronchon et al. (2016) gathered extensive feedback from both patients and nurses. Patients expressed a great deal of support on the program and nurses stated that the incorporation of the PaD scheme was easy to add to their discharge routines and strongly agreed on its usefulness for the patients and families. (Ronchon et al. 2016:29). Based on the 21-month data collected on incisional SSI, the researchers also estimated that the potential savings could be approximately £15.000 per incisional SSI prevented. (Ronchon et al. 2016: 26).

Saunders et al. (2022) found in their study that ambiguity surrounding normal versus abnormal wound healing can cause significant stress on patients and could potentially lead to an unplanned hospital readmission due to unidentified wound complications. (Saunders et al. 2022:81). Their study evaluated the impact of verbal and written

information provided to patients and their families. The researchers found that verbal instructions alone were ineffective, as patients often forgot them post discharge. In contrast, the additional written information provided better outcomes and a higher teaching quality, although it did not directly affect readmissions. Participants' experiences varied, emphasizing the importance of giving information tailored to each patient's specific needs. (Saunders et al. 2022: 82).

Thomas and Siaki (2017) utilized the HFMEA process, which allowed them to recognize and respond to opportunities to intervene and mitigate harm. In addition to finding that Project RED was successful in reducing hospital readmissions, they reported other positive effects from the study. These include a 70% reduction in risks, increased interprofessional teamwork, development of sustainability and scalable quality and improved patient safety outcomes and satisfaction levels. (Thomas and Siaki, 2027: 84.)

In the Nurse-led Transitional Program (TCP), Wang et al. (2023) found that although the intervention did not have distinguishable effect on hospital readmission rates, it did affect in positive ways the patients who enrolled the program. TCP patients compared to the control group had better QoL (quality of life) and satisfaction, as well as fewer T-tube obstruction related infections (1.2% vs. 4.4%) and T-tube skin problems (1.2% vs. 6.9%). (Wang et al. 2023: 4570.)

In the study done by Weiss et al. (2019), the researchers found that integrating the patient's perspective into the care planning and discharge was a key underlying factor that contributed to the effectiveness of the discharge readiness assessment. The READI1 and READI2 protocols both incorporated the nurses' medical judgement and assessment. The difference was that the READI2 added the patient's self-assessment, which caused remarkable results in high readmission units in comparison to the READI1 protocol that only consisted of nurse assessment. (Weiss et al. 2019: 12.)

5.3.4 Other Negative Effects

In terms of negative effects, only one study in this literature review addressed this issue. Donsel and Missel (2021) stated that each patient progresses at their own pace and that having rigid timings for follow-up phone calls can be risky since it may interfere with the transition and recovery process leading to worse outcomes. (Donsel and Missel, 2021: 1703.)

5.3.5 No Effect

In two studies included in the analysis, no significant effect, positive nor negative, was observed on hospital readmission rates (Maqueda-Martínez et al. 2024; Wang et al. 2023). In the study by Maqueda-Martínez et al. (2024), the intervention demonstrated positive effects, however, no significant difference was found between the control and intervention groups in terms of readmission rates (Maqueda-Martínez et al. 2024: 6). Similarly, the study by Wang et al. (2023) reported positive outcomes following the implementation of a nurse-led transitional care program, but no significant decrease in readmissions. Readmissions in the study's control group were recorded at 3.3%, compared with 2.4% in the intervention group. Although this represents a slight decrease, the study did not consider the difference statistically significant (Wang et al. 2023: 4574).

6 Discussion

The analysis identified five generic categories of nurse-led discharge education, as well as their respective influences on readmission rates. As nurses play an important role in informing the patient and family about their care, preparing for discharge and communicating with the multidisciplinary care team, the studies focused on types of education that were nurse-led (Mao et al. 2022; Zhu et al. 2015). The types of discharge education were grouped into follow-up-based, technological, multi-modal, structured, and individualized approaches, each then divided into relevant subcategories of specific nurse-led discharge teaching methods. Although five modes of nurse-led education were defined, there were also overlapping themes that appeared across several generic categories. This indicates that specifically the use of several methods may be required to ensure effective discharge education. The studies were subsequently analyzed to determine the effects of the interventions, resulting in five generic outcome categories. These reflected either a reduction or an increase in readmission rates, or no significant effect. Additionally, other positive and negative effects were observed in the studies, which may in turn indirectly influence readmission rates and be reflected in the effectiveness of nurse-led discharge education. The discussion will examine the findings in this literature review and consider their potential implications for nursing and healthcare practice.

Follow-up interventions, conducted in the form of outpatient visits, home visits and postoperative clinics, were essential in maintaining continuity of care. They allowed nurses to reassess patient conditions, clarify treatment plans, and identify possible complications. As earlier stated by Patel and Bechmann (2023), discharge education should ensure continuity and offer clear instructions for addressing potential complications. Technological methods were the most broadly utilized, and they consisted in telephone assistance, digital, and online methods. These approaches allowed nurse support from home environment, self-assessment tools, plan clarification, nurse triage, and a sense of comfort to the patient. Multi-modal methods enabled a more complete educational process. These included specialized education, verbal teaching, a combination of verbal and written methods, visual or photo utilization, and team-based teaching. Structured education consisted of checklists, scales, and readiness assessments which enabled all relevant content to be systematically addressed. Finally, individualized education, characterized by customized plans tailored to each patient's needs and factors such as cognitive ability and social support.

When analyzing the results from the studies included in the review, it was seen that most interventions had a positive effect, either reflected in reduced hospital readmissions or other positive effects. This reflects previous studies emphasizing the importance of discharge education and the effect it has on the rate of readmissions (Saunders et al. 2022) Nurse-led discharge education shows potential to reduce readmissions in post-operative patients and may also extend the time until hospitalization. When analyzing the influence of the interventions on readmission rates, the overwhelming majority of studies demonstrated a reduction in readmissions (Coskun and Duygulu 2022; Hu et al. 2020; Kang et al. 2022; Lee et al. 2021; Lin et al. 2024; Opper et al. 2019; Ronchon et al. 2016; Thomas and Siaki 2017; Weiss et al. 2019; Yang et al. 2025).

This general trend was reflected across all studies, except for studies by Maqueda-Martínez et al. (2024) and Wang et al. (2023), which had no significant effect, and the study by Weiss et al. (2019), of which parts of the intervention were found to increase readmissions. This suggests that nurse-led discharge education may be particularly effective in the early post-discharge period, when patients are vulnerable to obstacles in their healing process. Other benefits to the interventions were highlighted in the studies and appeared under other positive effects, such as improved discharge readiness, reduced emergency department visits, improved teaching quality, lower number of complications, improved support and communication and higher degree of standardization. As mentioned in the beginning of the review, confusion, disruptions in communication, and pressure from a growing workload all contribute to problems in the discharge process, and therefore the positive effects may help mitigate these issues (Opper, Beiler, Yakusheva and Weiss 2019). Studies which incorporated the theme of continuity, either by in-person follow-up or technological methods, had stronger positive results when considering the effects of the intervention. Increased readmissions, other negative effects and no effects were rare in all studies included. Increased readmissions were reported in one study, and this was only the case for one group of participants.

As discussed earlier in the review, hospital readmissions present a significant challenge for the healthcare system, particularly in surgical patients (Opper et al. 2019). Not only does rehospitalization affect patient outcomes, but it also creates a considerable cost burden for the healthcare system (Lucas and Pawlik 2014). Therefore, methods and protocols that decrease readmissions are considered noteworthy. Two studies found no significant reduction in readmissions. In the study on the implementation of a nurse-led telecare program by Maqueda-Martínez et al. (2024),

the effect on readmissions was not significant. Even so, the study resulted in other positive effects and specifically the lower number of emergency department and outpatient visits post-discharge, highlights the effectiveness of the intervention in possibly contributing to lower readmissions (Maqueda-Martínez et al. 2024: 8). The study by Wang et al (2023) in fact showed that the intervention group had a higher number of emergency room visits than the control group, however, it attributes this to higher compliance to care. No significant difference in readmission rates was found. The number of T-tube related complications, so those related to the surgical procedure performed, were in fact lower (Wang et al. 2023).

This literature review shows strong support that nurse-led teaching methods are most effective when combined. This aligns with previous research linking nurse-led programs using several teaching methods to effectively reduce readmission and emergency care visits post discharge. (Sakashita, Endo, Ota and Oku 2025.) Other studies have examined specific nurse-led teaching; one showed that reinforcing verbal teaching with written materials increases the likelihood that patients will retain information (Saunders et al. 2022.) These findings highlight the role of comprehensive, clearly communicated discharge education in preventing post-discharge complications and therefore reducing the risk of hospital readmissions. Methods that use a structured approach, focus on continuity, and use multi-modal teaching methods have shown positive effects in the results of this review. Combining different methods can maximize the ability to improve outcomes and reduce preventable readmissions in post-operative surgical patients.

7 Conclusion

This literature review demonstrates that nurse-led discharge education has substantial potential to reduce hospital readmissions and improve the quality of postoperative care. Across the fourteen studies analyzed, a range of approaches were identified; follow-up-based, technological, multi-modal, structured, and individualized interventions. While each method contributed uniquely to patient outcomes, the evidence consistently indicates that combining several teaching methods results in the best outcomes.

The most successful nurse-led discharge interventions integrated multiple types of nurse-led education with structured care plans and individualized components tailored to the patient's needs, health status, and personal abilities. Discharge methods that appeared in the studies enhanced the patients' ability and adherence to self-care. Structured methods such as checklists, scales, combined with the use of multi-modal materials helped nurses ensure consistency when providing patient education, which contributed to enhanced understanding, positive outcomes and reduced readmissions.

A central theme appearing in this review is the importance of continuity in the discharge teaching, specifically follow-up contact delivered either in person or through technology. The interventions seen in the studies allowed patients to communicate with the nurse or health provider post-discharge and provided a lower threshold for clarification of possible questions or health-related concerns and therefore early detection of post-operative complications. Follow-up and technology together strengthened the continuity of care, in particular for patients who were recovering from complex procedures, or those who were for any reason less likely to reach out in case they had signs or symptoms of post-operative complications. These methods also promoted patient engagement and inclusion by offering support and information for successful self-care either for themselves or their carers.

From a nursing perspective, the results in this thesis highlight the importance of nurses as educators and coordinators during the discharge process. Nurses as professionals work most closely with patients throughout their recovery. They can follow recovery, identify potential complications, and provide support to ensure a safe and effective transition from hospital to home. Nurses should be empowered through ongoing professional training and development, to provide discharge education that is individualized, structured, and thorough.

Future research in examining the long-term effects of nurse-led discharge teaching is needed to better understand the role of nurses as the providers of discharge teaching,

and the effects of the different types of teaching. In order to assess the effect of each individual method within studies investigating multi-modal approaches, future studies are needed to evaluate individual components in more detail. These studies may focus for example solely on technology as a method of nurse-led teaching. Further study of these methods may allow researchers to evaluate the individual potential impact of these methods on patient outcome, as well review their healthcare cost effectiveness.

The implications for nursing practice are significant. Nurse-led discharge education should be viewed as a key component of transitional care. Implementing structured, individualized, and follow-up focused teaching methods such as those seen in this review can strengthen the role of nurses during the discharge process. The methods discussed in this review can ultimately contribute to enhanced patient outcomes, and therefore also lower healthcare cost burden. With the growing emphasis on efficiency within the healthcare sector, adopting nurse-led discharge education can lead to a more sustainable healthcare system and offer positive results for both the patients and the healthcare provider.

