

# **Importance of self-care management education and prevention of complication among older adult with (HF) heart failure**

## **A Systematic Literature Review**

Labani Saha

Degree Thesis in Health Care and Social Welfare Education

Bachelor of Health Care, Nursing

Vaasa, 2022

## BACHELOR'S THESIS

Author: Labani Saha  
Degree Programme: Nurse, Vaasa  
Supervisor: Yvonne Sjöberg-Ehn  
Title: Importance of self-care management education and prevent complication among older adult with (HF) heart failure systematic literature review

---

Date: May 18. 2022      Number of pages: 53      Appendices: 7

---

### **Abstract/Summary**

Currently, heart failure is one of the most significant public health concerns, becoming a major medical issue with significant economic implications for health care. Affecting nearly 26 million people annually. Especially people in industrialized countries and older adults are most at risk. Over 5 million Americans and 15 million Europeans suffer from HF, and nearly 1 million need medical care and support each year. In 2012, there were 32 billion dollars spent on health-related costs due to cardiovascular disease (CVD). Costs are predicted to increase by 127% by 2030. Finland is struck by HF about 25,000 times a year, resulting in 13,000 deaths. One in ten people over 75 years old is likely to suffer from HF. In Finland, the cost of health care in 2007 was around 4.9 billion euros, but the cost of cardiovascular disease ranked second. Nonetheless, advances in diagnosis, treatment of HF, and its progression lead to high morbidity rates. HF patients' poor self-care behaviors increase their risk of adverse health outcomes. HF care treatment needs long-term self-care management, which has negative impacts and becomes a burden for patients, families, and the healthcare system.

This study aimed to describe and evaluate nurse investigation (HF) self-care management education intervention programs and ways to educate older adults with HF and assist them in adhering to self-care management and achieving positive health outcomes. To find and identify the study goals, nurses examined self-care management education programs and effective educational strategies for HF patients; these findings were obtained through an inclusive search. These articles have been published between 2010 and 2022 and have been searched systematically from six online databases, including EBSCO host CHINAL, EBSCO host MedLine, Springer link, PubMed, Unpaywall, and Google Scholar. Out of 502 articles reviewed, analyzed, independently evaluated, and subjected to inclusion and exclusion criteria, sixteen are eligible for inclusion in this study.

According to the analysis and review of 16 research articles, the findings of this study identified two main categories of self-care education based on the research question. This primary category emphasizes self-care management of HF in which nonpharmacological education interventions selected as subcategory, which are deemed beneficial for patients with HF. Finding effective educational strategies for self-care education addresses the second research question. Their different subcategories have been found, such as paper-based material, mHealth monitoring, and consulting with health care professionals, to deliver and promote HF self-care education among HF patients effectively. The study found that nurses have an essential role in educating, advocating, and providing proper guidance to HF patients about self-care management to prevent further complications and reduce the risk of developing HF. Among older adults

---

Language: English      Keywords: Heart Failure, Self-Care, Patient Education, Effective Education Methods, Qualitative Research, Systematic Literature Review

---

## Table of content

1	Introduction .....	1
2	Background.....	2
2.1	Description and Function of Heart.....	2
2.2	Heart Failure.....	3
2.3	HF Classifications and Manifestations.....	3
2.4	Signs and Symptoms of HF.....	4
2.5	HF Diagnosis and Testing.....	5
2.6	Treatment of HF.....	6
2.7	Risk Factors of HF.....	7
2.8	HF in Older Adults.....	7
2.9	Nurses' Role in Management of HF.....	7
2.10	The Importance of Education and Counselling of HF.....	9
2.11	Challenges in Management of HF.....	9
3	The Aim.....	10
4	Theoretical Framework (Orem's).....	11
4.1	Relationship between Theory and Research.....	11
4.2	Theory of Self-Care in HF.....	12
4.3	Self-care deficit theory in HF.....	13
4.4	Theory of Nursing System.....	14
5	Methodology.....	15
5.1	Qualitative Research.....	15
5.2	Systematic Literature Review.....	15
6	Data collection.....	16
7	Inclusion and exclusion criteria.....	18
8	Data Analysis.....	20
9	Ethical consideration.....	21
10	Result Findings.....	22
10.1	Self-Care management.....	23
10.2	Non-Pharmacological Education Program.....	23
10.2.1	Management of Weight and Optimal Nutrition.....	23
10.2.2	Management of Sodium and Fluid.....	24
10.2.3	Management of Alcohol Abstinence and Smoking cessation.....	25
10.2.4	Management of Diet and Nutrition.....	25
10.2.5	Managing exercise tolerance and sexual activity.....	26
10.2.6	Management of Symptoms Recognition.....	27
10.2.7	Management of medication adherence.....	29

10.2.8	Immunization and other medical condition .....	30
10.2.9	Management of psychological distress .....	30
10.2.10	Management of Sleeping Disorder .....	31
10.2.11	Management of Travelling and Leisure .....	31
10.2.12	Health literacy.....	32
11	Effective Education strategies .....	32
11.1	Paper-Based.....	33
11.1.1	Written and Printed Heart Health-Booklet.....	33
11.1.2	Daily Diary.....	34
11.1.3	Pamphlet with Schematic Warning Signs .....	34
11.1.4	mHealth Monitoring.....	34
11.1.5	E-learning (images, text, videos, animation, and audio) .....	35
11.1.6	Tele Health Technologies and Remote Monitoring.....	35
11.1.7	Smartphone and mHealth app-based education.....	36
11.2	Consult with Health care professionals (HCPs) .....	36
11.2.1	Face-to-face and teach back training.....	37
11.2.2	Home visitation by follow-up phone call .....	37
11.2.3	Group training .....	38
11.2.4	Motivational interview.....	38
12	Discussion.....	39
12.1	Limitation of this Study .....	41
12.2	Discussion Finding .....	41
13	Conclusion .....	44
14	Bibliography .....	45

# 1 Introduction

HF (heart failure) prevalence has increased to unprecedented levels in recent years, and it has become a major medical problem with a significant economic impact on healthcare (Zuraida, Irwan & Sjattar, 2021). HF incidents result in more hospitalizations and readmissions, as well as affect the quality of life of patients. Most countries are affected by cardiovascular disease (CVD). About 32% of deaths in 2019 are caused by CVD. Of these, 85% are caused by heart attacks and strokes. World Health Organization (WHO) reports that, more than three-quarters of deaths from (CVD) occur in low- and middle-income countries (WHO, 2021). In addition to other (CVD), HF-related mortalities and morbidities always hold the top spot (Hekkala, 2021).

Nearly 26 million people or even more are affected by HF worldwide every year. In industrialized nations, HF is more prevalent. The number of Americans and Europeans suffering from HF has reached 5 million and 15 million, respectively, and nearly 1 million need medical care and support every year (Calo et al., 2012). About half of their patients require readmission after being discharged from the hospital within six months. (CVD) accounted for 10% of health expenditures in the United States in 2012, with 32 billion dollars spent on health expenses. The warning now is that costs may rise by 127% by 2030 (Choi, Park, & Youn, 2019).

Approximately 25,000 people in Finland suffer from HF every year, resulting in 13,000 deaths. Since the disease progresses rapidly with aging, HF has high morbidity rates and mortality rates. One in ten people over 75 years old is likely to suffer from HF. In contrast, HF is relatively uncommon among young people under 50 (Kettunen, 2020). In Finland, health care costs in 2007 were close to 4.9 billion euros, but CVD costs came in second place (Hekkala, 2021).

As HF is a chronic condition, the patient needs to take care of themselves their entire lives, which can permanently alter the lives of both them and their families. Additionally, HF can cause recurrent hospitalizations, fatal arrhythmias, health conditions deterioration, and increased mortality rates. As patients are readmitted frequently, their needs for health care and caregivers increase (Oosterom-Caló, Van Ballegooijen, Terwee, te Velde, Brouwer, Jaarsma, & Brug, 2012).

HF can be treated pharmacologically and non-pharmacologically, despite its wide range of symptoms. HF self-care management intervention treatment plan, education, and support, including continuous monitoring of weight, medication adherence, dietary plan, fluid intake, smoking cessation, alcohol abstinence, appropriate exercise, lifestyle adaption, and patient's psychological care. Patients' confidence in self-care-management skills is developed by members of multidisciplinary care teams such as physicians, nurses, dietitians, and psychologists (Strömberg, 2005).

It is imperative to provide education and counseling to patients to increase their knowledge, alter their beliefs, and improve their quality of life because knowledge gaps and lack of understanding can endanger patients' lives. Continuous patient education should be considered during all stages of the illness journey (Gilmour, Strong, Chan, Hanna, & Huntington, 2014). Nevertheless, educating patients about self-care can be difficult. Nurse-delivered interevent education plans are emphasized and encouraged in this study. It is, therefore, essential that both patient and professional health care teams work closely together to implement a successful HF self-care management plan to prevent complications associated with heart failure (Oosterom-Calo, et al., 2012).

## **2 Background**

Cardiovascular diseases such as heart failure (HF) are often associated with several symptoms and conditions. The disease is a chronic and progressive illness that can lead to other heart-related complications, including congestive heart failure, hypertension, valvular insufficiency and diabetes mellitus. Studies has shown that chronic heart failure can decompensate to impair a patient's physical, mental, and social functions, as well as their quality of life (Liu, Chiou, Wang, Yu, W. & Lin, 2021).

This study topic should be understood by knowing the HF definition, terminology, and inclusion of related information. This helps the reader to understand the established information in this study topic. Description and function of HF, classification and manifestation, signs and symptoms, diagnosis and testing, treatment, risk factors, HF in older adults, nurse's role in management in HF, the importance of education and counseling of HF, challenges in the management of HF are discussed in this section. We conclude this section by discussing the nurse's role and the importance of ducation and counseling.

### **2.1 Description and Function of Heart**

Hearts are organs of the human body. The thorax is surrounded by the mediastinum of muscle. A normal heart looks like a clenched fist, located just below the ribcage, between the lungs—heart functioning mainly by the pumping mechanism. Supplying oxygen helps individuals to cope with everyday stress and emotion. The average heart beats 1000 times in 24 hours, depending on the level of rest and activity. It pumps out between 5 and 20 liters of blood every minute (Katz, M., & M.B., 2013).

There are four cavities in the heart, and each cavity is divided into right and left chambers. Each side of the heart contains two chambers. Atrium refers to the upper chamber and ventricles to the lower chamber. Through one valve section, blood flows from the atrium to the ventricles. Together, they pump blood throughout the body. The right atrium received oxygen and nutrients that reached blood from the body, and then blood was pushed into the right ventricles. Then from then, from the right ventricle, blood is pumped into the lungs, then oxygen reaches blood returned from the lungs to the left atrium and pumped into the left ventricle and pumped back into the body. As a result of all these processes, oxygen reaches our blood and reaches the heart. The heart's circulatory system repeats itself (Valerie & Scanlon, 2007, p. 274-275).

## **2.2 Heart Failure**

Due to the inadequate supply of blood, the ventricles weaken and are damaged, causing the heart to fail to function correctly. During this condition, the heart's pumping mechanism does not function as it should, resulting in an imbalance of supply and demand. Due to reduced blood flow, the nervous system releases stress hormones, and the heart begins to beat faster. Heart failure weakens and narrows the ventricles in the long run, resulting in less blood being delivered to the body. Breathing becomes problematic when the heart's circulatory system is compromised minute (Katz, M., & M.B., 2013). HF may be caused by various factors, such as coronary artery disease, heart attacks, which weakened and dead heart muscle, and develop a condition like high blood pressure, diabetes, infected disease, damaged heart valve, lung disease, and sleep apnea (Nicholson, 2007, p.24-25).