8 Ethics and validity

8.1 Ethics

Ethics in research refers to the moral and legal principles of how studies are planned, conducted, and shared. It involves concepts such as transparency, honesty, responsibility, and integrity at every stage of the research process. From the choice of the topic to data handling and reporting findings. (Bitter, Ngabirano, Simon and Taylor 2020.) Ethics is a vital part of scientific studies because it builds stronger research systems and preserves trust in science (Sánchez, Bezhoid and Farnós 2023).

In this study, the previously mentioned ethical concepts were followed throughout all stages. The sources used were properly credited to avoid plagiarism, and findings were used honestly without altering or fabricating any data. The articles used were selected from scientific databases, primarily PubMed and CINAHL, and only selecting credible and peer-reviewed sources. We also utilized support from Metropolia University's library staff, which contributed to a more accurate and ethical data collection process. In addition, Artificial Intelligence (AI) was used in the format of the database Keenious to search for additional articles that could be of interest and that did not appear in the previously mentioned databases. AI was also utilized to help structure the background into subcategories in order to increase clarity and find synonyms. The prompts used were "We are doing a nursing thesis and its title is "The impact of nurse-led discharge teaching on readmission rates in postoperative patients", give suggestions on how to structure the background section so it is logical, coherent and easy to understand", "Give synonyms for the word/words..." and "Give a more academically appropriate synonym for the word/words...".

8.2 Validity

Validity in research refers to how well the conclusions are supported by evidence and clear reasoning. It dives into whether the information in the study or literature review is correct and trustworthy. (Schweinsberg, Thau and Pillutla 2023.)

The reliability of this study was ensured by two students who worked collaboratively, reviewing and discussing each phase of the thesis process. This helped reduce the chance of mistakes such as bias, misinterpretation, or deviation from the structured review process. Only primary studies that met the inclusion and exclusion criteria specified were chosen. Each study was assessed carefully to confirm its relevance to the thesis topic and research questions. Lastly, the research process was supported and

guided by an experienced supervisor, whose knowledge helped align the work with Metropolia's academic standards and further guided the overall validity of the study.

References

- Aljubouri, S. A., Alsaedi, E., Alrehaili, M., Aloufi, H., Alsubhi, R., Aljassar, M., Seraj, A. S., Samman, H. M., Alharbi, A. N., Kaki, W. K., Mohammad, H. A., Alharbi, N. H. and Almarwani, M. 2025. Evaluating the effectiveness of enhanced recovery after surgery protocols on outcomes in general surgery: a systematic review. *International Journal of Community Medicine and Public Health* 12 (2). 920-927.
- Badia, J. M., Casey, A. L., Petrosillo, N., Hudson, P. M., Mitchell, S. A. and Crosby, C. 2017. Impact of surgical site infection on healthcare costs and patient outcomes: a systematic review in six European countries. *Journal Of Hospital Infection* 96 (1). 1-15.
- Bengtsson, M. 2016. How to plan and perform a qualitative study using content analysis. *Nursing Plus Open* 2. 8-14.
- Bitter, C., Ngabirano, A., Simon, E., Taylor, D. 2020. Principles of research ethics: A research primer for low- and middle-income countries 10 (2). 125-129.
- Coskun, S. and Duygulu, S. 2022. The effects of Nurse Led Transitional Care Model on elderly patients undergoing open heart surgery: a randomized controlled trial. *Cardiovascular Nursing* 21 (1). 46–55.
- Dharap, S. B., Barbaniya, P. and Navgale, S., 2022. Incidence and Risk Factors of Postoperative Complications in General Surgery Patients. *Cureus* 14 (11).
- Donsel, P. O. and Missel, M. 2021. What's going on after hospital? – Exploring the transition from hospital to home and patient experiences of nurse-led follow-up phone calls. *Journal of Clinical Nursing* 30. 1694–1705.
- Groenen, H., Bontekoning, N., Van Dieren, S., Orsini, R. G., Boermeester, M. A., Tobiano, G. and Eskes, A. M. 2024. Patients' Ability to Self-Manage Their Surgical Wound to Prevent Wound Complications: A Cross-Sectional Study. *Journal of Advanced Nursing* 81 (7). 4208-4215.
- Haddaway, N. R., Bethel, A., Dicks, L.V., Koricheva, J., Biljana, M., Gillian, P., Pullin, A. S., Savilaakso, S. and Stewart, G. B. 2020, Eight problems with literature reviews and how to fix them. *Nature Ecology & Evolution* 4 (12). 1582-1589.
- Hartweg, D. L., Metcalfe, S. A. 2021. Orem's Self-Care Deficit Theory: Relevance and Need for Refinement. *Sage Journals* 35 (1). 70-76.

- Hayajneh, A., Hweidi, I. and Abu Dieh, M. W. 2020. Nurses' knowledge, perception, and practice toward discharge planning in acute care settings: A systematic review. *Nursing Open* 7 (5). 1313-1320.
- Higgins, J. P. T., Thomas, J., Chandler, J., Cumpston, M, and Li, T. 2024. *Cochrane Handbook for Systematic Reviews of Interventions* version 6.5. <<https://www.cochrane.org/authors/handbooks-and-manuals/handbook/current/chapter-03#section-3-2>>. Accessed 28 August 2025.
- Hu, R., Gu, B., Tan, Q., Xiao, K., Li, X., Song, T. and Jiang, X. 2020. The effects of a transitional care program on discharge readiness, transitional care quality, health services utilization and satisfaction among Chinese kidney transplant recipients: A randomized controlled trial. *International Journal of Nursing Studies* 110.
- Javed, H., Olanrewaju, O. A., Ansah Owusu, F., Saleem, A., Pavani, P., Tariq, H., Vasquez Ortiz, B. S., Ram, R. and Varrassi, G. 2022. Challenges and Solutions in Postoperative Complications: A Narrative Review in General Surgery. *Cureus* 15 (12).
- Kang, E., Chaboyer, W., Tobiano, G. and Gillespie, B. 2022. Evaluating the feasibility of a web-based discharge education programme to improve general surgical patients' postdischarge recovery: a pilot randomised controlled trial. *BMJ Open* 12 (2).
- Khademian, Z., Ara, F. K. and Gholamzadeh, S. 2020. The Effect of Self Care Education Based on Orem's Nursing Theory on Quality of Life and Self-Efficacy in Patients with Hypertension: A Quasi-Experimental Study. *International Journal of Community Based Nursing and Midwifery* 8 (2). 140-149.
- Kyngäs, H., Mikkonen, K. and Kääriäinen, M. 2020. *The application of Content Analysis in Nursing Science Research*. E-book. Cham.
- Lau, F. and Kuziemy, C. 2017. *Handbook of eHealth Evaluation: an Evidence based Approach*. E-book. Victoria. National Library of Medicine.
- Lee, J. H., Kang, S. M., Kim, Y. A. and Chu, S. H. 2021. Clinical outcomes of a nurse-led post-discharge education program for heart-transplant recipients: A retrospective cohort study. *Applied Nursing Research* 59.
- Lin, L., Fang, Y., Wei, Y., Huang, F., Zheng, J. and Xiao, H. 2024. The effects of a nurse-led discharge planning on the health outcomes of colorectal cancer patients with stomas: A randomized controlled trial. *International Journal of Nursing Studies* 155.

Lucas, D. J. and Pawlik, T.M. 2014. Readmissions After Surgery. *Advances in Surgery* 1. 185-199.

Mao, H., Xie, Y., Shen, Y., Wang, M. and Luo, Y. 2022. Effectiveness of nurse-led discharge service on adult surgical inpatients: A meta-analysis of randomized controlled trials. *Nursing Open* 9 (5). 2250-2262.

Maqueda-Martínez, M., Ferrer-Márquez, M., García-Redondo, M., Rubio-Gil, F., Reina-Duarte, Á., Granero-Molina, J., Correa-Casado, M. and Chica-Pérez, A. 2024. Effectiveness of a Nurse-Led Telecare Programme in the Postoperative Follow-Up of Bariatric Surgery Patients: A Quasi-Experimental Study. *Healthcare* 12 (23). 2448.

Melissa, R., Sukeshi, M., Carlos, M., Deborah, Luff., Leah, R., Bibi, P., Sandy, T., Deepthi, J., Vimal, S. 2016. Quality improvement approach to reducing readmission for surgical site infection. *Wounds UK* (12) N2.

Merkow, R. P., Ju, M. H., Chung, J. W., Hall, B. L., Cohen, M. E., Williams, M. V., Tsai, T. C., MD, Ko, C. Y. and Bilimoria, K. Y. 2015. Underlying Reasons Associated with Hospital Readmission Following Surgery in the United States. *JAMA* 313 (5). 483–495.

Nepogodiev, D., Martin, J., Biccard, B., Makupe, A. and Bhangu, A. 2019. Global burden of postoperative death. *The Lancet* 393 (10170). 401.

Opper, K., Beiler, J., Yakusheva, O. and Weiss, M. 2019. Effects of Implementing a Health Team Communication Redesign on Hospital Readmissions Within 30 Days. *Worldviews on Evidence-Based Nursing* 16(2). 121–130.

Patel, P. R. and Bechmann, S. 2023. *Discharge Planning*. StatPearls. E-book. Treasure Island.

Prisma Executive 2025. Prisma Flow Diagram. <<https://www.prisma-statement.org/prisma-2020-flow-diagram>>. Accessed 2 September 2025.

Rochon, M., Makhecha, S., Morais, C., Luff, D., Richardson, L., Persaud-Rai, B., Tibbles, S., Joseph, D., Sriram, V., Cowell, G., Roberts, A., Trimlett, R., Yadav, R., Raja, S., and De Souza, A. 2016. Quality improvement approach to reducing readmission for surgical site infection. *Wounds UK* 12 (2). 26–31.

Sakashita, C., Endo, E., Ota, E. and Oku, H. Effectiveness of nurse-led transitional care interventions for adult patients discharged from acute care hospitals: a systematic review and meta-analysis. *BMC Nursing* 24 (379).

Sánchez, G.S., Bezhold, G.A., Farnós, I.A. 2023. Research ethics: From principles to practical aspects. *Science Direct* 99 (3). 195-202.

Saunders, R., Dineen, D., Gullick, K., Graham, R. and Finlay, S. 2022. Exploring orthopedic patients' experiences of hospital discharge: Implications for nursing care. *Collegian* 29 (1). 78-83.

Schweinsberg, M., Thau, S. and Pillutla, M. 2023. Research-Problem Validity in Primary Research: Precision and Transparency in Characterizing Past Knowledge. *Sage Journals* 18 (5). 1230-1243.

Snyder, H. 2019. Literature review as a research methodology: An overview and guidelines. *Journal of Business Research* 104. 333-339.

Thomas, D. V. and Siaki, L. A. 2017. A Partnership for Patients Initiative: Redesigning a Medical-Surgical Unit's Discharge Process to Reduce Readmissions. *Nursing Economics* 35 (2). 76–87.

Tobiano, G., Chaboyer, W., Tong, M.Y.T., Eskes, A. M., Musters, S. C. W., Colquhoun, J., Herbert, G. and Gillespie, B. M. 2023. Post-operative nursing activities to prevent wound complications in patients undergoing colorectal surgeries: A scoping review. *Journal of Clinical Nursing* 33 (3). 890-910.

Vears, D. and Gillam, L. 2022. Inductive content analysis: A guide for beginning qualitative researchers. *Focus on Health Professional Education: A Multi-Professional Journal* 23 (1). 111-127.

Wang, M., Hua, J., Liu, T. and Liang, H. 2023. Application of a nurse-led transitional care programme for patients discharged with T-tubes after biliary surgery. *Nursing Open* 10 (7). 4570–4577.

Weiss, M. E., Yakusheva, O., Bobay, K. L., Costa, L., Hughes, R. G., Nuccio, S., Hamilton, M., Bahr, S., Siclovan, D. and Bang, J. 2019. Effect of Implementing Discharge Readiness Assessment in Adult Medical-Surgical Units on 30-Day Return to Hospital: The READI Randomized Clinical Trial. *JAMA Network Open* 2(1).

Yang, B., Luo, X., Wang, P., Pan, P., Lin, P. and Zhao, W. 2025. Nurse-led discharge versus consulting surgeon-led discharge for patients who underwent laparoscopic surgeries: an evaluation of follow-up outcome, readmission frequencies, cost of care, and satisfaction of patients. *BMC Nursing* 24 (1). 218.

Zhou, B., Ji, H., Liu, Y., Chen, Z., Zhang, N., Cao, X. and Meng, H. 2021. ERAS reduces postoperative hospital stay and complications after bariatric surgery: A retrospective cohort study. *Medicine (Baltimore)* 100 (47).

Zhu, Q. M., Liu, J., Hu, H. Y. and Wang, S. 2015. Effectiveness of nurse-led early discharge planning programmes for hospital inpatients with chronic disease or rehabilitation needs: a systematic review and meta-analysis. *Journal of Clinical Nursing* 24 (19-20). 2993-3005.

Appendices

Appendix 1. Selected articles

Authors / Year / Country	Study	Objective	Sample Population	Research design / Methods / Analysis	Major Findings	Limitations
Coskun, S. and Duygulu, S. 2022 Turkey	1. The effects of Nurse Led Transitional Care Model on elderly patients undergoing open heart surgery: a randomized controlled trial.	To improve patient convalescence results and reduce rate of post-discharge readmission to hospital and unplanned post-discharge rehospitalization, home-care and follow-up process of patients should be managed successfully. To evaluate the effectiveness of Nurse Led Transitional Care Model on the functional autonomy, quality of life, readmission, and rehospitalization rates of elderly patients undergoing open heart surgery.	Sixty-six elderly cardiovascular surgical patients	A randomized controlled trial was conducted from November 2017 to December 2018. Sixty-six elderly patients were randomly allocated to the intervention (n: 33) and control (n: 33) groups. Patients in the intervention group were given care based on the Transitional Care Model until the post-discharge 9th week starting from date of hospitalization. Patients in control group were given standard care services. Functional autonomy, quality of life levels, and repeated admission/re-hospitalization rates to the clinic were evaluated.	As of the post-discharge 6-month follow-up period of the patients participating in the research, the rates of repeated hospitalization (n=2) or emergency service referral (n=1) of the patients in the intervention group compared to that of the rates of repeated hospitalization (n=9) or emergency service referral (n=11) of the patients in the control group were found to be statistically significantly lower (P<0.05).	Location limited Fairly small sample size. Discrepancy in the meaning of elderly patients (60, whereas WHO defines as >65.

<p>Donsel, P. O. and Missel, M.</p> <p>2021</p> <p>Denmark</p>	<p>2. What's going on after hospital? – Exploring the transition from hospital to home and patient experiences of nurse-led follow-up phone calls.</p>	<p>To explore the transition from hospital to home and patient experiences of nurse-led post-operative follow-up phone calls after thoracic surgery.</p>	<p>Patients who have undergone surgery in February 2019 at the Department of Thoracic Surgery at Rigshospitalet, Copenhagen University Hospital</p>	<p>A qualitative intervention study. Interviews were conducted with patients who had received a post-operative phone call after hospital discharge (n = 15).</p>	<p>Two overall themes emerged: (1) The follow-up phone call, which concerns experiences involving the actual call and (2) Transitioning from hospital to home. It was also revealed that a call from a nurse can help patients not to feel left out and finally why it is absolutely essential that nurses initiate the phone call. Being part of an Enhanced Recovery After Surgery program has implications for the initial period after discharge; dominated by fatigue, pain and experiences of a changed body.</p>	<p>Location limited</p> <p>Study is qualitative, does not quantify effect on readmissions</p> <p>It is noted that recovery journeys and needs are very individual.</p>
<p>Hu, R., Gu, B., Tan, Q., Xiao, K., Li, X., Song, T. and Jiang, X.</p> <p>2020</p> <p>China</p>	<p>3. The effects of a transitional care program on discharge readiness, transitional care quality, health services utilization and satisfaction among Chinese kidney transplant recipients: A randomized controlled trial.</p>	<p>To evaluate the effectiveness of an innovative transitional care program in improving discharge readiness, transitional care quality, health services utilization and patient satisfaction among kidney transplant recipients (KTRs) in China.</p>	<p>A total of 220 eligible patients admitted undergoing kidney transplantation were recruited in a general tertiary hospital in Chengdu, China.</p>	<p>A randomized controlled trial. 220 eligible patients were recruited and randomly assigned to the intervention and control groups. Participants in the intervention group received a transitional care intervention, including a risk assessment for early readmission, health education from admission to pre-discharge, individualized discharge</p>	<p>Compared with the control group, the intervention group showed significantly better discharge readiness (personal status, $P < 0.001$; knowledge, $P = 0.010$; coping ability, $P < 0.001$; expected support, $P = 0.007$; total score, $P < 0.001$), better transitional care quality (importance of preferences, $P <$</p>	<p>Location limited</p> <p>Study compares nurse-led discharge to several factors, readmissions falling under health service utilization. Therefore, relevant results are limited.</p>

				<p>planning, and a telephone follow-up once per week for one month and WeChat follow-up post discharge. The control group received routine care of comparable length and follow-up contact.</p>	<p>0.001; management preparation, $P < 0.001$; critical understanding, $P = 0.003$; written and understandable care plan, $P = 0.012$; total score, $P < 0.001$), lower readmission rate at T2 ($P = 0.033$) and at T3 ($P = 0.013$).</p>	
<p>Kang, E., Chaboyer, W., Tobiano, G. and Gillespie, B. 2022 Australia</p>	<p>4. Evaluating the feasibility of a web-based discharge education program to improve general surgical patients' post discharge recovery: a pilot randomized controlled trial.</p>	<p>To assess the feasibility of implementing a web-based discharge education program for general surgery patients both prior to and after hospital discharge.</p>	<p>85 patients who had a general surgery procedure were recruited from a tertiary hospital between October 2020 and January 2021 in Queensland, Australia.</p>	<p>A prospective, two-arm, unblinded pilot randomized controlled trial. Eighty-five patients were recruited and randomized (42 control; 43 intervention). All patients received their group allocation as randomized and all patients in the intervention group received the web-based education prior to discharge. The web-based education comprised of three components designed to enhance patients' knowledge, skills and confidence to improve their engagement with self-care, and the ability to detect any post-operative issues that can arise during the post discharge period.</p>	<p>Post discharge, patients accessed the education an average of 3 times (SD 3.14), with 4 minutes (SD 16) spent on the website. 28 (97%) of the intervention patients found the content easy to understand, 25 (86%) found it useful and 24 (83%) were satisfied with its content. There was a significant association between the intervention and patient activation ($F(1,60)=9.347$, $p=0.003$), but not for self-care ability and unplanned healthcare utilizations.</p>	<p>Location limited Fairly small sample size Google Analytics used for monitoring possibly unreliable Many patients lost to follow-up Lack of blinding among patients, research assistants and data analyst</p>

<p>Lee, J. H., Kang, S. M., Kim, Y. A. and Chu, S. H.</p> <p>2021</p> <p>South Korea</p>	<p>5. Clinical outcomes of a nurse-led post-discharge education program for heart-transplant recipients: A retrospective cohort study.</p>	<p>This study aimed to compare the effects of specialized nurse-led discharge education, including continuous post-transplant education and counselling, on heart transplant recipients' clinical outcomes, with the effects of existing discharge education.</p>	<p>Participants were 136 heart transplantation recipients at a university-affiliated hospital in South Korea from November 1, 1994, to November 30, 2018.</p>	<p>A retrospective cohort study. Participants' electronic medical records were retrospectively analyzed. Participants were grouped according to usual care (n = 25), nurse-led program (n = 66), and nurse-led program with post-discharge education (n = 45). The number of outpatient visits with clinical problems and days to first unplanned rehospitalization within one year after transplantation were assessed.</p>	<p>The nurse-led program with post-discharge education was associated with significantly reduced outpatient visits with clinical problems, compared to usual care and the existing nurse-led program. A significantly longer time until the first unplanned rehospitalization in the nurse-led program with post-discharge education group, compared to the usual care group was found.</p>	<p>Location limited</p> <p>Readmissions is measured in a different way from thesis - measuring time until first hospitalization with no limit of 30 days</p> <p>Fairly small sample size</p>
<p>Lin, L., Fang, Y., Wei, Y., Huang, F., Zheng, J. and Xiao, H.</p> <p>2024</p> <p>China</p>	<p>6. The effects of a nurse-led discharge planning on the health outcomes of colorectal cancer patients with stomas: A randomized controlled trial.</p>	<p>Evaluate the effects of a nurse-led discharge planning on the quality of discharge education, stoma self- efficacy, readiness for hospital discharge, stoma quality of life, incidence of stoma complications, unplanned re- admission rate, and length of stays.</p>	<p>Participants were 160 with diagnosis of colorectal cancer without distant metastasis or other tumors, 18 years of age or older, and experiencing elective colostomy surgery for the first time. Participants were recruited from May to November 2022, with follow-up ending in February 2023.</p>	<p>Design: Assessor-blind parallel-arm randomized controlled trial with a repeated-measures design. Method: Participants were randomly allocated to the experimental and control groups. The former received nurse-led discharge planning in addition to the usual discharge education, while the control group received only the usual discharge education. The program included assessment, health education, stoma care, stoma support,</p>	<p>Participants in the intervention group showed significant improvement in the quality of discharge teaching, readiness for hospital discharge, stoma self-efficacy, stoma quality of life, complications, and unplanned re-admission, compared to the control group (p < 0.001). However, no statistically significant differences were observed in length of stays (p > 0.05).</p>	<p>Study was done in only one hospital</p> <p>Follow up lasted only 3 months</p> <p>Same nurses worked with both groups (could cause overlap in care)</p>

				discharge review, discharge medication and checklist integration, discharge referral, and post-hospital follow-up. Baseline data were collected prior to the intervention (T0). Data on the quality of discharge teaching, readiness for hospital discharge, stoma self-efficacy, and stoma quality of life were measured on the day of discharge from the hospital (T1). Patients' stoma self-efficacy and quality of life were repeat measured 30 (T2) and 90 days post-discharge (T3). Data on stoma complications (T1, T2, T3), length of stays (T1), and unplanned readmission (T2, T3) were collected from medical records.		
Maqueda-Martínez, M., Ferrer-Márquez, M., García-Redondo, M., Rubio-Gil, F., Reina-Duarte, Á., Granero-Molina, J., Correa-	7. Effectiveness of a Nurse-Led Telecare Programme in the Postoperative Follow-Up of Bariatric Surgery Patients: A Quasi-Experimental Study.	The objectives were (1) to describe the nature of consultations in patients who have undergone bariatric surgery in the immediate postoperative period after discharge (first month post-surgery) and (2) to analyse the effects of the intervention (the implementation of a	We included 161 patients who met the inclusion criteria: a body mass index (BMI) ≥ 40 kg/m ² or a BMI ≥ 35 kg/m ² with associated comorbidities, aged between 18 and 65 years, obesity persisting for more	A quasi-experimental study was designed and conducted in two hospitals in southern Spain. The data collection process was carried out over 18 months. Several variables were recorded, including the number of telephone consultations, reasons for consultation, number of	The IG showed a significant reduction in ED visits (4.9% vs. 30% in CG), and consultations were mainly related to diet and drainage. The nurse telecare intervention significantly improved postoperative recovery by reducing	Using a quasi-experimental design instead of a controlled randomised trial Recruiting patients from a small geographical area limit the generalizability of the results. Since there was no