## **2.3 HF Classifications and Manifestations**

There are seven types of HF including, one) systolic Heart failure (where the left ventricle cannot make sufficient contractions or send out sufficient blood into the body's arteries, resulting in a decrease in cardiac output, fatigue weakness, and a reduced ability to exercise and take part in physical activity) and diastolic Heart failure (where there is a decrease in cardiac output, fatigue, and weakness).; and two) Diastolic heart failure (the stiffness of the left ventricle impairs relaxation of heart muscle and disturbs regular heart rhythm, which manifests as shortness of breath, tachypnoea, respiratory crackles, anorexia, nausea, three) Left ventricular or left-sided (in this stage the left ventricle of the heart cannot pump or send out enough blood around the body, resulting in high blood pressure and pulmonary congestion because blood supplying in the right side arises pressure in the pulmonary vascular system because left ventricle cannot return blood to circulation system, which is manifested by dizziness, fatigue, pulmonary congestion, dyspnea, cough, low cardiac output).; four) Right, ventricular, or (right-sided) HF, here (right ventricle cannot pump enough blood into the lungs because pressure increases and impairs and damages pulmonary circulation, manifested as fluid buildup in the abdomen and legs and feet swelling causes peripheral edema).; five) Low-output HF (caused by coronary artery disease, hypertension, and cardiomyopathy); six) High output HF (people

with hyperthyroidism, infection, anemia, and pregnancy usually have a faster heart rate when the body needs blood flow and oxygen for the body's tissues). In this condition heart is unable to meet oxygen demand can cause high-output failure), seven). Acute HF (symptoms happen without warning signs and suddenly deteriorate cardiac function output), 8. Chronic HF (progresses disease condition, gradually deteriorates, weakening heart muscle because of cardiomyopathies, valvular disease, and CHF). Accordingly, as the disease progresses, each side becomes affected, resulting in the progression of (HF) (Priscilla & Karen, 2017, P.1048-1049; Nicholson, 2007, p.24-25).

## 2.4 Signs and Symptoms of HF

Signs and symptoms of HF varies according to its type and severity. Individuals may experience symptoms during physical activity. The most common early-onset symptoms are chest pain and shortness of breath, which may occur because of physical activity, including getting dressed, climbing stairs, and even lying flat. HF weakens the heart's ability to pump blood and thickens the lower left chamber, which causes fluid to build up and swell in the abdomen, feet, legs, and ankles. An increase in weight and breathing difficulties are associated with persistent coughing and wheezing. Breathing difficulties can sometimes make you feel lightheaded, tired, fatigued, confused, or faint when lying down. Heart failure patients can also experience a rapid heartbeat, feel nauseous, and lose appetite (American Heart Association, 2017). Heart Failure symptoms are always alarming and dangerous. A patient should be aware of any signs and symptoms of heart failure since an early diagnosis may help them receive appropriate treatment and achieve a speedy recovery (Tansy, 2010, P.2).

The following table illustrates the symptoms of left and right-sided heart failure:

Table 1. Signs and Symptoms of HF. (Tansy, 2010, p.2)

<i>Left-sided heart failure</i>	<i>Right-sided heart failure</i>
<i>Shortness of breath</i>	<i>Polyuria (at nighttime)</i>
<i>Fatigue</i>	<i>Pronounced jugular veins</i>
<i>Tachycardia</i>	<i>Shortness of breath</i>
<i>Weight gain</i>	<i>Tachycardia</i>
<i>faintness</i>	<i>Fatigue</i>



## 2.5 HF Diagnosis and Testing

HF detection mainly deepened the patient's typical symptoms. Heart chest X-ray, heart film transthoracic echocardiography (TTE), computerized tomography (CT) scan, and magnetic resonance (MRI) is used to see if any changes happened with the size of the heart or fluid build-up in the heart and lung area. Also, help to detect pulmonary congestion and alternative cardiopulmonary disease. Exercise and exertion should be accompanied by a stress test to determine how the heart responds. (R. K. 2020).

Untreated insufficiency is associated with high heart-secreted natriuretic peptide (BNP) levels in the blood. An elevated BNP level of more than 100pg/mL indicates heart disease, heart failure, and even patient death. A high BNP level can also result in renal failure, pulmonary embolism, pulmonary hypertension, and hypoxia. Besides the complete blood count should also check liver function, blood cholesterol levels, and hemoglobin levels since low hemoglobin levels can cause fatigue and tiredness similarly to heart failure (HF). Having the serum electrolytes, serum creatinine, blood urea nitrogen, and blood glucose levels tested as part of the urine analysis (Inamdar A. A., & Inamdar, A. C. 2016).

There are other specific laboratory tests and diagnosis options available to be confirmed heart failure, such as a 12-Lead electrocardiogram (ECG) to identify Myocardial infraction to detect the condition of heart rhythm and level of damage, it also will help to see situations like atrial fibrillation, valvular disease, pericarditis, and cardiomyopathy. As an echocardiogram shows what side of the heart is damaged, it helps to identify systolic and diastolic dysfunctions, valve problems, ejection fraction, and other abnormalities of the heart (Tansy, 2010, P.3).

HF diagnosis needs different evaluations and diagnostic procedures. As an initial evaluation physician assesses risk factors like family history, history of smoking, and alcohol also needs to consider if the patient has chemotherapy or radiation therapy, coronary artery disease, or ongoing medication. Additional information about health history is necessary, such as diabetes, kidney disease, chest pain, high blood pressure, and cholesterol levels. Family history and medical examination are a significant part of HF diagnosis. Describe how the physical assessment provides information about signs and symptoms, the tolerance level of physical activity, fluid retention problems, peripheral edema, and abdominal edema (Inamdar A. A., & Inamdar, A. C. 2016).

## 2.6 Treatment of HF

Early detection of symptoms and appropriate treatment of heart disease can prevent damage to the heart muscle. It is possible to treat heart failure pharmacologically and non-pharmacologically. As a non-pharmacological treatment, health care professional responsibilities are to motivate patients to change lifestyle and diet habits, regular exercise, and other physical activities, stop smoking, tracking on daily fluid and sodium intake, avoid alcohol and caffeine, monitor blood pressure, manage stress, and perform the sound test. By adopting that habit, one can reduce symptoms of HF and slow the progression of the disease (American Heart Association, 2017).

First and foremost, HF should be treated with pharmacological methods to lower high blood pressure. The treatment for coronary heart disease involves medications, balloon dilatation, and bypass surgery. A valve defect can exacerbate HF, which can be treated surgically and with catheters. There are several drug treatments available to address specific symptoms. The ACE inhibitors work by relaxing blood vessel walls and preventing muscle weakness. Using diuretics helps to remove excess fluid from the body and prevent fluid from accumulating in the lungs and feet, making breathing easier for the patient. Several drugs are used to slow disease progression, including spironolactone and eplerenone. Both digoxin and long-acting nitro are effective in treating HF symptoms. NSAIDs, including aspirin, should be used with caution to prevent blood clots since they have an anticlotting effect (Kettunen, 2020). Beta-blockers can relieve chest pain and irregular heartbeats, and medications are also available to lower blood cholesterol levels. Surgical treatments may include coronary bypass, valve replacements, defibrillators, pacemakers, and pumps based on the degree of heart failure (Tansy, 2010, p.3).

## 2.7 Risk Factors of HF

The most common risk factors of HF are higher BMI associated with higher triglyceride level, a more extended period of smoking history, diabetes, AF (atrial fibrillation), sedentary lifestyle, age, social deprivation, COPD (chronic obstructive pulmonary disease), family history, alcohol consumption, hypertension, inflammatory disease, BP lowering and lipid controlling medication. Additionally, low hemoglobin and white blood cell (WBC) levels can increase the risk of inflammatory diseases. Furthermore, diabetes and obesity cause the immune system to weaken, resulting in inflammatory disease. A high creatinine level, low hemoglobin level, and anemia are associated with worsening symptoms and increased health care costs associated with HF. In studies, men over 55-years-old and women over 45-years-old have a higher level of bad cholesterol (LDL) than good cholesterol (HDL); thus, they are at risk of developing heart failure (Uijl, Koudstaal, Direk, Denaxas, Groenwold, Banerjee, Hoes, Hemingway & Asselberg, 2019). HF symptoms can be exacerbated by a myocardial infarction (MI) symptom, such as stress, family problems, depression, and anxiety (Uijl et al., 2019).

## 2.8 HF in Older Adults

Older adults are more likely to experience hospitalization, morbidity, and mortality due to HF, advanced age and comorbidities. Additionally, to complications associated with heart failure, older adults face many public health problems, multimorbid illnesses, and polypharmacy, also compromising cognitive and functional capabilities, causing hospitalizations, and post-discharge mortality. Geriatric citizens with polypharmacy, cognitive impairment, and frailty present many challenges to determining a proper diagnosis and HF management plan. HF patients' physical, functional, and long-term clinical outcomes have been negatively affected by the complication domain of geriatrics (Hoda, Scott & Hummel, 2016). Although there are many obstacles and difficulties, research has shown guidelines-based comprehensive assessment of "*geriatrics domains*" (Hoda, Scott & Hummel, 2016). patient center management, including clinical and device therapies intervention, develops morbidity and mortality. Additionally, non-pharmacological interventions, e.g., exercise, physical exercise, dietary and nutrient plan, risk stratification, and appropriate self-care guide management and geriatrics evaluation, including functional and cognitive assessment, bring overall positive clinical outcomes in older adults (Hoda, Scott & Hummel, 2016).

## 2.9 Nurses' Role in Management of HF

In cardiac and peripheral dysfunction, the nurse's role is to prevent HF prognosis and reduce symptoms, mortality, and morbidity. There is little knowledge among patients about the progression of HF disease and how it affects their internal organs. A nursing approach to managing hypertensive patients includes assessing their symptoms, monitoring their weight, limiting sodium intake, and

managing their diet and nutrition. To achieve optimal clinical healthcare outcomes and standard quality of life, nurses should provide HF self-care management education to make patients knowledgeable and proficient in their self-care activities. Newly diagnosed HF patients with inadequate knowledge of self-care management and unclear goals are at risk (Jurgens, Goodlin, Dolansky, Ahmed, Fonarow, Boxer, Arena, Blank, Harleah, Cranmer, Fleg, Lampert, Lennie, Lindenfeld, Pina, Semla, Trebbien, & Rich, 2015).

To prevent HF, self-care management education and counseling are essential. Due to old age, comorbid diseases, and physical distress, the elderly may lose interest in self-care. Nurses are tasked with establishing well-evaluated intervention and prevention education plans. If an education program does not have a plan, it will be a waste of resources for both educator and learner until both parties know how to absorb and retain information. In addition to clarifying a patient's understanding of education, nurses need to encourage the patient to provide feedback. So, during the education program, nurses should evaluate if patients have such kinds of self-care management knowledge, e.g., self-adjustment of diuretics therapy, fluid intake, management of medication therapy recognition of worsening signs and symptoms and how to deal with it (Strömberg, A. 2005).

Researchers found that HF self-care management education is effective when nurses provide active support. So, in the nurses' role with consideration of education plan, two matters should prioritize, primarily maintaining good communication with the patient because such connection and mutual understating are beneficial in this long term chronic caring condition like HF. Nursing has a great deal of responsibility and must play an active part in establishing connections with patients and their families. Secondly, nurses should work as a leader to maintain good teamwork and good communication with all other health care professionals such as physical, nutritionists, and psychologists are significant nursing roles during the entire HF patient care journey (Glogowska, Simmonds, McLachlan, Cramer, Sanders, Johnson, Kadam, Lasserson & Purdy, 2015).