<p>Casado, M. and Chica-Pérez, A.</p> <p>2024</p> <p>Spain</p>		<p>nurse-led telecare post-surgical follow-up programme) on complications and readmissions in these patients.</p>	<p>than 5 years, and the failure of other non-surgical treatments to treat obesity. They were divided into two groups (each in one hospital) of CG (n = 80) and the IG (n = 81).</p>	<p>emergency visits, readmissions, and surgical reinterventions. In order to analyse the effects of the intervention on complications and readmissions in patients who had undergone bariatric surgery, bivariate analyses were performed to compare the two groups (control and experimental) for the following outcome variables: ED visits, hospital readmissions, surgical re-intervention, and the mean length of readmission stay (in days). Between-groups differences were tested using the Mann–Whitney U-test.</p>	<p>complications and optimizing the safety and quality of postoperative care. These results reinforce the importance of personalized follow-up in improving clinical outcomes in bariatric patients.</p>	<p>previous study on this, study sample needed had to be calculated based on an approximation and this could have affected the power of the study.</p> <p>Readmission data was only collected from the hospitals that participated on the study, so it's unknown if some participants were readmitted elsewhere.</p>
<p>Opper, K., Beiler, J., Yakusheva, O. and Weiss, M.</p> <p>2019</p> <p>United States</p>	<p>8. Effects of Implementing a Health Team Communication Redesign on Hospital Readmissions Within 30 Days.</p>	<p>To improve health team communication and collaboration about hospital discharge; improve patient experience of discharge measured by patient-reported quality of discharge teaching, readiness for discharge, and post discharge coping difficulty; and reduce readmissions and emergency department</p>	<p>Preintervention patients were 413 and postintervention patients were 191 patients. For the match analysis, 188 postintervention patients were matched with preintervention patients. Inclusion criteria were +18 years of age, English-speaking</p>	<p>A quasi-experimental study of 2 groups pre- and postintervention design (not randomized) with patients, nurses and physicians.</p>	<p>Readmissions decreased from 18% to 12% (p < .001); ED visits decreased from 4.4% to 1.5% (p < .001). Changes in health team communication and collaboration and patients' experience of discharge were minimal.</p>	<p>Nurse participants varied, which could affect data completeness.</p> <p>No control group, which does not allow us to rule out the contribution of other efforts.</p> <p>Only two nursing units from the same academic medical center were used.</p> <p>Fewer physicians</p>

		(ED) visits post discharge.	and no hospice care available. Exclusion criteria was decisional incapacitation.			participated in post-intervention.
Rochon, M., Makhecha, S., Morais, C., Luff, D., Richardson, L., Persaud-Rai, B., Tibbles, S., Joseph, D., Sriram, V., Cowell, G., Roberts, A., Trimlett, R., Yadav, R., Raja, S., and De Souza, A. 2016 United Kingdom	9. Quality improvement approach to reducing readmission for surgical site infection.	To improve patient care experience, develop better links between acute and community care and reduce readmissions for SSI.	3,259 (cardiac, non-transplant) procedures over a 21-month period	A prospective surveillance service monitored SSI rates on readmission.	PaD is associated with four times lower readmission rates for incisional SSI (p=0.0344).	Hospital site 2 could not train more staff members on PaD Surveillance nurses only available 8h/day and only Monday to Friday Lack of support on the PaD project from the senior nurses in hospital site 2
Saunders, R., Dineen, D., Gullick, K., Seaman, K., Grah, R. and Finlay, S. 2022	10. Exploring orthopedic patients' experiences of hospital discharge: Implications for nursing care.	To explore patients' experiences of discharge from hospital following orthopedic surgery.	Of the 34 participants, 14 (41%) were female and 20 (59%) were male with a mean age of 65.3 years (range 24-87 years). The mean length of stay was 3.3 days	A descriptive qualitative study was undertaken with a sample of 34 patients discharged following orthopedic surgery at a private acute Australian hospital. Individual semi structured telephone interviews were conducted	Patient feedback has highlighted that nurses need to provide more tailored discharge information for orthopedic patients to support recovery to prevent post discharge problems and hospital readmission.	Conducted in one ward of a private hospital Voluntary Participation Patients' recollections of discharge instructions may have declined since discharge

Australia			and ranged between 1 and 8 days.	and analyzed using inductive thematic analysis.		No differentiation the experiences of patients by age group, gender, comorbidities, prior hospitalizations, or orthopedic surgical type.
Thomas, D. V. and Siaki, L. A. 2017 United States	11. A Partnership for Patients Initiative: Redesigning a Medical-Surgical Unit's Discharge Process to Reduce Readmissions.	In 2011, the Military Health System (MHS) reaffirmed commitment to patient safety by embracing the P4P initiative focused on achieving a 20% reduction in preventable readmissions by the end of 2013.	Patients of a U.S. Navy community hospital in the Pacific Northwest. Average daily inpatient census is 14 patients.	A healthcare failure mode and effect analysis. Project RED - an initiative by the Centers for Medicare and Medicaid Services - outlines strategies and guidelines to improve readmission rates. Step 3 of Project RED is to analyze and set goals for reducing readmission rates. Using the HFMEA, areas within the discharge process targeted for improvement were analyzed and prioritized. There are 11 interrelated steps, beginning with an organizational decision to commit to improving readmission rates and culminating with implementation and an evaluation plan that is piloted and rolled out in phases. The team conducted a proactive HFMEA of the existing discharge process to create	The HFMEA revealed four key areas of opportunity or intervention points: no standard callback process, high-risk patients were not prioritized to receive discharge teaching by a registered nurse, no designated clinician identified to conduct call, and no standardized format for calls. Prior to the intervention, baseline readmission rate for the previous 2 years was 6%. After implementing a coordinated, inter professional, and interdepartmental discharge process, overall readmission rate fell to 2.6% with a preventable readmission rate of less than 1%. The goal to decrease	Location limited Intervention consists of a wide array of steps making up the new discharge protocol.

				action plans directed at reducing high-risk failure modes.	readmission rates by 20% was exceeded.	
Wang, M., Hua, J., Liu, T. and Liang, H. 2023 China	12. Application of a nurse-led transitional care programme for patients discharged with T-tubes after biliary surgery.	Nurse-led transitional care programmes (TCPs) have been shown to facilitate patient recovery in several illness settings, but its role among patients discharged with T-tubes remains uncertain. The aim of the study was to investigate the effects of a nurse-led TCP among patients discharged with T-tubes.	255 patients were included in the TCP group, and 451 patients were included in the control group.	From January 2018 to December 2020, a total of 706 patients discharged with T-tubes after biliary surgery were included in the study. Patients were divided into a TCP group (n = 255) and a control group (n = 451) based on whether they participated in a TCP. The baseline characteristics, discharge readiness, self-care ability, transitional care quality and quality of life (QoL) were compared between the groups.	Self-care ability and transitional care quality were significantly higher in the TCP group. Patients in the TCP group also exhibited improved QoL and satisfaction. The results suggest that the incorporation of a nurse-led TCP among patients discharged with T-tubes after biliary surgery is feasible and effective.	Single-centre retrospective study Evidence is limited Imbalance in the sample group sizes, could cause bias Possible deviations in TCP implementation due to 3-year time period
Weiss, M. E., Yakusheva, O., Bobay, K. L., Costa, L., Hughes, R. G., Nuccio, S., Hamilton, M., Bahr, S., Siclovan, D. and Bang, J. 2019	13. Effect of Implementing Discharge Readiness Assessment in Adult Medical-Surgical Units on 30-Day Return to Hospital: The READI Randomized Clinical Trial.	To determine the effect of unit-based implementation of readiness evaluation and discharge intervention protocols on readmissions and emergency department or observation visits.	The sample included 144 868 patient discharges in medical-surgical units of 33 Magnet hospitals between September 15, 2014, and March 31, 2017. This included all adult (aged 18 years) patients discharged	A multisite cluster randomized controlled trial. Of 2 adult medical-surgical nursing units from each hospital, 1 was randomized to the intervention and 1 to usual care conditions. Using the 8-item Readiness Scale, the 33 intervention units implemented a sequence of protocols with	74605 in the intervention group and 70263 in the control group); 17667 (12.2%) were readmitted and 12732 (8.8%) had an emergency department visit or observation stay. None of the READI protocols reduced the primary outcome of return to hospital in intent-to-treat	Location limited Not only surgical patients - some inpatient in medical-surgical units Study measures hospital returns - only category 2 (readmissions) is relevant to this thesis.

United States, Saudi Arabia			home.	increasing numbers of components: READI1, in which nurses assessed patients to inform discharge preparation; READI2, which added patient self-assessment; and READI3, which added an instruction to act on a specified Readiness for Hospital Discharge Scale cutoff score indicative of low readiness.	analysis of the full sample. In exploratory subgroup analysis, when patient self-assessments were combined with readiness assessment by nurses (READI2), readmissions were reduced by 1.79 percentage points (95% CI, -3.20 to -0.40 percentage points; P = .009) on high-readmission units. With nurse assessment alone and on low-readmission units, results were mixed.	
Yang, B., Luo, X., Wang, P., Pan, P., Lin, P. and Zhao, W. 2025 China	14. Nurse-led discharge versus consulting surgeon-led discharge for patients who underwent laparoscopic surgeries: an evaluation of follow-up outcomes, readmission frequencies, cost of care, and satisfaction of patients.	To evaluate the follow-up outcomes, readmission frequencies, cost of care, and satisfaction of patients who received nurse-led discharge compared to those of patients who received consulting surgeon-led discharge after laparoscopic surgeries.	A total of 261 participated in the study. A total of 105 patients who underwent laparoscopic surgery received a nurse-led discharge (NLD cohort). In the NLD cohort, the final medical examinations (check- ing of cognitive functions) of patients for the decision to discharge were	In a retrospective study of electronic medical records gathered from the First Affiliated Hospital of Sun Yat-sen University, Guangzhou, Guangdong, China, of patients who underwent laparoscopic surgery received nurse-led discharge after final medical examinations by a senior nurse (NLD cohort, n = 105) or consulting surgeon- led discharge after final medical examinations by consulting surgeons (SLD cohort, n = 156). All patients received	Fifteen (6%) patients (3 (3%) from the NLD cohort and 12 (8%) from the SLD cohort) were readmitted. The working area for consulting surgeon-led discharges had a beneficial score of 0–0.51 (between 5 and 11% readmission rate) and the working area for nurse-led discharges had a beneficial score of 0–0.81 (between 5 and 34% readmission rate).	Retrospective study design Small sample size No randomized groups which could cause selection bias

			performed by a senior nurse. A total of 156 patients who underwent laparoscopic surgery received consulting surgeon-led discharge (SLD cohort).	discharge prescriptions from consulting surgeons, with instructions.		
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Appendix 2. Content analysis research question 1

Research Question 1: What are the different types of nurse-led discharge education provided to adult postoperative patients?						
Study	Meaning Unit	Condensed Meaning Unit	Code	Subcategory	Generic Category	Main Category
1. The effects of Nurse Led Transitional Care Model on elderly patients undergoing open heart surgery: a randomized controlled trial.	Care practices provided within the scope of TCM Protocol consisted of four main steps: (i) assessment of the current health status of the participating patient, regularly visiting the patient in the clinic, coordinating the care process, and providing pre-operative and post-operative training (led by coordinator nurse)	The TCM protocol was divided into 4 steps. Current health status assessment and regular visits and providing pre and post-operative training.	4 Step structured transitional care model with assessments	Customized plan	Individualized	Types of nurse-led discharge education provided to adult post-operative patients
	(ii) analysing the case and plan the patient's care process using the OMAHA system (led by TCM team members);	Each patient case was analyzed to plan the care process.	Customized care process according to patient	Customized plan	Individualized	
	(iii) post-operative patient assessment and defining the further healthcare process (led by TCM team members);	Post-operative assessment of each patient to decide on further action.	Customized care based on post-operative assessment	Customized plan	Individualized	
	(iv) home visits within 24 h, at 2nd, 6th, and 9th weeks, respectively after discharge (led by the coordinator nurse).	Home visits were scheduled at 24 hours, 2nd, 6th and 9th weeks post-discharge.	Home visits planned post-discharge	Home visits	Follow-up	
	The TCM starts with the admission of the elderly patient to the clinic and covers the entire post-discharge healthcare process, including the coordination and continuity of post-operative clinical treatment and management, with the active participation of the supportive and guiding caregiver, together with the patient and his family.	The transitional care model covers the length of the whole patient stay and incorporates the caregivers and families in the process.	Covers the whole post-discharge healthcare process and involved family and caregivers	Continuous care	Individualized	

2. What's going on after hospital? – Exploring the transition from hospital to home and patient experiences of nurse-led follow-up phone calls.	To try and accommodate the patients' needs, nurse-led follow-up phone calls were set up in February 2019 for patients who had undergone surgery at the Department of Thoracic Surgery at Rigshospitalet, Copenhagen University Hospital. The intervention consists of systematic phone contact after discharge with all cancer patients treated in the department and also patients who the discharging nurse considers having been through a particularly complex procedure.	Nurse-led follow-up phone calls were implemented for thoracic postoperative patients. Calls were placed systematically after discharge to cancer patients and those who had undergone complex procedures.	Systematic nurse-led follow-up calls to specific patient groups	Telephone	Technological	
	Earlier studies also indicate the benefit of timing the follow-up phone call to take place within the first 7–10 days after discharge and that the call can be handled by a nurse.	Call timing was studied and determined to be most successful within 7-10 days post discharge and when handled by a nurse.	Optimally timed telephone-follow up calls	Telephone	Technological	
	Generally, the patients described the phone call as an opportunity to discuss their worries and concerns with a professional expert and to be given reassurance that the symptoms they had experienced were to be expected or that they should be examined in a follow-up consultation.	Patient experiences included being able to discuss their worries and be given reassurance, and advised on possible symptoms and possible need for hospital follow-up.	Reassurance during telephone follow-up calls	Telephone	Technological	
	The nurse-led phone call can be seen as a form of care that reaches beyond the hospital.	Nurse-led phone calls were seen as a form of continuous care.	Continuity of care through telephone calls	Telephone	Technological	
3. The effects of a transitional care program on discharge readiness, transitional care quality, health services utilization and satisfaction among Chinese kidney transplant recipients: A randomized controlled trial.	In our study, patients received structured qualified telephone follow-up based on a standardized follow-up record sheet once per week...	Patients in the transitional care program received follow-up telephone contact once weekly.	Telephone follow-up once weekly	Telephone	Technological	
	...they could also contact doctors and nurses online via WeChat whenever they encountered any problems, ensuring a timely and effective continuity of health care during the transition period.	WeChat was implemented so patients could contact doctors and nurses anytime with their concerns.	Digital follow-up for continuity of care	Digital	Technological	
	One other noteworthy reason is that we creatively adopted the early readmission risk assessment at hospital admission and identified those at high risk and provided more intense targeted interventions.	Risk assessment was adopted and used to target more intense interventions.	Risk assessment at admission	Scales and assessments	Structured	

	While our program shares common transitional care components, its distinctive features of timeliness (start right after admission), wholeness (covering interventions at admission, during the hospital stay, pre- discharge, after discharge)...	This program differs from other transitional care models in timeliness (immediately after admission), wholeness (covering all interventions).	Tailored self-management instruction	Continuous care	Individualized
	...tailored (stratified management based on early readmission risk assessment), self-management instruction with teach back,	Discharge plans were based on patient assessments and tailored.	Tailored self-management instruction	Customized plan	Individualized
	...and use of WeChat for sharing and in-time support are noteworthy.	WeChat was used for sharing and support.	WeChat for sharing and support	Digital	Technological
4. Evaluating the feasibility of a web-based discharge education programme to improve general surgical patients' postdischarge recovery: a pilot randomised controlled trial.	The intervention was a web-based discharge education programme designed to encourage patient participation in self-care through active learning and self-assessment of their postoperative symptoms and recovery.	The intervention was a web-based education program for encouraging patient participation in self-care through self-assessment of symptoms and recovery.	Web-based discharge education program	Online	Technological
	The web-based education programme consisted of three components: (1) post general surgery warning signs; (2) post general surgery everyday care instructions; and (3) a video on surgical wound care and signs of wound complications. The first component included a traffic light system (colours were green, yellow and red) with descriptions of common warning signs of post-operative complications following general surgery.	The web-based program consisted of - post surgical warning signs (with a traffic light system for possible complications); post-surgical daily care instructions and a video on surgical wound care and signs of wound complications.	Web learning to pinpoint warning signs post-operatively	Online	Technological
	The web-based education was not designed to replace the current in- hospital discharge teaching provided by the clinicians. Rather, the web-based education programme provides patients with an additional and alternative source of information to facilitate patients' participation in self-care after discharge.	The web-based program was implemented together with the existing discharge teaching provided. It provided an additional source of information.	Web learning as an addition to discharge education	Online	Technological

5. Clinical outcomes of a nurse-led post-discharge education program for heart-transplant recipients: A retrospective cohort study.	All the patients were classified into either the usual care group, nurse-led program (NLP) group, or nurse-led program with post-discharge education (NLP + PE) group. Patients who received specialized discharge education for heart transplantation and telephone counselling after discharge from a transplant coordinator were classified into NLP groups.	Patients were divided into 3 groups. The usual care group, the nurse-led program (NLP group) and the nurse-led program with post-discharge education (NLP + PE) group. NLP group received discharge education and telephone counselling from a transplant coordinator.	Nurse-led program with specialized discharge education	Specialized education	Multi-modal	
	Among the patients classified into a NLP group, those who received regular, face-to-face education and counselling from the coordinator during outpatient visits, in addition to telephone counselling after discharge, were classified as the NLP + PE group.	The NLP+PE group were offered face-to-face education and counselling during outpatient visits.	Face-to-face counselling and education	Outpatient visits	Follow-up	
	The NLP group received additional education from a transplant coordinator, as well as discharge education by a general ward nurse. Transplant coordinators were nurses who had received expert training in heart transplantation. At discharge, coordinators educated recipients, using a brochure on post-heart transplantation management that included signs and symptoms of rejection/infection, taking immuno suppressants, attending regular outpatient clinic visits and screenings, and maintaining a healthy lifestyle.	The NLP group received specialized discharge education from a general ward nurse and a transplant coordinator. At discharge, the coordinator used a brochure to educate patients on post-transplant care, including recognizing signs of rejection or infection, medication adherence, follow-up visits, and healthy living.	Coordinator nurse education using brochure	Verbal + written	Multi-modal	
	(NLP) After discharge, recipients were able to call the coordinator to discuss an appropriate course of action instead of visiting outpatient clinics or emergency rooms when the patient had problems, did not take medications, or had any questions.	The NLP was given telephone access to coordinator in case of any problems.	Telephone access for problems and questions	Telephone	Technological	
	The NLP + PE group continued to receive individual education and counselling related to post-transplant management at outpatient clinic visits, as well as discharge education...	The NLP + PE group received ongoing individual education and counseling during outpatient visits.	Ongoing education and counseling at outpatient clinics	Outpatient visits	Follow-up	
	(NLP+PE)...and telephone counselling by a transplant coordinator.	The NLP+PE group were offered telephone counselling.	Telephone counselling	Telephone	Technological	

6. The effects of a nurse-led discharge planning on the health outcomes of colorectal cancer patients with stomas: A randomized controlled trial.	Stage 1, on the day the patient was admitted to the hospital, the nurse initiated the evaluation process and formulated a personalized plan to meet the patient's needs.	There were 4 stages. Stage 1 was evaluation and formulating an individualized care plan in admission	4-stage stoma management program	Customized plan	Individualized	
	Stage 2, during hospitalization, health education, stoma support, and stoma care training were conducted to help the patient and their family obtain stoma-related knowledge and care skills and prepare for the transition from hospital to home.	Stage 2 was health education, stoma support, and care training during hospitalization	Education through inpatient training of care skills	Specialized education	Multi-modal	
	At Stage 3, within 24 h before discharge, discharge verification, integration of drugs, and a discharge list were adopted to help the patient successfully complete their discharge referrals.	Stage 3 was discharge verification, medication integration, and a discharge list within 24 hours before discharge.	Discharge verification and consolidating information	Checklists	Structured	
	At Stage 4, within 90 days after discharge, continuous information support was provided to meet the patient's continuation care needs; this was achieved via telephone, outpatient, and WeChat follow-ups.	Stage 4 was post-discharge support through phone calls, outpatient visits and WeChat follow-ups within 90 days after discharge.	Post discharge support through phone, outpatient and WeChat	Telephone	Technological	
	Additional care for intervention group: (1) Personal information questionnaire and medical variables with (yes/no) answer. Data were collected from the patients' medical records. (2) Quality of Discharge Teaching Scale that consisted in three dimensions: "needed content," "received content," and "teaching skills and effects." (3) Readiness for Hospital Discharge Scale consisted in three dimensions: "personal status," "adaptability," and "expected support." (4) Stoma Self-Efficacy Scale was consisted in two dimensions: "stoma self-efficacy" and "stoma social efficacy". (5) Stoma Quality of Life Scale to measure quality of life in colorectal cancer patients with stoma.	The intervention group received additional care including (1) a personal information questionnaire and medical data collected from records (2) the Quality of Discharge Teaching Scale assessing needed content, received content, and teaching skills/effects (3) Readiness for Hospital Discharge Scale consisting of personal status, adaptability, and expected support (4) Stoma Self-Efficacy Scale consisting of stoma self-efficacy and social efficacy and (5) the Stoma Quality of Life Scale.	Use of evaluation tools like questionnaires and readiness scales	Scales and assessments	Structured	
	The control group underwent the usual admission education, standard surgical nursing, discharge guidance before discharge.	The control group received routine care with discharge guidance.	Routine discharge guidance	Verbal + written	Multi-modal	

7. Effectiveness of a Nurse-Led Telecare Programme in the Postoperative Follow-Up of Bariatric Surgery Patients: A Quasi-Experimental Study.	Control Group (CG): The Control Group were given a detailed explanation (both orally and in writing) of the care that they would require during the postoperative period until the following consultation. This included information about surgical wound management and drainage, the type of diet that they should follow (a liquid diet and nutritional supplements for the first 7 days after discharge, followed by a semi-liquid diet for the next three weeks), the treatment to be followed (explaining how to administer the low-molecular-weight heparin), and the type of exercise that they could and should perform (walking daily for one hour after hospital discharge).	The Control Group received standard postoperative care instructions verbally and in writing. This included guidance on surgical wound management and drainage, diet, treatments like medication administration (including heparin), and type of exercise recommended.	Verbal and written instructions on post-operative care	Verbal + written	Multi-modal	
	Intervention Group (IG): All patients received the same information after discharge (usual APHS care) as the CG. In addition, they were informed that, if they were to have any queries or incidents, they could message (via WhatsApp) or call the specialist nurse, who was available 24 h a day, 7 days a week.	The Intervention Group received the same postoperative instructions as the control group, plus instructions how to contact the specialist nurse 24/7 via WhatsApp or phone in case of any queries or incidents after discharge.	24/7 access to contact specialist nurse by WhatsApp or telephone	Telephone	Technological	
	All calls related to postoperative care, as well as dietary queries, could be addressed directly by the nurse over the telephone. Calls requiring the assessment of the patient by a doctor (fever, abdominal pain that did not subside with the usual analgesia, incoercible vomiting, or changes in the appearance of the drainage) were dealt with by referring the patient to the emergency department.	Calls regarding postoperative and dietary queries were handled over the phone by the nurse. Cases requiring assessment by a doctors were referred to the emergency department.	Nurse-triaged calls which can be escalated to the emergency department	Telephone	Technological	
8. Effects of Implementing a Health Team Communication Redesign on Hospital Readmissions Within 30 Days.	Daily health team rounds at the patient bedside (hereafter referred to as Team Bedside Rounds [TBRs]) by the medical team with registered nurses (RNs) and other professionals, and RN-to-RN bedside shift handoff reports (referred to as BSRs) are mechanisms for direct communication between health team members and with patients and families to assure common goals, proactive planning, and consistent information exchange.	The medical team approach was to focus on developing and improving their TBR (daily team rounds in front of the patient) and BSR (nurse to nurse shift report at the patient bedside) mechanism.	Daily team bedside rounds and improved bedside shift reporting	Team-based	Multi-modal	