The nurses' other important role is to support patients' families and patients and console them during times of psychological distress. Nurses should try to involve family caregivers in every meeting or grow the most supportive attitude among family members and motivate them to active participation because it has been seen that only family members can provide most of the support with HF management. A family member's active support improves patient care management and patient outcomes and reduces hospital readmissions (Gilmour, Strong, Chan, Hanna, & Hutington et al., 2014).

HF patients sometimes feel depressed. People who suffer from depression are often low on self-esteem, unable to depend on themselves, and isolated from social and family relationships.

Accordingly, nurses should demonstrate a holistic approach to patients' physical and psychological well-being (Tansy, 2010, P.4).

## **2.10 The Importance of Education and Counselling of HF**

Educating and encouraging patients is essential to participate in their care. Prioritizing patients' physical and mental well-being is important. Making the right choice about a treatment plan can be helped by education and counseling. A well-chosen education program can reduce hospitalizations and readmissions (Gilmour et al., 2014).

Adequate health education, according to public health and medical aspects, education and counseling help patients and their families to enlarge their knowledge, motivate and give accurate understanding, help to make their judgment in every life care and decision for applying health information. Education and counseling aim to prevent the progression of disease and symptoms, give patients the skills to manage their health in the best possible way, and maintain and improve patient quality of life (Gilmour et al., 2014).

The education of patients helps improve self-management skills when pharmaceutical and non-pharmacological interventions are part of the primary care context. During HF education, several topics should be included, including weight monitoring, detecting early one-sets and worsening signs and symptoms, responding appropriately, medication management, dietary, sodium, and fluid management, and appropriate physical activities according to disease condition and progression. By improving patients' confidence and decision-making skills, self-care management support education helps improve self-efficacy and self-belief and supports positive health outcomes. Chronic illnesses like heart failure require significant self-management. Therefore, evidence-based treatments should support patient self-management and ensure consistency in care. HF education and self-management education during hospitalization and community care settings reduce hospital readmissions and the need for further hospitalization. Patients with HF are more likely to have knowledge gaps and a lack of understanding; continuing patient education is essential throughout their illness (Gilmour et al., 2014).

## **2.11 Challenges in Management of HF**

Over the past 30 years, HF management and treatment plans have been updated, and new versions have been created, but many challenges remain. Ineffective guidelines, changes in patient profiles with multiple comorbidities, and increased hospitalization rates reduce overall HF mortality. A growing HF population creates healthcare dilemmas. There is still a lack of evidence and a gap in knowledge among healthcare professionals and patients despite the massive progress made in pharmacological and non-pharmacological intervention. Many factors contribute to HF management

challenges. One) increased the number of HF patient rehospitalization rates, two) HF patients with advanced age, multiple comorbidities, and difficulties in implementing self-care management due to contradiction, intolerance, and increased frailty. three) lack of communication chain, which has chiefly been observed during hospital discharge, causes a long time to follow up care gap after hospital discharge (Komajada, 2015).

Researchers have found that HFpEF (heart failure with preserved ejection fraction) is a critical condition of HF. Several trials to reduce the morbidity and mortality associated with HFpEF have failed. Patients with HF are often older and have multiple comorbid conditions, affecting their ability to manage their health. Further, it is challenging to diagnose HF early because it is usually diagnosed at an advanced age when the HF signs and symptoms have developed so far with “preserved EF (ejection fraction > 50%)” with multiple difficulties. Additionally, the true pathophysiology of HFpEF remains challenging, which affects the quality of self-care management (Teichman, Maisel & Strrow, 2015).

A guideline-based medical therapy can use to manage HF, including (ACE) angiotensin-converting enzyme inhibitors, diuretics, beta-blockers, and (ISDN) isosorbide dinitrate. The biggest challenge in managing HF is to follow the prescribed medication guidelines and to make sure that (GDMT) is appropriately administered by a patient. Studies have shown that achieving good adherence is difficult for patients with multiple comorbidities. But different therapies like “(ICDs) implantable cardiac defibrillators, (CRT) cardiac resynchronization therapy” (Teichman, Maisel & Strrow, 2015) are helpful in preventing sudden HF death in mild or moderate symptomatic HF patients (Teichman, Maisel & Strrow, 2015).

### **3 The Aim**

This study aims to describe nurse's investigation (HF) self-care management education intervention programs and effective ways to provide education among older adults with (HF) and help them adhere to adherence in self-care management. Especially this research intervention is mainly designed for elderly, as they are a risk group, have learning barriers, difficulties, cognitive and functional limitations, misconceptions, low levels of motivation also self-esteem.

#### **Research Question**

1. What kind of patient education and counselling is important for HF patient?
2. What can be the effective ways to provide HF education?

## **4 Theoretical Framework (Orem's)**

The importance of nursing theories in bringing development in nursing interventions cannot be overstated. Theory and conceptual frameworks play an integral role in advancing science and research. The frameworks organize data collection so that researchers can make informed decisions. Using this method, isolated and separated facts can be gathered, investigated, and analyzed. Furthermore, providing guidance is also a great way to stimulate research and advance knowledge. Authors understand theoretical models and theories more simply when they are summarized. The theoretical framework is more than a collection of ideas and models, and it can also assist researchers in comprehending reality and circumstances. A systematic and knowledgeable approach is necessary for theorizing and forming a framework in the research process. It gives researchers advanced knowledge and enables them to collect all the evidence for practice (Polit & Beck, 2012, p.131-132).

### **4.1 Relationship between Theory and Research**

Research and nursing theory are closely intertwined and beneficial for each other. Developing ideas and models requires close observation and excellent sources, such as qualitative studies, concepts, and relationships. Strong theory building and testing research have a significant contribution because through studying and using theories for different situations; researchers can judge the benefit of view and be able to create a foundation for a new approach where the client gets the most benefits for health and well-being (Polit & Beck, 2021, p.131-132).

This research study utilizes one nursing theory, Dorothea Orem's Self-Care, and Self-Care Deficit Theory, to better understand the research findings due to its practicality, simplicity, and ease of understanding this theory has all essential categories. These theories can help nurses adapt to self-care deficit activities by educating, promoting, and motivating patients. Dorothea Orem's Orem's self-care theory has been used for this study purpose. The basic premise of this theory outlines that self-care is a necessity for optimal health outcomes and well-being. Nevertheless, self-care requires extensive knowledge and skills (Hartweg, 1991, p.10).

Orem has described it as first-line health care provided here; the nurse's role is to provide support, advocate, educate and create a secure, therapeutic, and goal-directed environment for the patient. The goal of Orem's self-care theory is that individuals should be capable of performing all activities through nurses' guidance on their behalf to continue their life function, health, and well-being and bring regularity to their functioning and development. Based on this theory, self-care is divided into three components: one) self-care; two) self-care deficit; and three) nursing system (Orem, 1999). But This study will choose/follow only Orem's self-care concept among all three conceptual categories (Hartweg, 1991, p.10).

## 4.2 Theory of Self-Care in HF

Orem's self-care theory can benefit patients with HF since it helps improve their quality of life. Different factors influence self-care behavior, and educated, and trained individuals can quickly adopt self-care behaviors. According to Orem's theory, self-care consists of three components: one) universal self-care, which refers to people's basic needs, such as food, air, and water, and two) development self-care is the ability to care for people, three) illness-related health deviations that people must deal with (Snowden, Donell & Duffy, 2010).

Orem's self-care theory has become universally accepted in clinical and academic settings since it offers practical guidelines for people suffering from chronic illnesses. According to Orem's self-care theory, nursing-led patient care is equivalent to following theoretical instructions. Due to the self-care theory, nurses can deliver self-care instructions in a more accessible and straightforward manner, as well as patients can gain insight into their regular self-care habits. It is essential for HF patients to practice self-care activities that involve recognizing symptoms, measuring weight, following a healthy diet and nutrition plan, limited sodium and fluid intake, medication adherence, regular exercise, learning risk reduction, healthy coping, and problem-solving skills. To improve quality of life through behavior changes, nurses need to assist HF patients in altering their lifestyles and gaining self-confidence in self-care (Snowden, Donell & Duffy, 2010).

Since patients engaging in active self-care behavior positively impact the quality of life, self-care can be the first and primary treatment state for HF patients. Patients who are more involved in self-care have a better quality of life and lower mortality and readmission rates in hospitals than patients who are not so much active in self-care. Maintaining the ability to function, quality of life, and quality of life of chronically ill patients can improve their overall health outcomes (Jaarsma, Cameron, Riegel & Stromberg, 2017).

As per Orem's theory, nursing involves helping people who need nursing care. It is the responsibility of nursing care facilities to fulfill the needs of patients and enhance their functional abilities by meeting their self-care needs, enabling them to take on their responsibility for self-care, assisting them with chronic illness and spiritual self-care, as well as promoting health and well-being, and encouraging patients to engage in self-care activities (Jaarsma et al., 2017).

Using Orem's self-care theory, nurses can develop a conceptual framework for integrating spirituality into their practices because spirituality is an integral part of nursing care. Research has found that people often negatively impact their health, but when they become active, engaged, and motivated in their self-care behaviors, they achieve a positive and standard quality of life capable of developing their physical, mental, and social well-being. Orem's self-care theory is essential and effective in clinical healthcare settings and collaborative nursing practice. It shows how important self-care is for



chronic health conditions like heart failure through self-care practices and provides a guideline for maintaining chronic health conditions through self-care (Jaarsma et al., 2017).

### **4.3 Self-care deficit theory in HF**

Many HF patients find it challenging to carry out their essential daily tasks. According to this self-care deficit theory, patients should seek help from health care providers for self-care when they have difficulty. As HF affects older people's ability to conduct their daily activities, as they experience shortness of breath, fatigue, and weakness, which limits some of their abilities, e.g., they may be unable their ability to walk in the toilet, get drees, bathing, grooming, homemaking Etc. In addition to sharing knowledge and providing physical and psychological support, nurses can help patients meet their own self-care needs (Hartweg, 1991, p.11).

Orem's self-care deficit theory focuses on people's inabilities, which gradually limit their abilities and create significant barriers for them to meet self-care needs and improve their health. Physical and psychological impairments can result from those factors, and patients with physical and psychological impairments may experience self-care deficits. Self-care deficit can divide into external and internal factors. Conclusion: there are external factors, such as depression, that may discourage patients from engaging in self-care and internal issues, such as cognitive aging and mobility issues (Hartweg, 1991, p.11).

Using Orem's self-care deficit theory in nursing, one can observe 'The act of assisting others in the provision and management of self-care so that human functioning is maintained or improved at the level of effectiveness at home' (Gonzalo, 2021). This theory helps nurses understand when nursing is needed, such as when an older adult has insufficient capabilities and limitations to perform and continue their practical self-care tasks (Gonzalo, 2021).

Nurses can use Orem's self-care deficit theory to identify patients' self-care deficit factors and help them to increase their self-care levels through assessment and intervention. It is essential for the nurse to be aware of patients' strengths, weaknesses, and specific needs and to intervene in various ways to help them. It is beneficial in this case to use short-term targeted goal-achieving methods to motivate and educate patients to be independent in their self-care. Based on Orem's self-care deficit theory, patients may recover better and even earlier when they can perform their self-care (Gonzalo, 2021). Many HF patients find it challenging to carry out their essential daily tasks. According to this self-care deficit theory, patients should seek help from health care providers for self-care when they have difficulty. As HF affects older people's ability to conduct their daily activities, as they experience shortness of breath, fatigue, and weakness, which limits some of their abilities e.g., it may unable their ability to walk in the toilet, get drees, bathing, grooming, homemaking, etc. In addition

to sharing knowledge and providing physical and psychological support, nurses can help patients meet their self-care needs (Hartweg, 1991, p.12).

Orem's self-care deficit theory focuses on people's inabilities, which gradually limit their abilities and create significant barriers for them to meet the needs of self-care and improve their health. Physical and psychological impairments can result from those factors. Patients with physical and psychological impairments may experience self-care deficits. Self-care deficit can be divided into external and internal factors. There are external factors, such as depression, that may discourage patients from engaging in self-care, as well as internal issues, such as cognitive aging and mobility issues (Hartweg, 1991, p.12).

Using Orem's self-care deficit theory in nursing, one can observe 'The act of assisting others in the provision and management of self-care so that human functioning is maintained or improved at the level of effectiveness at home' (Gonzalo, 2021). This theory helps nurses understand when nursing is needed, such as when an older adult has insufficient capabilities and limitations to perform and continue their practical self-care tasks (Gonzalo, 2021).

Nurses can use Orem's self-care deficit theory to identify patients' self-care deficit factors and help them to increase their self-care levels through assessment and intervention. It is essential for the nurse to be aware of patients' strengths, weaknesses, and specific needs, and to intervene in various ways to help them. It is beneficial in this case to use short-term targeted goal-achieving methods to motivate and educate patients to be independent in their self-care. A patient may recover better and even earlier when they can perform their self-care (Gonzalo, 2021) based on Orem's self-care deficit theory.

#### **4.4 Theory of Nursing System**

Using Orem's nursing system theory, self-care is paired with the idea of self-care deficit and when self-care agencies assist patients. The nursing theory mainly pays attention to complete or partial care when individuals receive therapeutic self-care from care agencies. It helps to build up a well-founded relationship between clients and nurses. This kind of care support is needed when people are unable to engage themselves to perform their self-care activities, become dependent on other people, and need full-time self-care direction such as help with mobility, successful medication administration according to prescription for continuing their well-being, and existence. This theory of the nursing system can distinguish into three types: one) total compensation, in which nurses must assist patients and give complete support to perform e successful self-care; two) partial compensation, in which nurses and patients need to collaborate to provide and receive the best care such as to perform manipulative task and ambulation; three) a supportive self-care education system

where individuals learn to perform therapeutic self-care by nurses when patients are unable to do so themselves (Snowden, Donell & Duffy, 2010). According to Orem, the nursing theory cannot establish without self-care and self-care deficits. In self-care theory, nurses help patients to reach their self-care goals (Hartweg, 1991, p.13).

## **5 Methodology**

An empirical study of a systematic review of the literature with a deductive perspective will guide this study's methodology. Authors will have the opportunity to provide updated knowledge and information about study topics through systematic literature reviews, which will lay solid foundations for future research. It is possible to summarize the same types of literature in a systematic literature review to establish the study's findings and conclusions (Siddaway, Wood & Hedges, 2014). Together, these studies can highlight the areas in which further research is needed. By providing updated knowledge about managing HF self-care methods and teaching patients, the author offers a strong foundation for future research.

### **5.1 Qualitative Research**

Qualitative research involves collecting and analyzing non-numerical qualitative data. Qualitative research is flexible and naturalistic as it is mainly used in humanities and social sciences. A qualitative study tries to determine the core meaning of its research topic, and it can adapt to new information to explain relevant insights from the research. Qualitative data can be interpreted and presented in a detailed, individual way during ongoing research. A holistic method is concerned with understanding the whole and involving oneself in the whole process for research purposes and going deeply into that process. Research data is summarized, interpreted, and categorized in this research process. Qualitative research allows researchers to dig into the detail, develop new ideas and analyze their own experiences (Polit & Beck, 2012, p.487-489).

### **5.2 Systematic Literature Review**

Systematic literature review methods are crucial components of academic research and investigation. The systematic review provides a rich and comprehensive understanding of different topics as a critical component of the research process. A systematic search strategy identifies, summarizes, analyzes, and synthesizes all related information to build up new and unique theories by identifying gaps and missing information. In addition, the author has the right to evaluate the quality, validity, and stability of pre-existing work (Xiao Y et al., 2017).

By conducting systematic literature reviews, authors can demonstrate their field of study knowledge and identify and explain how their study differs and overlaps with existing studies. In addition, systematic literature reviews increase academic expertise in specific subjects. Researching relevant peer-reviewed journals and articles provides intellectual context for the author's research (Xiao & Watson, 2019). All available health evidence is retrieved, appraised, and summarized. This method focuses on framing questions, identifying relevant data, and extracting, analyzing, and applying that data. Health care providers and readers have a unique opportunity to make a good decision on health care (EBP) by analyzing and interpreting evidence based on outcomes and quality (White & Schmidt, 2005).

## 6 Data collection

This systematic literature review mainly analyzed peer-reviewed articles published in the scientific literature. In the context of this study, FINNA used all electronic databases, and library resources searched through Novia University of Applied Sciences' school-guided library. EBSCO CHINA PubMed, Springer Link, UnPaywall, Med-Line, and Google Scholar were used to search for relevant studies.

We selected articles from databases to develop search strategies and select keywords using PICO. The abbreviation of PICO is (study-related population, the interest of phenomenon, and context of the study). When conducting evidence-based research like a systematic qualitative review, PICO frameworks provide the appropriate response to a clinical question. Following the PICO framework, the population in this study is older adults suffering from HF and nurses, the phenomenon of this study is patient education for self-care management and implementation of education, and the context is HF-related scientific articles that have been used without any geographic limitations (Cooke, Smith & Booth, 2012).

This study employs peer-reviewed scientific articles that researchers produced between 2010 and 2022 and contains relevant information about self-care management and health care education. These main terms used to find relevant articles, including ("Heart Failure") AND ("Nurses knowledge" OR nurses' intervention") AND ("patient education") AND ("Education material"), ("Heart failure") AND ("patient education) AND ("self-care") AND ("self-care management"), ("nurses' role") AND ("new Heart failure education") AND ("Self-care intervention") AND ("self-Management") AND ("Self- monitor"), ("Heart failure") AND ("self-care" OR self-care behavior") AND ("Patient education") AND ("Educational Component"), ("Heart failure") AND ("Nursing management") AND ("Nurses education") AND ("self-care"), ("Heart Failure") AND ("Lifestyle Modification") AND ("Patient education") AND ("self-care"), and different Boolean Operator search word such as "AND"" OR" have used to obtain relevant results in this field. A PICO framework assisted in selecting keywords and phrases for this study. Keyword analysis helped determine the study's

objective and question. All searches were conducted in English. The following table shows the keywords and search options used to retrieve articles from different databases related to a given topic.

Appendix table 2. Lists of data bases selected key words and articles.

Data Base	Different key works/phrases used for searching articles	Number of Article finding by searched hit	Title	Abstract reading	Relevant article for content	Articles selected for this study
EBSCOhost CHINAL	(“Heart Failure”) AND (“Nurses knowledge” OR nurses’ intervention”) AND (“patient education”) AND (“Education material”)	158	30	15	6	4
PubMed	(“Heart failure”) AND (“patient education) AND (“self-care”) AND (“self-care management”)	112	25	10	5	4
EBSCOhost Medline	(“nurses’ role”) AND (“new Heart failure education”) AND (“Self-care intervention”) AND (“self-Management”) AND (“Self-monitor”)	86	20	10	5	3
Google scholar	(“Heart failure”) AND (“self-care” OR self-care behavior”) AND (“Patient education”) AND (“ Educational Component”)	58	20	10	5	2
Springer Link	(“ Heart failure”) AND (“Nursing management”) AND (“Nurses education”) AND (“self-care”)	40	20	7	6	1
Unpaywall	(“Heart Failure”) AND (“Lifestyle Modification”) AND (“Patient education”) AND (“self-care”)	48	15	10	6	

<b>Total</b>		502	130	62	33	17

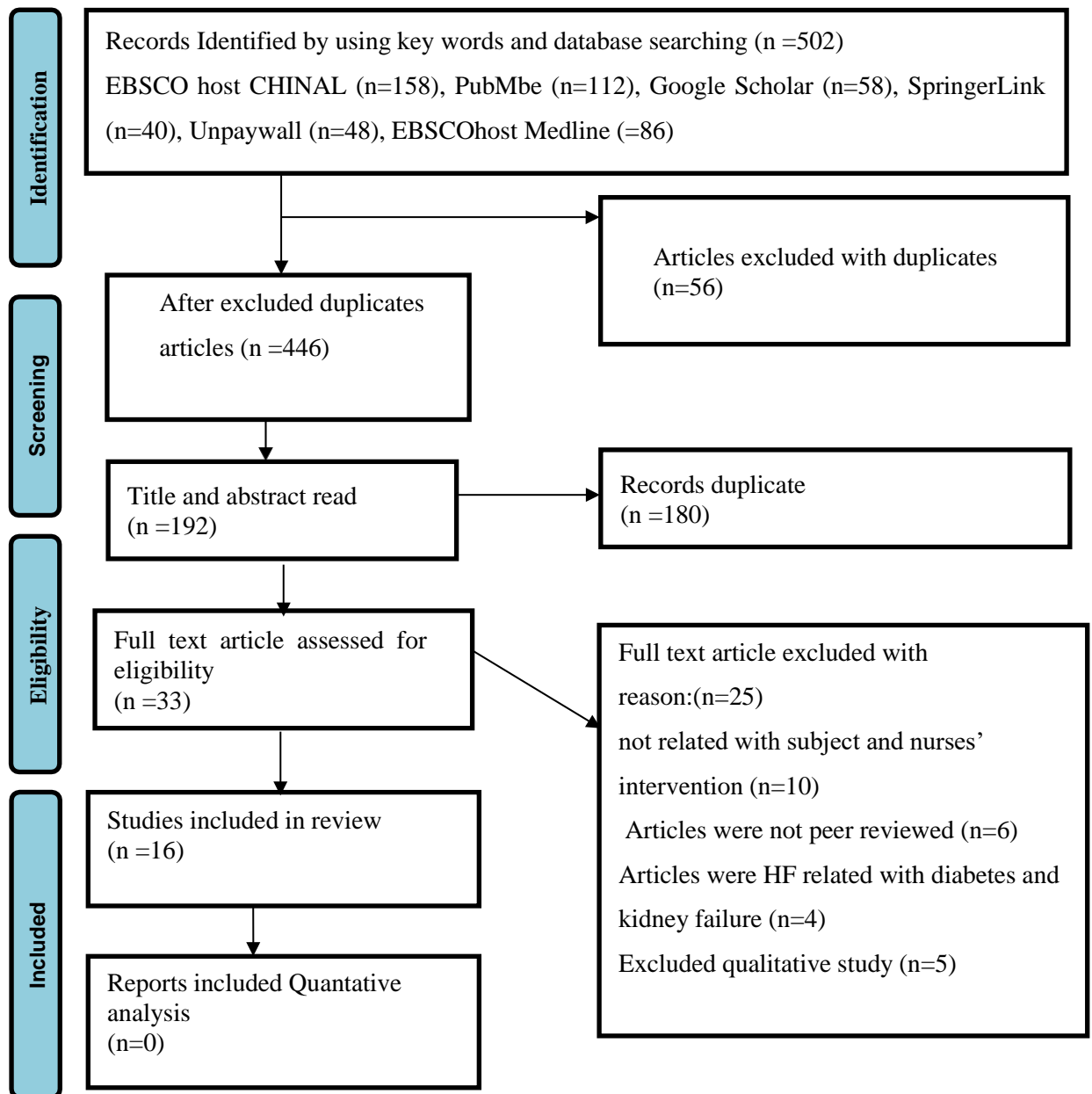
## 7 Inclusion and exclusion criteria

This study used inclusion and exclusion criteria to get articles based on the study topic. Selection criteria considered the fact that included articles would mainly deal with HF patients and different methods of HF education and the methods to implement education for effective outcomes. This study only considers articles published in English-language journals with full text and high-quality journals. Research articles published between 2010 and 2022 were used to narrow the search and obtain convenient results. This study aimed to accomplish the expected goal of excluding non-relevant articles and retaining a standard level of quality by including only peer-reviewed scientific qualitative research articles. The article's content has been closely relevant and is given priority; the article was excluded because it was not closely related to the topic and did not answer the study's research question. Low-quality and pre-2010 quantitative publications were excluded from this study.