	These tools were structural enhancements to the TBR and BSR processes: (a) "briefing checklists" for use in TBR and BSR and (b) a "whiteboard" checklist in the patient room to cue patients (and their families) about the discharge- related goals.	Discharge goals were reinforced with "briefing checklist" and "whiteboard checklist".	Briefing checklists and whiteboard checlists in patient room	Checklists	Structured
	Scales such as Quality of Discharge Teaching Scale (QDTS), Readiness for Hospital Discharge Scale (RHDS) and PostDischarge Coping Difficulty Scale (PDCDS).	Scales used in assessment: Quality of Discharge Teaching Scale, Readiness for Hospital Discharge Scale and Post Discharge Coping Difficulty Scale.	Use of evaluation tools like scales to measure readiness and post-discharge coping.	Scales and assessments	Structured
	Telephone follow-up interview at 2 weeks postdischarge.	Phone call follow-up was implemented at 2 weeks post-discharge.	2 week post-discharge telephone follow-up	Telephone	Technological
9. Quality improvement approach to reducing readmission for surgical site infection.	On the day of discharge, the ward nurse takes a colour photograph of the patient's wound. This is inserted into a form containing evidence-based wound care information, including advice specific to the individual, improving documentation and information on wound status/appearance for community carers. A plan is also given for any outstanding microbiology results. A copy of the form is sent to the GP and patient/carer, and is uploaded to the electronic patient record.	Wound photo taken the day of discharge and personalized information and guidance given to patient. The form is given to both patient/carer and GP, and uploaded to electronic patient record.	Wound photograph for tailored discharge guidance and records	Photo/visual	Multi-modal
	Focused on improving 3 key points: - Wound assessment and documentation at the point of discharge - Patient experience of the discharge process - Individual and patient-centred information for carers and community healthcare professionals.	Main goals were to improve: - Wound assesment and documentation - Discharge process - Patient's experience and information provided for patient/carers and community healthcare.	Targeted improvement: wound documentation, discharge experience, individualized info	Photo/visual	Multi-modal
	PaD = Photo of Discharge Individualized advice to the patient	PaD = Photo of Discharge Individualized advice to the patient	PaD — individualized discharge advice with photo	Photo/visual	Multi-modal

10. Exploring orthopaedic patients' experiences of hospital discharge: Implications for nursing care.	On the day of discharge, a registered nurse communicates with the patient and/or family member about the information that is required as part of self-care following discharge such as physical activity, pain management, medication management, wound care, constipation education, follow-up appointments and information about potential complications.	On the day of discharge a nurse explained care instructions to the patient and family.	Verbal instruction on detailed care instructions	Verbal	Multi-modal
	Both the registered nurse and patient sign the 'Home Discharge Checklist' and a copy is given to the patient.	Home discharge checklist was used and given to the patient by the nurse.	Patient and nurse signed discharge checklist	Checklists	Structured
	Participants were provided written information that was verified by nurses, physiotherapists, and/or pharmacists during the discharge process which participants also reported helping them with their recovery as they were able to refer to it.	Patients were provided with written useful information verified by various health care professionals.	Written and verified discharge materials	Verbal + written	Multi-modal
11. A Partnership for Patients Initiative: Redesigning a Medical-Surgical Unit's Discharge Process to Reduce Readmissions.	According to Project RED, follow up phone calls are one of several important focus areas when optimizing post-discharge services. Post-discharge phone calls provide an opportunity for nurses to reiterate discharge instructions and identify problems that can be addressed to fore stall readmissions. These calls also provide opportunities to answer patient questions, clarify misinterpretations, and identify discrepancies in the discharge plan that may result in a preventable readmission.	Project RED implemented in the study highlights follow-up phone calls as a key part of improving post-discharge care. These calls help nurses reinforce discharge instructions, identify issues early, answer patient questions, and correct misunderstandings.	Follow-up phone calls for reinforcing discharge instructions	Telephone	Technological
	Although a coordinated follow-up call was identified as a key element to the program's success, HFMEA helped the team pinpoint other target areas to enhance the re-engineered discharge process. Specific target areas involved: Communicating discharge plan of care with primary care provider/team, medication reconciliation, ensuring timely follow-up appointments with primary care team, coordinating patient education between care settings and care management for high risk patients.	Follow-up calls were essential to the program's success - additional areas for improving the discharge process included better communication with primary care, medication reconciliation, timely follow-up appointments, coordinated patient education, and focused care management for high-risk patients.	Follow-up phone calls reinforced discharge teaching	Telephone	Technological

	During the pilot, patients or care givers were contacted within 48 hours of discharge to review discharge plans and ensure safe transitions from inpatient to outpatient settings.	During the pilot, patients and caregivers were contacted within 48 hours of discharge to review discharge plans and ensure a safe transition.	Contact within 48 hours post-discharge for plan review	Telephone	Technological	
	By standardizing the 48-hour phone call process using HFMEA, objectives of the pilot project were exceeded and sustained over a 12-month period.	By standardizing the 48-hour phone call process, readmissions were decreased over a 12 month period.	Standardized 48 hour follow-up call process	Telephone	Technological	
12. Application of a nurse-led transitional care programme for patients discharged with T-tubes after biliary surgery.	Discharge planning arrangements, assessments of patient readiness for discharge (three dimensions: personal status, coping ability and expected support)...	Discharge planning, patient readiness and follow up were a part of the program.	Transitional care program based on patient assessment	Scales and assessments	Structured	
	Use of the WeChat application for patient transmission of pictures, voice messages and text to communicate and consult with medical staff at any time and reciprocal advice from the staff through verbal descriptions or photos and health information pushes	WeChat was used to consult and get advice from medical staff by voice messaging and photos	WeChat for photo/voice/text consultations and prompts	Digital	Technological	
	A nursing clinic for medication changes, catheter maintenance, drainage bag changes and related consultation for patients discharged with tubes.	Nursing clinic was implemented for post-operative care.	Nursing clinic for post-operative care	Post-operative clinic	Follow-up	

13. Effect of Implementing Discharge Readiness Assessment in Adult Medical-Surgical Units on 30-Day Return to Hospital: The READI Randomized Clinical Trial.	The 4 phases included baseline plus 3 READI protocols implemented sequentially with additional components in each phase. The 2 study conditions were intervention (unit incorporated the READI protocols as a supplement to existing discharge practices for all patients going home) and usual care control (unit from the same hospital where no study activities were conducted).	This study tested whether adding discharge readiness checks could reduce 30-day hospital returns. It was done in multiple hospitals using four phases, each adding more to the protocol. Some units used the new protocols with their usual care, while others continued with usual care only.	READI multi-phase implementation with readiness checks	Scales and assessments	Structured	
	The READI1 protocol required the discharging nurse to complete an assessment of patient readiness on the day of hospital discharge using the Readiness for Hospital Discharge Scale nurse form (RN-RHDS).	The READI1 protocol required the discharging nurse to complete an assessment of patient readiness on the day of discharge using the Readiness for Hospital Discharge Scale nurse form (RN-RHDS).	RN-RHDS assessment completed by nurse before discharge	Scales and assessments	Structured	
	The READI2 protocol added the patient self-assessment version of the RHDS (PT-RHDS), which was reviewed by the discharging nurse immediately before completing the RN-RHDS, so that the patient's perspective would inform the nurse's assessment and action.	The READI2 protocol added a patient self-assessment (PT-RHDS), which the nurse reviewed before completing their own assessment, so the patient's perspective could help the nurse's own assessment.	PT-RHDS (patient self-assessment) reviewed by nurse	Scales and assessments	Structured	
	The READI3 protocol additionally instructed nurses that a score lower than 7 of 10 on the RN-RHDS or PT-RHDS indicates low readiness and required documentation of an action to improve readiness and reduce readmission risk for any low value.	The READI3 protocol told nurses that a score below 7 meant low readiness and required them to document steps taken to improve the patient's readiness and lower the risk of readmission.	Use of scoring to assess low readiness and improve	Scales and assessments	Structured	
	The RN-RHDS and PT-RHDS are parallel 8-item forms to rate readiness for hospital discharge on the day of discharge on a scale from 0 to 10. Scores below 7 indicate low readiness. Administered in the 4 hours prior to discharge and following the decision to discharge, the scales measure the degree of readiness for discharge to home self-management close to the time of discharge but with sufficient time to address remaining patient needs before discharge.	The RN-RHDS and PT-RHDS are parallel 8-item tools used within 4 hours before discharge to assess patient readiness on a 0–10 scale; scores below 7 indicate low readiness. They help evaluate readiness for home self-management while allowing time to address any remaining needs.	Use of scoring to assess low readiness and improve	Scales and assessments	Structured	

	The forms capture 4 dimensions of readiness (2 items per scale): personal status (physical readiness and energy); knowledge (problems to watch for and restrictions); perceived coping ability (ability to handle demands at home and perform personal care); and expected support (help with personal care and help with medical care).	The RN-RHDS and PT-RHDS assess four dimensions of readiness: personal status, knowledge, coping ability, and expected support.	Form assessment of patient dimensions: personal status, knowledge, coping ability, expected support	Scales and assessments	Structured	
14. Nurse-led discharge versus consulting surgeon-led discharge for patients who underwent laparoscopic surgeries: an evaluation of follow-up outcome, readmission frequencies, cost of care, and satisfaction of patients.	A total of 105 patients who underwent laparoscopic surgery received a nurse-led discharge (NLD cohort). In the NLD cohort, the final medical examinations (checking of cognitive functions) of patients for the decision to discharge were performed by a senior nurse.	The patients in the intervention group underwent nurse-led discharge including cognitive examination. The decision to discharge was made by the senior nurse.	Nurse-led discharge including cognitive examination and routine care	Discharge counselling	Individualized	