Appendix table 3. Inclusion criteria

<p><b>Inclusion Criteria</b></p> <p>Article published only in English.</p> <p>Articles published year within 2010-to 2022 onward.</p> <p>Articles have included answering the research question.</p> <p>The articles chosen were related to content.</p> <p>Articles included have been published in high impact journals.</p> <p>Articles have included the accessible full text.</p> <p>Articles included are only scientific, peer-reviewed, and qualitative research.</p>
---

For giving clear information about strategies of inclusion and exclusion criteria has used in this study, during data base searching and summarizing screening process. It has been shown here by using PRISMA follow chart below.



**Appendix Figure 1:** *Prisma follow chart showing the search and screening process. Modified and borrowed on online (21.04.2022).*

## 8 Data Analysis

It has done a brief review of the literature to illustrate how the study's research questions have been addressed. It is a type of study where all the formulated data and research from previous studies are combined to formulate the study's research question. According to this study, qualitative content analysis was used. The qualitative content analysis incorporates thematic interpretation of the data, which is achieved by coding, categorizing different themes, and content patterns. An analysis of content can divide into two sections: inductive and deductive. Those facts were grouped into smaller groups and outlined by those prominent features. As a data analysis method, inductive content analysis was chosen for this study since it continuously includes nurses and healthcare professionals in research and analyzes articles systematically (Kiteley & Stogdon, 2013).

Data can be categorized into three categories in inductive content analysis (Kiteley & Stogdon, 2013). First, included data is split into smaller pieces, and then in the second stage, the smaller data are collected and categorized. Lastly, subcategories have the same content as main categories. In addition, inductive analyses combine specific data into standard data and present them in a general context. Seventeen articles are eligible for review after applying all inclusion and exclusion criteria.

Because the authors were very familiar with the contents of all articles chosen for reviews from the previous article, all selected articles for reviews were analyzed very carefully. As the selection process was justified and analyzed for all articles, the main idea was withdrawn, coded, then put in a smaller group with similar ideas and given a specific name. A careful review of the article highlights all relevant phrases related to the research question. Furthermore, the single and combined words used in the reduction part are gathered and placed into subcategories linked to the main categories.

Lastly, after categorizing all data, the authenticity of the data process is checked carefully. However, writing conclusions from the data is of utmost importance. Determine the core meaning and relationship of categories; all procedures have been conducted. The findings of this study are described and interpreted by the authors.



## 9 Ethical consideration

All examined articles were systematic reviews published in scientific journals and had verified as scientific articles. This study has correctly cited the information, knowledge, and research from various sources. Furthermore, all the researchers cited correctly.

According to the Finnish Advisory Board on Research Integrity (TENK), all the guidelines have been followed. Research has been conducted carefully based on the results of this study after an evaluation of the research integrity, accuracy, and meticulousness. As well as adhering to scientific criteria and ethical norms, the data collection process in this study is plagiarism-free. To prevent plagiarism, the author gathered all information from related studies, read them carefully, grasped the meaning they portrayed, and used it to support the purpose of the study by paraphrasing and making it unique (The Finish Advisory Board on Research Integrity TENK, 2012).

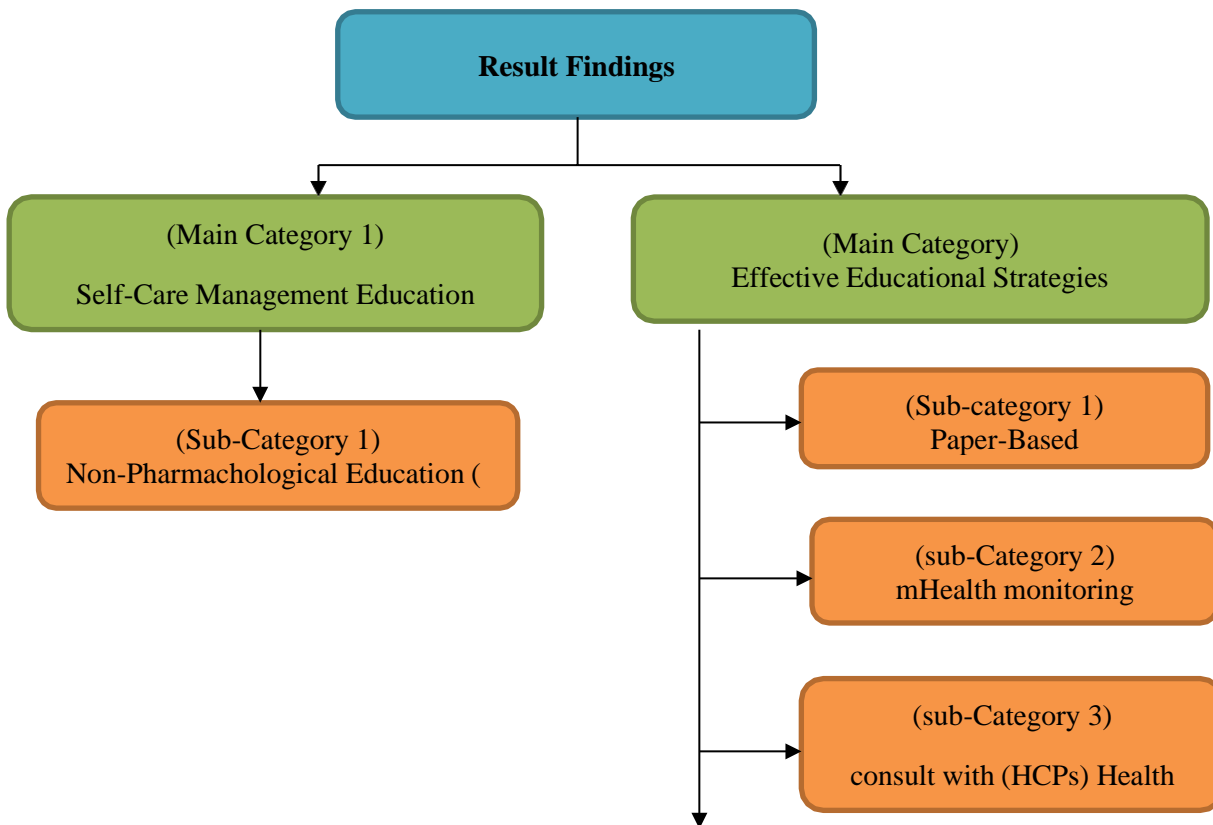
This study respected other researchers' work and achievements thoroughly. Additional attention is taken to avoid stealing and copy-pasting ideas from other authors' work and to acknowledge and cite other authors' collected information and quotations. Direct quotations from another or research from another source were avoided in this study to avoid plagiarism. To ensure ethics and research reliability, the study did not utilize non-reviewed sources for its data sources. Rather, all information has been collected carefully and systematically using a well-protected database accessible only by using a school library login (The Finish Advisory Board on Research Integrity TENK, 2012).

This study carefully avoided research problems and scientific misconduct issues to gain the reader's trust and confidence. This study did not contain any plagiarism, falsification, or fabrication (Polit & Beck, 2017, p-153). This study has presented all the data collection and searching strategies for readers to judge the effectiveness of the study.

## 10 Result Findings

According to the study results, two main categories were found: self-management education and 2) effective ways of educating patients. In the first section, **the Self-care management education program** is the main category, and the *non-pharmacological education program* is a subcategory. In the second section, **effective educational strategies** as the main categories which discuss the three different effective education strategies; *paper-based, using medical devices, mHealth monitoring, and consult with (HCPs) Health care professionals* as subcategories.

**Appendix Figure 2:** Part of result findings category and subcategory



## **10.1 Self-Care management**

It is crucial to managing HF as a chronic illness in the illness journey. As part of this process, patient education is essential to familiarize the patient with treatment procedures, lifestyle changes, and symptom monitoring. Patients whose conditions worsen may respond better to treatment. Self-care management is essential to a higher quality of life and a lower mortality rate. Aiming to reduce the number of HF incidents and hospitalizations, self-care programs are encouraged. Self-care management education conception consists of two key concepts one) pharmacological education intervention; two) and non-pharmacological education intervention (Jarrsma, Hill, Bayes-Genis, Rocca, Casteillo, Celutkiende, Marque-Sule, Plymen, Piper, Riegel, Rutten, Ben Gal, Bauersachs, Coats, Chioncel, Lopatin, Lund, Lainscak, Moura, Mullens & Strömberg, 2020). As a subcategory in this section, the findings will focus on non-pharmacological education intervention programs.

## **10.2 Non-Pharmacological Education Program**

Treatment of HF requires self-care management. HF patients should be introduced and encouraged to engage in self-care activities by applying a personalized and indigent approach by their health care providers. Nurses should also assess patient capability and when to become involved with patient care. As a result, their health and quality of life will improve. Additionally, it will relieve the strain on healthcare systems and providers (Lainscak, Clark, Dahlstrom, Dickstein, Ekman, McDonagh, McMurray, Ryder, Stewart, Strömberg & Jaarsmae, 2011). As a Non-Pharmacological education program, this study has included management of weight and optimal nutrition, management of sodium and fluid, management of alcohol abstinence and smoking cessation, management of diet and nutrition, managing exercise tolerance and sexual activity, management of symptom recognition, management of medication adherence, immunization and other medical condition, management of phycological distress, management of sleeping disorder and management of traveling and leisure.

### **10.2.1 Management of Weight and Optimal Nutrition**

Obesity may exacerbate symptoms of heart failure (Lainscak et al., 2011). In patients with heart failure, it is essential to maintain fluid balance and weight and symptom stability (White, Kirschner, & Hamilton, M. A. 2014). Intentional weight loss can result in cachexia, characterized by congestion-related inflammation and malabsorption, and anorexia, associated with gut dysfunction and reduced nutrient intake. Significant weight loss can increase the mortality rate (Lainscak et al., 2011).

*“In patients with a BMI >40kg/m<sup>2</sup>, the mortality and morbidity are higher, and the outcome is low”* (Jarrrsma et al., 2020).

*“The risk of developing cachexia is higher for those who lost 5-6% of their body weight within 6-12 months and have a BMI >20kg/m<sup>2</sup>”*. (Colin, Arcand, & Ezekowitz, 2017).

Patients with heart failure and cachexia need to consume nutritional food with the recommended caloric and protein intake. As a result, health care providers can give patients helpful information regarding healthy eating practices and maintaining optimal nutritional status, including clinical brochures and websites referenced to dieticians and offering healthy cooking suggestions to patients with heart failure (Lainscak et al., 2011).

### **10.2.2 Management of Sodium and Fluid**

Dietary guidelines for patients with HF generally recommend reducing sodium and fluid intake. HF symptoms can be worsened by excessive salt and fluid intake (White, M. F., Kirschner, J., & Hamilton, M. A. 2014). The excess fluid consumption of some patients may require hospitalization for diuretics to modify their salt and fluid intake, according to fluid intake guidelines (Colin, Arcand, & Ezekowitz, 2017).

*“In patients with severe HF symptoms or hyponatremia and congestion, daily fluid intake should be 1.5 to 2.0 liters”* (Colin, Arcand, & Ezekowitz, 2017).

Similarly, an insufficient fluid intake can result in volume depletion (fever, diarrhea, and vomiting affecting kidney function and electrolyte homeostasis) and different symptoms such as hypotension, dizziness, and lethargy. According to studies, fluid intake should be measured according to body weight.

*“(30 mL/kg body weight, and 35 mL/kg if weight is >85kg.) Guidelines suggest daily weight is helpful to maintain a stable fluid balance in the body and react in that situation if weight goals are unexpected - such as a weight loss of 2 kilograms over three days”*. (Lainscak, et al., 2011; White, M. F., Kirschner, J., & Hamilton, M. A. 2014).

Sodium intake increases fluid volume in the body. Thus, limiting sodium intake is beneficial. Researchers have shown that excessive sodium consumption leads to diuretic resistance, worsening symptoms and requires hospital re-admission for patients with advanced heart failure (Lainscak et al., 2011).

Guidelines were published in 2013 by the American college of cardiology foundation and the American Heart Association.

*"Sodium consumption for patients with heart failure measured according to their HF stage; 1500mg/day is appropriate for stages A and B. The recommended sodium intake for patients in stages C and D is 3,000mg/day. In contrast, the European society of cardiology recommends consumption of 2400 mg of sodium per day"* (Colin, Arcand, & Ezekowitz, 2017).

For patients with heart failure, sodium intake between 2000 and 3000 mg/day is safe (Colin, Arcand, & Ezekowitz, 2017). According to (WHO) healthy people can consume up to 5 grams of salt per day. (Jarrsma et al., 2020). Consequently, low sodium diets are recommended for heart failure patients. By avoiding fast food and processed foods, reading the sodium content in foods, HF patient should concentrate on low in sodium homemade foods (White, Kirschner, & Hamilton, 2014).

### **10.2.3 Management of Alcohol Abstinence and Smoking cessation**

Alcohol and smoking are firmly associated with the development of HF, pulmonary disease, and cancer. In accordance with alcohol consumption guidelines, more than two units/day of alcohol consumption could worsen HF symptoms and lead to other medical conditions, including supraventricular arrhythmias and paroxysmal atrial fibrillation (Jarrsma, et al., 2020). Excessive alcohol consumption is responsible for developing ischemic left ventricular systolic dysfunction and fatal myocardial infarction. Studies have shown that smoking and alcohol use is prevalent habits among HF patients. Heart failure patients who smoke and consume alcohol have a higher risk of developing arrhythmias, high blood pressure, adverse inotropic effects, and build-up body fluid. So, the health care provider should provide advice about stopping alcohol consumption and smoking cessation, which helps to reduce HF morbidity and mortality (Lainscak, et al., 2011).

### **10.2.4 Management of Diet and Nutrition**

#### Micronutrients composition

Foods that contain all the micronutrients, including calcium, magnesium, vitamin E, vitamin D, and zinc, are essential for heart failure patients. (Colin, Arcand, & Ezekowitz, 2017). The American Heart Association recommends eating vegetables, fruits, nuts, and seeds and avoiding meat, dairy, eggs, and cheese in restaurants to reduce atherosclerosis and prevent heart attacks (Aggarwal Bozkurt, Panjrath, Agarwal, Ostfels, Barnard, Gaggin, Freeman, Allen, Madan, Massera, & Litwin, 2018).

*“A good macronutrient intake recommendation for HF patients is 50-55% carbohydrates, 25-30% fat, and 15-20% protein”* (Colin, Arcand, & Ezekowitz, 2017).

However, fruits and vegetables can reduce the risk of heart failure. In contrast, a diet high in phosphatidylcholine (meat, cheese, and eggs) increases the formation of trimethylamine-N-oxide in the gut, which is associated with mortality in cases of myocardial infarction (Aggarwal, et al., 2018).

#### DASH diet

DASH is recommended for patients with heart failure, as is a Mediterranean diet. Diets such as the Dietary Approaches to Stop Hypertension (DASH) diet are low in fat and sodium and high in protein, as they comprise fruits, vegetables, whole grains, poultry, fish, and nuts. The DASH diet encourages the consumption of foods rich in potassium, calcium, and magnesium. Study results suggest that (DASH) diets help prevent cardiovascular disease, stroke, and heart failure ((Colin, Arcand, & Ezekowitz, 2017).

#### Mediterranean diet

There is an emphasis on consuming monosaturated fats in the Mediterranean diet and whole grains, fish, vegetables, fruits, and fats. In reducing sudden cardiac death and heart failure while lowering the mortality rate, Mediterranean diets proved more beneficial (Colin, Arcand, & Ezekowitz, 2017).

#### Nutritional supplement

Since loop diuretics cause the urine to lose thiamine, potassium, magnesium, and calcium, HF patients need micronutrient supplements. Intestinal barrier dysfunction can cause many health conditions, including abdominal and gut edema. A study found that HF patients had low calcium, potassium, folate, vitamin E, B, D, and zinc thiamine nitric oxide iron (Colin, Arcand, & Ezekowitz, 2017).

Heart failure patients are at a higher risk of micronutrient deficiencies. A proper diet is paramount to ensuring that patients receive adequate micronutrients. Education and counseling for HF patients should consider the whole diet (Colin, Arcand, & Ezekowitz, 2017).

### **10.2.5 Managing exercise tolerance and sexual activity**

HF patients who are not in the NYHA stage or have class IV or angina symptoms can benefit from physical exercise. Patients who exercise regularly have lower symptoms, a higher quality of life, and a higher survival rate. Exercise supports improving patients' exercise capacity and quality of life (Lainscak, et al., 2011).

*"Cardiovascular variability and neurohormonal activation affect HF patient outcome, which can be promoted by regular exercise" (Lainscak, et al., 2011).*

Exercise for HF patients should be prescribed by a physician based on the patient's exercise intensity, and the patient's exercise regimen should include resistance training and aerobic exercises. Additionally, elderly patients should be considered when prescribing exercise because they are more likely to have multiple comorbidities such as mental and behavioral factors and limited activity levels. In addition to yoga and Tai chi, HF patients can benefit from different exercises. Yoga

programs can reduce inflammation and atherosclerosis and improving cardiovascular risk factors (Aggarwal, et al., 2018).

*"Traditionally, yoga combines physical movement, breathwork, and mind control and is beneficial to cardiovascular health by increasing parasympathetic activity while reducing sympathetic activity. Exercises such as Tai Chi can benefit HF patients at every stage of their illness, improve their quality of life and lower their depressive symptoms"* (Aggarwal, et al., 2018).

Sexual activities are problematic for patients with heart failure, which negatively affects their quality of life and their partners. Patients' HF symptoms and medication lead to sexual difficulties. Some cardiac medicines like nitrates are effective in treating erectile dysfunction. Drug interaction is unknown to HF patients who prescribe medicines independently and buy them through the internet, making them more susceptible to complications. Sexual activity may worsen symptoms or cause death in HF patients because any physical or sexual activity may worsen symptoms (Jarrsma, et al., 2020).

*"As well as medication to mitigate dyspnea and chest pain, HF patients should receive education and counseling about their sexual activity"* (Jarrsma, et al., 2020).

However, sometimes, health care providers have difficulty discussing sexual activity with patients; for example, the patient may lack knowledge about sexual activity or feel shy about discussing it. The health care provider should discuss these issues with the patient in exercise (Lainscak, et al., 2011).

### **10.2.6 Management of Symptoms Recognition**

The symptoms of HF affect patients physically and negatively affect their lifestyle and make them anxious and depressed (Lainscak, et al., 2011). The most common symptoms of HF are breathlessness and fatigue. However, other symptoms such as dizziness and loss of appetite, coughing during exercise, and lying flat, should also be considered (White, Kirschner, & Hamilton, 2014).

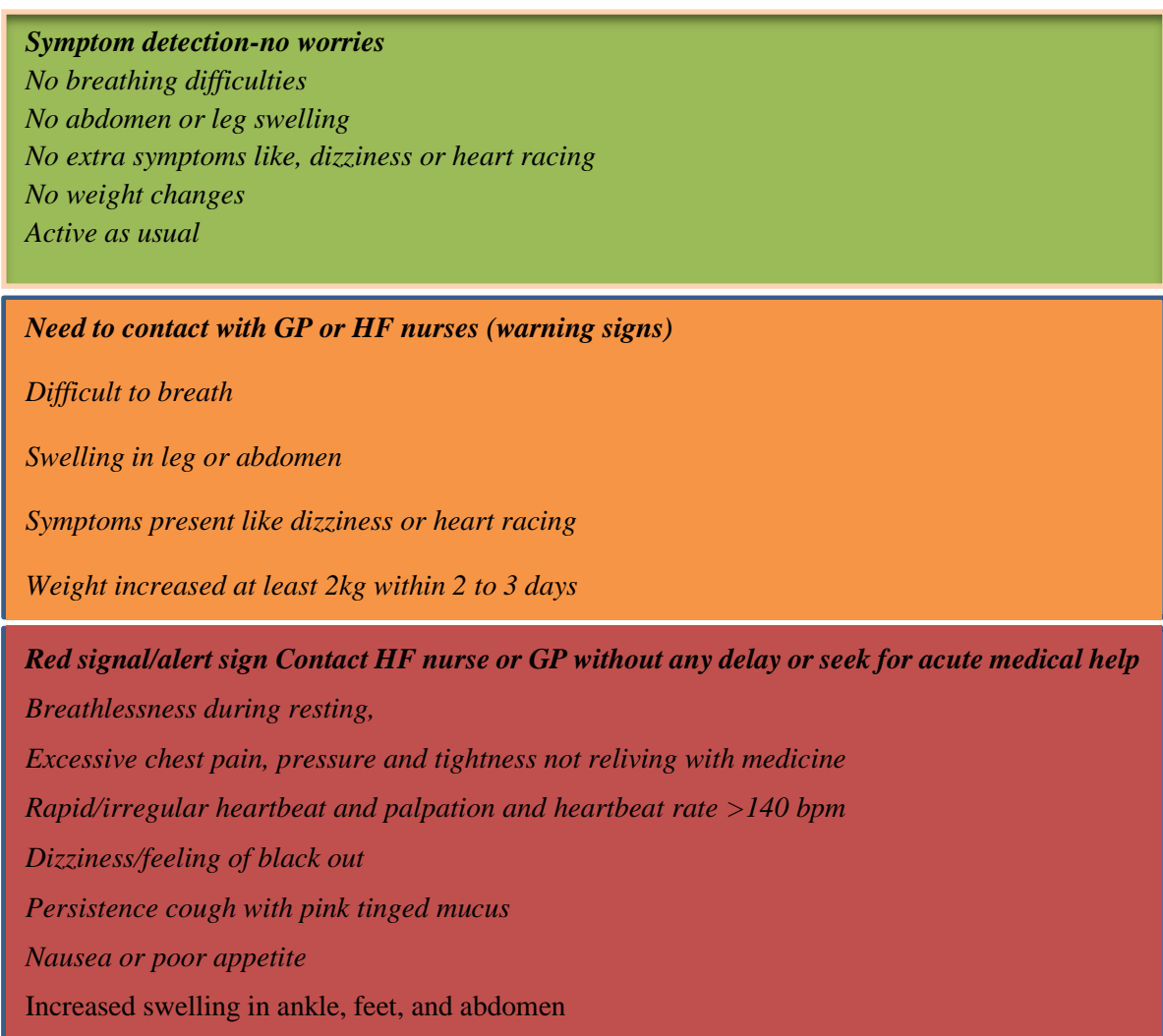
A significant part of patient self-care is monitoring and recognizing HF symptoms. Monitoring and early detection and deterioration of HF are essential for preventing hospital readmissions and mortality rates. All those topics must be discussed with the patient on the same day HF is diagnosed, including patient education about symptoms and management plans (Jarrsma et al., 2020).