Appendix 3. Content analysis research question 2

Research Question 2: How does nurse-led discharge education influence the rate of hospital readmissions?						
Study	Meaning Unit	Condensed Meaning Unit	Code	Subcategory	Generic Category	Main Category
1. The effects of Nurse Led Transitional Care Model on elderly patients undergoing open heart surgery: a randomized controlled trial.	As of the post-discharge 6-month follow-up period of the patients participating in the research, the rates of repeated hospitalization (n=2) or emergency service referral (n=1) of the patients in the intervention group compared to that of the rates of repeated hospitalization (n=9) or emergency service referral (n=11) of the patients in the control group were found to be statistically significantly lower (P<0.05).	At the 6-month follow-up, the intervention group had significantly lower hospital readmissions (2 vs. 9) and emergency visits (1 vs. 11) compared to the control group.	Lower hospital readmissions and ED visits	Reduced readmissions	Reduced readmissions	Influence of nurse-led discharge education on hospital readmission rates
	The results of this study support our hypothesis H1 arguing that 'Nursing care carried out in collaboration with a multidisciplinary team in line with TCM for elderly patients who have undergone open heart surgery may improve the patients' functional autonomy, their quality of life levels, and decrease the rate of repeated post-discharge referrals to hospital and rehospitalization.	The study supports the hypothesis that nursing care carried out in collaboration with a multidisciplinary team in line with the Transitional Care Model (TCM), can improve functional autonomy, quality of life, and reduce hospital readmissions in elderly patients after open-heart surgery.	The transitional care model reduces readmissions	Reduced readmissions	Reduced readmissions	
	Research findings reveal that nurse-led TCM practices are effective on the rehospitalization and emergency department referral rates of patients over the age of 60 who underwent open heart surgery.	Research shows that nurse-led TCM reduces rehospitalization and emergency department visits in patients over 60 who had open heart surgery.	The transitional care model reduces readmissions	Reduced readmissions	Reduced readmissions	
	The findings of our study argued the major causes underlying rehospitalization of patients (n=9) in the control group were: chest wound infection, sternum shift, mediastinitis, pericardial effusion, weakness, urinary tract infection, heart failure, and COPD; whereas the reasons underlying emergency department referrals (n=11) were difficulty in breathing, nausea, sleeping disorders, rhythm problem, constipation, diarrhoea, weakness, and fatigue. The patients in the intervention group (n=2), on the other hand, were rehospitalized based on organizing the medication programme (although not very often, patients with bleeding problems after discharge may require rehospitalization for further blood tests and adjustment of anticoagulant drug doses).	In the control group, rehospitalizations were mostly due to serious complications like infections and heart issues, ED visits were caused by symptoms like breathing problems and fatigue. In contrast, only two patients in the intervention group were re-hospitalized, based on organization of the medication program.	Medication management prevented rehospitalization	Complication reduction	Other positive effects	

	It has been concluded that the healthcare services offered within the scope of the Nurse Led TCM improved the functional autonomy and quality of life levels of patients undergoing open heart surgery and decreased the patients' post-discharge hospital readmission and rehospitalization rates.	Nurse-led TCM improved functional autonomy and quality of life levels in open heart surgery patients while reducing post-discharge readmissions and rehospitalizations.	Functional autonomy improvement	Autonomy and readiness	Other positive effects
2. What's going on after hospital? – Exploring the transition from hospital to home and patient experiences of nurse-led follow-up phone calls.	By offering the patients a phone call, the patients are given the opportunity to talk to a nurse without having to contact the hospital department. Thus, the onus is not on the patient to ring and ask to talk to a healthcare professional. If the nurse contacts the patient, this signals that the nurse has set aside time to listen to what matters to the patient which has been described to be important during the first few weeks after the patients' discharge.	By offering follow-up phone calls patients can speak to a nurse without needing to contact the hospital themselves. This shows the nurse is available and willing to listen, which is especially valuable in the early weeks after discharge.	Follow-up calls enhance accessibility	Support and communication	Other positive effects
	Standardising the timing of the phone call carries the risk of contacting the patient at an inappropriate time, which is why we feel it is necessary to be aware that the patients can be at different stages in their transition process. Disturbing the patients' transition process may lead to poor clinical outcome.	Standardizing phone call timing may interrupt patients who are at different stages of recovery, potentially harming their transition and leading to worse clinical outcomes.	Rigid call schedules may be harmful	Support and communication	Other negative effects
3. The effects of a transitional care program on discharge readiness, transitional care quality, health services utilization and satisfaction among Chinese kidney transplant recipients: A randomized controlled trial.	Another important finding of our research was that the 30- and 90-day readmission rates in the intervention group were significantly lower than those in the control group, which is consistent with the results of previous studies.	Research showed that 30 and 90 day readmission rates in the intervention group were significantly lower than in the control group.	Short-term readmission reduction	Reduced readmissions	Reduced readmissions
	Our findings confirmed that transitional care was beneficial to improving KTRs' discharge readiness, transitional care quality, health services utilization and patient satisfaction with transitional care services.	The study confirmed that transitional care improved kidney transplant recipients' discharge readiness, quality of care during transitions, use of health services, and satisfaction with transitional care.	Transitional care improves readiness & satisfaction	Autonomy and readiness	Other positive effects

	Compared with the control group, the intervention group showed significantly better discharge readiness (personal status, $P < 0.001$; knowledge, $P = 0.010$; coping ability, $P < 0.001$; expected support, $P = 0.007$; total score, $P < 0.001$), better transitional care quality (importance of preferences, $P < 0.001$; management preparation, $P < 0.001$; critical understanding, $P = 0.003$; written and understandable care plan, $P = 0.012$; total score, $P < 0.001$), lower readmission rate at T2 ($P = 0.033$) and at T3 ($P = 0.013$).	Compared to the control group, the intervention group had significantly higher discharge readiness, better quality of transitional care, and lower readmission rates at both follow-up points (T2 - 30 days post discharge, and T3 - 60 days post discharge).	Discharge readiness linked to lower readmissions	Reduced readmissions	Reduced readmissions
4. Evaluating the feasibility of a web-based discharge education programme to improve general surgical patients' postdischarge recovery: a pilot randomised controlled trial.	ED visits for postoperative complications and hospital readmissions within 30 days were also higher in the standard education group, although non-significant (4 of 43 (9%) vs 6 of 40 (15%), $p=0.43$; 1 of 43 (2%) vs 2 of 40 (5%), $p=0.51$).	Although not statistically significant, the standard education group had more ED visits and hospital readmissions within 30 days compared to the intervention group.	Trend toward fewer readmissions with intervention	Reduced readmissions	Reduced readmissions
	We observed a significant improvement in patient activation but not self-care ability and healthcare utilisations for patients who received the web-based education. Nonetheless, these findings were exploratory and not adequately powered to support hypothesis testing for effectiveness, although it is plausible a correlation exists between patient activation, self-care ability and unplanned healthcare utilisation from the use of the web-based programme.	Web-based education significantly improved patient activation but not self-care ability or healthcare use. While the findings suggest a possible link between activation and outcomes, they were exploratory and not powered for definitive conclusions.	Patient activation may influence outcomes	Engagement and outcomes	Other positive effects
5. Clinical outcomes of a nurse-led post-discharge education program for heart-transplant recipients: A retrospective cohort study.	There were 13 unplanned rehospitalizations in the usual care group, 34 in the NLP group, and 22 in the NLP +PE group. After discharge, the median time until unplanned first rehospitalization was 43 days (range: 39.48–46.52) for the usual care group, 74 days (range: 15.43–132.57) for the NLP group, 126 days (range: 34.07–217.93) for NLP +PE group. The NLP +PE group had significantly longer days to first unplanned rehospitalization than the other groups.	The NLP + PE group had less unplanned rehospitalizations than the NLP group. The time until the first rehospitalization was longer in the NLP + PE group (126 days), than the NLP group (74 days) or the usual care group (43 days).	NLP + PE delays and reduces rehospitalization	Reduced readmissions	Reduced readmissions
	The NLP + PE group significantly reduced the frequency of outpatient visits with unfavorable clinical signs or symptoms and delayed the period until first unplanned rehospitalization.	The NLP + PE group had a reduced number of outpatient visits and a delayed time till first rehospitalization.	Reduced healthcare utilization	Engagement and outcomes	Other positive effects

	Through implementing NLP +PE program for heart transplant recipients, readmission rates could be lowered, improving patient survival and reducing healthcare costs.	By implementing the nurse-led program with post-discharge education (NLP + PE), readmission rates could be lowered for heart transplant patients.	Post-discharge education reduces readmissions	Reduced readmissions	Reduced readmissions
6. The effects of a nurse-led discharge planning on the health outcomes of colorectal cancer patients with stomas: A randomized controlled trial	Referring to the results of the Chi-squared test, there was a statistically significant difference ($p < 0.05$) in the unplanned readmission rates between the two groups at T2 and at T3. At the 1-month follow-up (T2), 2 participants (2.56%) in the intervention group were readmitted compared to 12 (16.00%) in the control group. At the 3-month follow-up (T3), 1 participant (1.28%) in the intervention group was readmitted versus 8 (10.67%) in the control group.	Unplanned readmission rates were significantly lower in the intervention group compared to the control group at both the 1 month (2.56% vs 16%) and the 3-month follow-ups (1.28% vs 10.67%).	Significant reduction in early readmissions	Reduced readmissions	Reduced readmissions
	Referring to the results of the Mann–Whitney U test, the intervention group had significantly higher scores than did the control group in terms of the total score, actual obtained dimensions, teaching skills, and effectiveness dimension of the quality of discharge teaching ($p < 0.001$). Specifically, the intervention group had a median total score of 147.00 compared to 100.00 in the control group.	The intervention group scored significantly higher than the control group on all aspects of the quality of discharge teaching.	Higher teaching quality linked to outcomes	Teaching quality	Other positive effects
	The higher the scores the different scales get, the better outcome the nurse-led discharge teaching was.	Higher scores on the scales meant better outcomes of nurse-led teaching.	Teaching quality affects readmission outcomes	Teaching quality	Other positive effects
7. Effectiveness of a Nurse-Led Telecare Programme in the Postoperative Follow-Up of Bariatric Surgery Patients: A Quasi-Experimental Study.	When comparing the number of ED visits in the CG ($n = 24$; 30%) and the IG ($n = 4$; 4.9%), we observed significant differences with a medium-high effect size in favour of the group that participated in the nurse-led telecare follow-up programme ($U = 2347.5$; $p < 0.001$; $\eta^2 = 0.133$).	The intervention group in the nurse-led telecare program had significantly fewer emergency visits (4.9%) compared to the control group (30%).	Telecare reduces ED visits	Engagement and outcomes	Other positive effects
	However, no significant differences were observed between the CG ($n = 3$; 3.8%) and the IG ($n = 4$; 4.9%) in terms of the number of patients requiring readmission after emergency department visits ($U = 3238.5$; $p = 0.988$).	There was no difference in readmission rates after emergency department visits between the control group (3.8%) and the intervention group (4.9%).	ED-related readmissions not affected by intervention	No effect	No effect
	Our results highlight the benefits of a telecare follow-up programme, given that the number of visits to the emergency department in the IG was significantly lower than in the CG (24 vs. 3; $p < 0.01$).	Emergency department visits in the intervention group compared to the control group were lower.	ED visits reduced	Engagement and outcomes	Other positive effects