ESC guidelines state that health care providers should teach patients about the general symptoms of heart failure, inform them when and where to seek medical care, and inform patients about the general

symptoms of heart failure. A health care provider should confirm that the patient has sufficient health literacy and technical skills (Vuckovic, Bierle, & Ryan, 2020). In addition, patients should be taught how to assess HF symptoms correctly. Here are a few symptoms that they need to consider:

- 1) *Frequency (how often)*
- 2) *Intensity (e.g., scale 1-10)*
- 3) *Rate (how many times during a time interval)*
- 4) *Duration (how long)*
- 5) *Pattern (morning after activities).*
- 6) *Specificity (where is actual pain is, arm or leg. (Lainscak, et al., 2011).*

This figure will help to understand when patient should react and take effective stem according to HF symptom:



**Appendix Figure:3** *Self-care monitoring and Self-care guide for HF patient (source: (Jarrsma, et al., 2020).*



### 10.2.7 Management of medication adherence

Information on medication benefits and side effects is essential for improving the self-care capabilities of HF patients. A lack of understanding of pharmacotherapy by patients increases hospital readmissions. Educating patients about medication management is critical. Thus, if a patient prefers, family members and informal caregivers should be included during education so that self-care will adhere better (Jarrsma, et al., 2020).

In addition, patients' physical and cognitive limitations should be considered since their psychological well-being has shown to be a barrier to medication compliance (Lainscak, et al., 2011). The researchers found that patients should receive enough education and make sure that they know how to take certain medications. Patients must take the correct dosage and timing of their medications as prescribed. Patients should consider using medication lists, schedules, or medicine boxes if they cannot take the proper medicine at the right time. Many HF patients are not familiar with which medications they should take and for what purpose, and what common side effects and adverse effects they should be aware of when taking those medications.

The figure displays the medications that patients usually take for heart failure (HF), the names of the medications, and what to watch for when taking those medications (White, Kirschner, & Hamilton, 2014).

**Appendix Table 4:** *Groups of medicines used for HF to improve quality of life and survival rate:*(White, Kirschner, & Hamilton, 2014).

Medication	Example	What to monitor
(ACE) Angiotensin-enzyme	Enalapril, Benazapril, Ramipril, Catopril	Kidney, potassium, blood pressure, cough, dizziness, and swelling
(ARB) Angetensin receptpr	Cansesartan, Losartan,	Kidney, potassium, BP, swelling
Beta-blockers	Metoprolol, Bisoprolol	Blood pressure, heart rate, fatigue
Aldosterone inhibitors	Spironolactone, Eplerenone	Potassium, breast tenderness,

Diuretics	Furosemid, Metrolazone,	Electrolytes (sodium, potassium),
Digitalis	Digoxin	Digoxin level, kidney function
Hydralazine	Isosorbide dinitrate, Hydralazine, combination	Blood pressure, headache, fluid loss

### 10.2.8 Immunization and other medical condition

Patients with HF have multiple disease conditions such as diabetes, high blood pressure, sleep apnea, and irregular heartbeat. Moreover, patients older than 60 to 65 years have a higher risk of getting infections like influenza and COVID19. HF patients should inform their health care providers if they have other medical conditions or take other OTC medications because NSAIDs such as ibuprofen and naproxen can damage the kidneys (White, Kirschner, & Hamilton, 2014).

*“According to ESC guidelines, vaccination against influenza, COVID19, and pneumococcal are recommended for patients with symptomatic heart failure Evidence suggests that influenza vaccines may reduce mortality risk in HF patients”* (White, Kirschner, & Hamilton, 2014).

Thus, it is essential to discuss vaccination with the patient and family members. In addition, health care professionals should educate them about vaccination schedules and potentially harmful side effects (Jarrsma et al., 2020).

### 10.2.9 Management of psychological distress

A variety of psychological problems can affect HF patients. HF patients in a particular group (NYHA classes II-IV) are more likely to suffer from anxiety and depression (Jarrsma, et al., 2020). 20% of HF patients suffer from physical problems, but the rate increases to almost 70% during hospitalization if the proper detection process is carried out (Lainscak, et al., 2011). Indifference and non-compliance with self-care activities such as exercising, adhering to dietary guidelines, and social problems result from patient mental health issues. Depression and anxiety increase hospital utilization, mortality, and readmissions (Jarrsma, et al., 2020). HF patients and their families' negative emotions (for example, fear of future disabilities, hopelessness about chronic diseases, worsening symptoms) negatively impact their ability to take care of themselves, leading to depression, anxiety, impatience, and anger (Negarandeh, Aghajanloo & Seylani, 2020).

*"Medical and nonpharmacological treatments for patients can improve their health, quality of life, and physical abilities. These interventions include antidepressant medicine, yoga, Tai-Chi, medications, relaxation, cognitive behavioral therapy, and standard physical therapy."* (Negarandeh, Aghajanloo & Seylani, 2020).

Studies have shown that HF patients can manage their psychological distress better with the help of family-based education, depression screening tools, frequent contact with the health care team, and referral to psychiatry (Jarrsma, et al., 2020).

### **10.2.10 Management of Sleeping Disorder**

Physiological or physical conditions like obesity, orthopnea, paroxysmal nocturnal dyspnea, anxiety, and depression cause poor sleep quality, insomnia, and nocturia due to elevated amounts of pulmonary fluids (Jarrsma. et al., 2020).

*"Almost 80% of HF patients suffer from sleep problems, such as restless sleep, difficulty falling asleep, early awakenings, and difficulty returning to sleep after a night awoken".* (Jarrsma. et al., 2020).

Continuous positive airway pressure (CPAP) can effectively treat HF and obstructive sleep apnea. Both nasal and facial masks are well-proven treatments. Use of CPAP for at least six hours a night reduces apnea episodes, awakened episodes, and daytime fatigue, improves symptoms, coronary function, and improves patient quality of life" (Lainscak, et al., 2011).

Adaptive servo-ventilation can, however, increase the risk of death in people with heart failure (Lainscak, et al., 2011). Medical professionals should routinely inquire about patients' sleeping habits, daytime sleepiness, and snoring habits, and whether they feel restless after waking from sleep, and take pharmacological and non-pharmacological measures to improve their sleeping quality since poor sleeping quality can lead to poor sleep quality to serious health complications. Additionally, provide information on losing weight, quitting smoking, abstaining from alcohol, and using (CPAP) because all these education interventions help improve self-care skills in HF patients (Jarrsma, et al., 2020).

### **10.2.11 Management of Travelling and Leisure**

HF incidents are increasing when traveling by air. Making a traveling plan for HF patients is difficult because they need different preparations and plans before traveling. Older adults face greater risks

when traveling, and thus, they should discuss travel preparation and arrangements with a health care professional first (Lainscak, et al., 2011).

*“Air travel puts HF patients at greater risk for deep vein thrombosis and pulmonary emboli. Hypoxia can cause adverse cardiopulmonary events in HF patients with NYHA classes III and IV. The risk of hypoxia and other co-related diseases should be considered when traveling. Air travel can also be aided by supplemental oxygen”* (Lainscak, 2011).

Colder weather worsens HF symptoms because peripheral vascular resistance increases, which increases the demand for myocardial oxygen and worsens symptoms. In this case, adjusting the diuretics may be necessary to avoid decomposition when traveling and staying abroad. Education about travel should focus on the medical aspects and address the practical ones. (Jarrsma, et al., 2020).

### **10.2.12 Health literacy**

Health literacy and self-management for chronic diseases like HF are closely related because chronic conditions like HF require long-term management. Patients need to gain familiarity with or knowledge of health information to apply it to their daily lives. In addition, patients can receive sufficient health information and opportunities in their daily lives. Health literacy education helps patients to be able to read, understand and obtain knowledge about primary health care facilities and information that can help them make appropriate decisions about their health. Health literacy knowledge is essential in the management of disease because the patient can apply disease information by having it, since low health literacy may cause an individual to misunderstand disease and make poor self-care decisions. (Jo, Ji Seo & Son, 2020).

## **11 Effective Education strategies**

Well-designed HF self-care management educational strategies and their successful implementation play a vital role in patients' success, for example, reducing readmission and mortality, developing self-care knowledge, ability, and patient quality of life. HF self-care management often presents difficulties in determining effective educational strategies. Nursing and health care professionals can create various educational strategies, such as combining multiple strategies and delivering effective education to patients with heart failure. At the same time, incremental benefits can be achieved for self-care management so that patients can easily reach them. Paper-based materials, videos, DVDs, telemonitoring and innovative phones-based materials, and consultation with health care professionals (HCPs) can all be effective as supplementary materials (Boyed & Peters, 2014). Accordingly, study findings, **Effective educational strategies are categorized into main categories,**

and supplemental ones, such as paper-based, health monitoring, and consulting with Health care professionals (HCPs), are used as subcategories.

## **11.1 Paper-Based**

Most older adults with HF live at home, have difficulty accessing reliable information and communication technology (ICT) resources, and communicate with health care professionals (HCPs) due to chronic HF stages, comorbidities, general aging-related changes, and a shortage of healthcare professionals. Moreover, they are unfamiliar with using new technological tools such as HF smartphone apps; video consultation also cannot use other measurement tools, e.g., vest used to measure excessive lung fluid accumulation. For those kinds of patients, traditional-based symptoms measurement tools, such as paper-based tools, are beneficial for recognizing their HF symptoms at home (Aamodt, Strömberg, Helleso, Jaarsma & Lie, 2020). As traditional paper-based tools, *written and printed heart health booklet, daily diaries, and a pamphlet with schematic warning signs* are effective educational strategies and interventions. This section in this study discussed the following founding.

### **11.1.1 Written and Printed Heart Health-Booklet**

Patients have a poor understanding of heart failure causes, nature, and pharmacological management, which shows their low level of self-care. HF knowledge greatly enhances self-care for those people. Most patients want more self-management information that is easy to understand, such as signs and symptoms, disease progression, risk factors, and medication. It might be helpful to use printed educational materials, like booklets, that provide information on self-management of HF, such as health promotion, prevention of disease, and treatment options. This type of supplementary information allows patients to become more familiar with their condition in a way that suits them. The booklet should include all the information that patients with heart failure need to maintain and implement self-care outside the hospital and nursing home. According to studies, printed materials and verbal information can improve patient knowledge about HF. Post-discharge instructions should contain all necessary information in written form. It is very beneficial to developing confidence, reducing anxiety, decreasing hospital readmission, increase the patient's recovery time (Boyed & Peters, 2014).

*“This booklet will be widely accepted if written in simple and easy-to-understand language with a fifth grade reading level. There is a large font, color contrast, and pictures to be easy to understand and suitable for patients at all levels, including older adults, people with limited health literacy, and poor vision and cognitive impairment”.* (Boyed & Peters, 2014).

In addition, booklets provide more information since the patient will be able to read and write the information. For patients with low health literacy, written materials are more effective than verbal interaction. The effectiveness of educational materials and programs can improve by considering the degree of health literacy and the preferred learning style of the patient (Boyed & Peters, 2014).