	The main results of our study showed a significant number of consultations made (4.3 consultations per patient on average), primarily via WhatsApp, which is indicative of the level of concern among patients.	The study found that patients made 4.3 consultations each, mostly through WhatsApp.	Nurse accessibility prevents ED visits	Support and communication	Other positive effects
	The main reason why the bariatric patients participating in our study contacted the on-call nurse was to communicate diet-related concerns. The second-most-frequent concern was related to drainage problems (mainly discomfort), which raises the question of whether or not it is really necessary to discharge all patients with an abdominal drainage, especially given the controversy around this topic. The next most common problems raised by the patients were in relation to surgical wounds, abdominal pain, intestinal disorders, and vomiting, which have been highlighted as the main causes and risk factors related to ED visits.	Bariatric patients primarily contacted the nurse about diet-related concerns, followed by drainage problems, surgical wounds, abdominal pain, intestinal transit problems, and vomiting. All have been linked to emergency department visits.	Nurse accessibility prevents ED visits	Support and communication	Other positive effects
8. Effects of Implementing a Health Team Communication Redesign on Hospital Readmissions Within 30 Days.	The 30-day readmission rate was significantly lower postintervention, by 6.4 percentage points (pp). Though not statistically significant, ED visits also declined postintervention by 2.8 pp. In the adjusted comparison with matched samples, the reduction in readmissions (Figure 1) was similar (readmissions declined from 18.2% to 12.1%, $p < .001$; ED visits from 4.4% to 1.5%, $p < .001$).	The intervention of the study made a significant 6.4% reduction on the 30-day readmission rate. Emergency department visits declined by 2.8%.	Quantified reduction in readmissions & ED visits	Reduced readmissions	Reduced readmissions
	Results revealed a marked decrease in readmissions and ED visits from pre- to post-implementation of the redesigned communication process.	Results showed a decrease on readmissions and ED visits.	General reduction in readmissions & ED visits	Reduced readmissions	Reduced readmissions
	Differences were noted in the percentage of male patients, hospitalizations in the past 90 days, and use of home health services post discharge between pre- and postintervention samples. When analysis using the matched sample controlled for these sample differences, the substantial reduction in readmissions remained, suggesting that the intervention, and not these differences in patient characteristics, contributed to the reduction.	There were some patient characteristics differences between the pre-and-postintervention groups that could affect results. To avoid biased of the results, matched sample analysis was conducted. After adjusting to these differences, the reduction in readmissions was still statistically significant.	Adjusted analysis confirms intervention effect in reduced readmissions	Reduced readmissions	Reduced readmissions
	In this study, we found that the evidence-based practices of TBR and BSR, when included in a redesigned health team communication process with a focus on improved discharge communication, may contribute to readmission reduction.	TBR and BSR paired with team communication focused on improving discharge outcome, may contribute to the reduction of readmission rate.	Team-based discharge planning reduces readmissions	Support and communication	Other positive effects

9. Quality improvement approach to reducing readmission for surgical site infection.	PaD was associated with four times lower readmission rates for SSI (p = 0.0344)	PaD was associated with four times lower readmission rates for SSI.	PaD reduces surgical site infection readmissions	Reduced readmissions	Reduced readmissions
	Observational audit data on 3,259 (cardiac, non- transplant) procedures over a 21-month period (May 2014 to February 2016) on SSI and PaD use were collected. A total of 39 patients developed incisional SSI that was detected on readmission. From January 2015, there was a downward trend in SSI rate. In October 2015, compliance with the scheme increased (i.e. the majority of patients received PaD). PaD was associated with four times lower readmission rates for SSI.	From 3259 cardiac procedures, SSI and PaD data was collected. A total of 39 patients had readmissions due to SSI.	PaD reduces surgical site infection readmissions	Reduced readmissions	Reduced readmissions
	Readmission rates for surgical site infection: - Patients with PaD -----> 0.34% - Patients without PaD ---->1.39%	Readmission rates with PaD (0.34%) and without PaD (1.39%)	PaD reduced readmissions	Reduced readmissions	Reduced readmissions
	The PaD scheme demonstrates reduced risk of readmission for incisional SSI and is strongly supported by patient feedback.	PaD scheme demonstrated reduced readmission risk and strong support from patients.	Patient-supported PaD reduces readmissions	Support and communication	Other positive effects
10. Exploring orthopaedic patients' experiences of hospital discharge: Implications for nursing care.	For surgical patients, discharge information on wound care contributes to successful post-operative recovery. It is particularly important, since any uncertainty regarding recognition of normal wound healing versus wound complications can be stressful for the patient, and may result in hospital readmission due to unrecognised wound complications	Wound care discharge information is particularly important so the patient is aware of normal and abnormal wound healing and therefor can act as soon as some abnormalities are seeing, which reduces the risk of readmissions.	Wound care education reduces readmission risk.	Teaching quality	Other positive effects
	Discharge education is an important part of patient care and effective discharge education can enhance the patient experience and reduce hospital readmissions.	Discharge education can improve patient's experience and readmission rates	Education improves outcomes	Teaching quality	Other positive effects
11. A Partnership for Patients Initiative: Redesigning a Medical-Surgical Unit's Discharge Process to Reduce Readmissions.	Prior to the intervention, baseline readmission rate for the previous 2 years was 6%. After implementing a coordinated, interprofessional, and interdepartmental discharge process, overall readmission rate fell to 2.6% with a preventable readmission rate of less than 1%.	Before the intervention, the readmission rate was 6%. After introducing a coordinated, interprofessional discharge process, it fell to 2.6%, with a preventable readmissions rate of less than 1%.	Coordinated discharge reduces readmissions	Reduced readmissions	Reduced readmissions

	Project RED shows promise as an evidence based, standardized approach to address preventable hospital readmissions.	Project RED shows promise as an evidence-based, standardized method for reducing preventable hospital readmissions.	Evidence-based standardized discharge program	Standardization	Other positive effects
12. Application of a nurse-led transitional care programme for patients discharged with T-tubes after biliary surgery.	Furthermore, compared with the control group, patients in the TCP group reported higher QoL (0.76 (0.12) vs. 0.64 (0.15), $F = 10.717$, $p < 0.001$) and satisfaction (87.5 ± 8.8 vs. 81.4 ± 10.9 , $F = 7.616$, $p < 0.001$). T-tube obstruction/related infection (1.2% vs. 4.4%, $\chi^2 = 4.502$, $p = 0.033$) and T-tube-related skin issues (1.2% vs. 6.9%, $\chi^2 = 10.325$, $p = 0.001$) occurred less frequently in TCP patients.	TCP patients had better QoL (quality of life), satisfaction and control on T-tube obstruction/related infection and T-tube-related skin issues.	TCP reduces complications	Engagement and outcomes	Other positive effects
	Additionally, as regards readmission (2.4% vs. 3.3%, $\chi^2 = 0.250$, $p = 0.617$) and emergency room visits (6.3% vs. 9.8%, $\chi^2 = 2.111$, $p = 0.146$) within 90 days of discharge, there was no significant difference between the two groups, although the TCP group exhibited a lower rate.	No significant difference on readmissions within 90 days (2.4% vs. 3.3%) and emergency room visits (6.3% vs. 9.8%).	Intervention not effective in this case	No effect	No effect
13. Effect of Implementing Discharge Readiness Assessment in Adult Medical-Surgical Units on 30-Day Return to Hospital: The READI Randomized Clinical Trial.	The ITT analysis for the full sample revealed a small significant increase in readmissions by 1.02 absolute percentage point change (95% CI, 0.10–1.90 percentage points; $P = .03$) and a concurrent reduction in ED/Obs visits by a similar magnitude (–1.15 percentage points; 95% CI, –2.00 to –0.30 percentage points; $P = .008$) with the READI1 protocol. The READI2 and READI3 protocols did not significantly affect readmissions and ED/Obs visits. The TPP analysis revealed no significant changes in readmissions or ED visits for any of the protocols.	In the full sample ITT (intent to treat) analysis, the READI1 protocol slightly increased readmissions. READI2 and READI3 had no significant effects, and protocols showed no significant changes in the TPP (treated per protocol) analysis.	READI1 protocol increased readmissions	Increased readmissions	Increased readmissions
	The ITT analysis stratified for high and low baseline readmission rates revealed that, in high readmission units, the adjusted readmission rate with READI2 decreased by 1.79 percentage points (95% CI, –3.20 to –0.40 percentage points; $P = .009$). We did not find an effect on ED/Obs visits with READI2 or on either outcome with READI1 and READI3. In TPP analysis, there was a significant reduction in readmission of 1.38 percentage points (95% CI, –2.50 to –0.30 percentage points; $P = .02$) with READI1, and the reduction in readmissions with READI2 was greater (3.05 percentage points; 95% CI, –4.50 to –1.60 percentage points; $P < .001$).	In high-readmission units, the READI2 protocol reduced readmissions by 1.79 percentage points. No effect was seen on ED/Obs visits or with READI1 and READI3. In the TPP analysis, READI1 and READI2 both reduced readmissions, READI2 by 3.05 percentage points.	READI2 effectively lowered readmissions in high-readmission units	Reduced readmissions	Reduced readmissions

	On low-readmission units, the ITT effect was an increase in 30-day readmissions for READI1 (2.60 percentage points; 95% CI, 1.40–3.80 percentage points; $P < .001$) and for READI2 (1.41 percentage points; 95% CI, 0–2.80 percentage points; $P = .05$); there was no effect on readmissions with READI3. Concurrently, ED/Obs rates decreased with all protocols (READI1, -2.33 percentage points; 95% CI, -3.50 to -1.20 percentage points; $P < .001$ vs READI2, -1.32 percentage points; 95% CI, -2.40 to -0.20 percentage points; $P = .02$ vs READI3, -1.43 percentage points; 95% CI, -2.70 to -0.20 percentage points; $P = .02$). In TPP analyses, the results were similar with the exception that the increase in readmissions with READI2 was not significant.	In low-readmission units, READI1 and READI2 led to increased 30-day readmissions and READI3 had no effect. All three protocols significantly reduced ED/Obs visits. TPP analysis showed similar results, except the increase in readmissions with READI2 was not significant.	Mixed outcomes in low-readmission units	Increased readmissions	Increased readmissions
	In the full heterogeneous sample of hospitals, units, and patients, none of the READI protocols were consistently effective in reducing return to the hospital. However, the READI2 protocol, which included a structured discharge readiness assessment that incorporated the patient's own perspective, significantly reduced rates of return to the hospital on units that had high readmission rates prior to implementation of the intervention.	In a sample of all hospitals and patients, the READI protocols did not consistently reduce hospital readmissions. However, READI2, which included the readiness assessment with patient perspective, significantly reduced return rates in high readmission units.	Patient-inclusive readiness reduces readmissions	Reduced readmissions	Reduced readmissions
	Our findings point to the broad utility of structured discharge readiness assessments in mitigating high rates of readmissions, but achieving readmission reduction in hospitals with already low rates is unlikely.	Structured discharge readiness assessments are effective in reducing high readmission rates, but they are unlikely to achieve results in hospitals that already have low readmission rates.	Readiness assessments effective in high-risk contexts	Engagement and outcomes	Other positive effects
	Incorporating the patient's voice in clinical decision making about discharge preparation appears to be an important underlying mechanism for the effectiveness of structured discharge readiness assessment. In high-readmission units, the READI2 protocol more than doubled the absolute reduction in readmissions relative to the READI1 protocol that included only nurse assessment, with even greater additional reductions for TPP patients.	Incorporating the patient's voice in discharge decisions increases the effectiveness of discharge readiness assessments. In high-readmission units, READI2 (which requires patient input) more than doubled readmission reduction relative to READI1 (which requires only nurse assessment) with even greater impact for TPP patients.	Patient voice enhances effectiveness	Engagement and outcomes	Other positive effects
	In this multisite cluster randomized clinical trial, when patient self-assessments were combined with readiness assessment by nurses, high readmission units showed a reduction in 30-day hospital returns. Mixed results were observed for nurse assessments only and for low-readmission units.	In this trial, combining patient and nurse readiness assessments reduced 30-day hospital returns in high-readmission units. For nurse assessments, and low readmission units, results were Mixed.	Combined assessment reduces readmissions	Reduced readmissions	Reduced readmissions

14. Nurse-led discharge versus consulting surgeon-led discharge for patients who underwent laparoscopic surgeries: an evaluation of follow-up outcome, readmission frequencies, cost of care, and satisfaction of patients.	A total of 15 (6%) patients were readmitted to our hospital. Three (3%) patients who received nurse-led discharges and 12 (8%) who received consulting surgeon-led discharges were readmitted.	Nurse-led discharge education was associated with a lower readmission rate (3%) compared to the surgeon-led discharge education (8%)	Nurse-led education more effective to lower readmissions	Reduced readmissions	Reduced readmissions