### **11.1.2 Daily Diary**

Using a daily diary is one kind of self-care supportive tool. Because for writing a daily diary, a patient needs to read through, which allows the patient to be familiar with HF signs and symptoms, read and write all the medication administration and side effects, and record appointment times with doctor or outpatient clinic. Moreover, the patient can record their regular weight, blood sugar, and blood pressure value in their daily diary. Studies show that by reading and writing daily diary, HF patient feels more independent and confident in their self-care activities (Aamodt, et al., 2020).

*“ Using daily diary help HF patient can manage their medication by themselves; they do not need to be dependent on others. Additionally, it is easy to keep tracking daily medication and HF signs and symptoms”* (Aamodt, et al., 2020).

### **11.1.3 Pamphlet with Schematic Warning Signs**

Pamphlets with Schematic Warning Signs simplify the detection of HF signs and symptoms, such as shortness of breath and chest pain, that patients get familiar with from outpatient clinics and during hospital discharge (HPCs). Pamphlets allow the patient to identify their HF symptoms and warning signs which this study found beneficial in reducing patient hospitalization. The pamphlet included signs and symptoms and contact information (HPCs) to help the patient at home (Aamodt, et al., 2020).

*“Using Pamphlet is relevant to HF patients because it allows them to consider their shortness of breath as warning signs, make them aware of that and need to take it more seriously and remind them continuously about their HF symptoms”* (Aamodt, et al., 2020).

### **11.1.4 mHealth Monitoring**

mHealth monitoring-based education can encourage and enhance self-care management techniques among HF patients. Moreover, it directly enhanced patient engagement in the usability of mHealth intervention. It can improve patient awareness levels about their disease and help to promote positive self-management activities of HF. mHealth monitoring-based education strategies are becoming more integrated (Aamodt et al., 2020) and have shown to be effective as a health monitoring-based

education strategy. E-learning, telehealth technology, remote monitoring, smartphone, and mHealth apps-based education have all been effective, as discussed below.

### **11.1.5 E-learning (images, text, videos, animation, and audio)**

E-learning educational programs are most effective methods for treating heart failure patients since they are cost-effective and time saving. It is possible to provide education to many people with few health workers or health care resources within a short period. In this scenario, e-learning materials can include images, videos, animations, and DVD audio to engage the learner's mind. The e-learning tools are readily available and do not have time limitations (Salahodinkolah., 2019).

*“Together with DVD training by visual remodeling and follow-up telephone calls made by nurses, DVD training by visual remodeling and follow-up phone calls help reduce the number of readmissions in heart failure patients. In contrast, visual representation scenarios facilitate knowledge transfer and encourage patient learning (Boyde., 2014). By registering on mobile phones, heart failure patients can improve their self-care by managing their daily weight and dietary needs”* (Salahodinkola., 2019).

### **11.1.6 Tele Health Technologies and Remote Monitoring**

In telehealth communications and remote monitoring, clinicians can monitor patients and provide clinical services by using technology. Telehealth plays various roles in supporting self-management and intervention for patients with chronic illnesses like heart failure. There are three ways telehealth can assist patients with self-management: one) Keeping professional and patient relationships; two). By introducing new technologies and helping patients use them effectively, the patient can gain understanding, motivation, self-confidence, and self-efficacy; three) telehealth also tries to gather support from the patient’s surrounding network and strengthen their self-management behaviors. Different data types can collect through technologies, including blood pressure monitors, weighing scales, and pulse oximeters (Greenhalgh et al., 2017).

Human-to-human communication is achieved through telephones, voice response systems, and video consultations; laptops and smartphones can be used for interactive portals (wearables or implantable sensors) (Greenhalgh et al., 2017).

*“Technology, service, and telehealth can be used to educate heart failure patients. Remote monitoring and communication allow practitioners and patients to maintain relationships. A small conversation can take the form of an open-ended conversation, a telephone call, or a video call. Meanwhile, remote monitoring aims to identify deteriorating symptoms and intervene early”*. (Greenhalgh et al. 2017).

A variety of data can be monitored using remote monitoring, including patient symptoms, medication compliance, fluid restriction, falls, body weight, body impedance, blood pressure, heart rate, ECG, blood oxygen, and blood glucose (Greenhalgh et al. 2017).

### **11.1.7 Smartphone and mHealth app-based education**

Heart failure patients benefit from mHealth-based interventions that promote self-management behaviors and provide advanced care with no health disparities. A portable technological device can be convenient and cost-effective for monitoring symptoms and engaging patients. The use of mHealth apps involves patients and helps them become more actively involved in their health care and increase their knowledge, abilities, and acceptance of managing their chronic conditions. The mHealth app has improved patients' motivation to monitor their health, and MHealth has been observed to make patients more aware of their health. Patients receive frequent reminders of medication administration, body weight, and warnings on their health every day. (Schmaderer et al., 2021).

*"My awareness of myself expanded, and I wished I had not made the same mistake again"* (Schmaderer et al., 2021).

Smartphone apps allow individuals to access various information in their everyday lives. Smartphones Patients use smartphones to track their activity, sleep pattern, blood oxygen saturation level, and blood sugar level. It is predicted that smartphones will be able to display other information related to heart failure soon, such as warning signs and symptoms and reminders to take medication (Aamodt. et al., 2020).

*"Having an application that provides information from healthcare authorities and professionals about heart failure would be helpful to me. For example, my heart may race sometimes, and I have an application instructing me on how to calm it."* (Aamodt. et al., 2020).

## **11.2 Consult with Health care professionals (HCPs)**

Health care professionals play an essential role in building confidence in everyday self-care activities and decision-making among HF patients. Studies found that consulting with HPCs directly has great clinical benefits such as reducing readmission and lowering the mortality rate." (Aamodt. et al., 2020). For consulting with health care professionals face-to-face and teach-back training, home visitation by following the phone call, group training, and motivational interviews has found to be effective educational strategies to provide self-care education to HF patients who have been discussed below in this section



### **11.2.1 Face-to-face and teach back training**

Heart failure patients can be taught self-care skills face-to-face, but more in-depth instruction can also be offered back-to-back. Besides enabling patients to receive vital information, teach-back training also helps to ensure that information is accurate and helps them comprehend educational subjects (Salahodinkolah, Ganji, Moghadam, Shafipour, Jafari & salari, 2019).

*"It enables educators to recognize and analyze patient errors as they memorize patient information and communicate with patients openly. It is also possible for educators to ask patients questions about what they read in the education material to determine whether they understand the message"* (Salahodinkolah, et.al., 2020).

Teaching patients about their disease process and self-care using teach-back methods can reduce readmission rates and help patients become aware and understand how their disease works. It is strongly advised that nurses ensure patient understanding during every session of education (Almkuist. 2017).

Teaching patients face-to-face is the most effective method for changing their attitudes and behaviors. Education through this type of program allows the educator to converse directly with the learners in the outpatient clinic and support their patient's self-care at home. In contrast, the learner can discuss, ask a question, and comment openly on the course. (Aamodt. et al., 2020). Participants in this individual training program were able to ask questions about their interests and learn from nurses' expertise, experience, counseling, educational approach, and supportive personality, which helped the patient become more independent at home (Aamodt. et al., 2020).

*"In this face-to-face program, health behavior training materials are delivered in an understandable manner adapted to individual needs"* (Aamodt. et al., 2020).

Training programs for heart failure patients can improve their physical, mental, emotional, and social well-being, as well as their motivation, awareness, and self-management, thus reducing patient depression and anxiety, improving sleep patterns, and decreasing hospitalization days and mortality rates. (Salahodinkolah, et.al., 2020).

### **11.2.2 Home visitation by follow-up phone call**

Home visits to improve self-care, self-management, self-esteem, and self-confidence by following up by phone and video are highly effective (Salahodinkolah, et.al., 2020). Future health care can be delivered digitally based on technologies such as video consulting through Skype or telephone calls (Aamodt. et al., 2020). Additionally, it will allow both groups to save time, energy, and hospital

resources. Besides exchanging information, nurses can manage symptoms and complications and promote the standard of living for patients and their families (Salahodinkolah, et.al., 2020).

### **11.2.3 Group training**

By facilitating group training, the educators can help participants better understand and overcome obstacles to self-care, develop patient health literacy, and promote an environment where trainers can communicate and share ideas (Salahodinkolah, et.al., 2020).

*"The empowering of spirit and creativity also increases the patient's level of confidence and self-esteem, allowing them to take the initiative to decide the right treatment procedure. Group training increases patients' self-confidence and has been found to reduce patients' health care expenses and their time spent in the clinic"* (Salahodinkolah, et.al., 2020).

In addition to improving sleep quality and disease management, group training enables patients to acquire self-care knowledge, adjust their diets, monitor their sodium intake, and become more adept at managing medications. By identifying the patient's belief values through group education sessions, it has been shown that it is possible to provide both the patient's preferences and comfortable self-care guidance and to build self-confidence and promote healthy lifestyles (Salahodinkolah, et.al., 2020).

### **11.2.4 Motivational interview**

Educating patients regarding self-care remains essential at both the time of discharge from the hospital and the time of outpatient follow-up. However, patients with advanced HF, different comorbidities and a massive self-care task can sometimes become demotivated, and they also face challenges with sudden habits, lifestyle, and behavioral changes. Motivating interviewing (MI) is considered a very effective component of multi-intervention self-care education (. A variety of concepts are considered when motivating heart failure patients via an interview session that can result in a positive result to encourage self-care (Brandberg, Ekstedt & Flimk, 2021).

*" The future of a family, the patient's past life and demotivation, their view of dying, barriers to change in behavior, or adopting regular exercise or making dietary or social changes indicate a patient's quality of life"* (Chew, et al., 2019).

#### ***family's future***

To look healthy and happy, patients must adopt self-care strategies so that their families don't have to worry about their health or mourn their deaths. The benefits of self-care include promoting

independence, slowing disease progression, and enabling patients to continue working and providing support for their families (Chew, Sim, Cao & Chair, 2019).

*"Relationship: My siblings. In the past, I was very self-centered, but now that they are concerned about me, I try not to worry my mom as much about my medications"* (Chew, et al., 2019).

### ***One's past life and demotivation***

Discussions about patients' regressions about their past lives and their guilt over their stubborn behavior during doctors' visits and regular checkups are essential. Chew, H. S. J., et al., 2019) suggest that it can make them active in self-care and help them evaluate the differences between their former lifestyle and the future life they should lead (Chew, et al., 2019).

*"My stubbornness meant I didn't come to my regular checkups, which were crucial. For that, I apologize. But now I can and know (how to prevent the condition from worsening"* (Chew, et al., 2019).

### ***patient's consideration of own fatalistic future***

It is reasonable for them to accept their uncertain future living with HF and the possibility of passing at any time. A patient with comorbidities, especially an older one, may believe that because life is short, they should take advantage of every moment rather than be distraught about their uncertain future. ((Chew, et al., 2019).

*"My child is 45 years already; I do not need to take care of them anymore. If it is tasty, if I want to eat it, I just eat, I do not think I will die or not"* (Chew, et al., 2019).

In addition, patients can adjust with a time perspective, adjust with behavioral changes, and adjust with self-regulatory capacity. Further, motivation can be improved by encouraging patients to consider past regrets and their future well-being, and success stories can promote patients' hope. Providers and professionals can empower patients to develop their individualized plans and strategies and help patients achieve a healthier lifestyle by applying their situational skills and strategies (Chew, et al., 2019).

## **12 Discussion**

This study discusses how the data was analyzed to justify its quality. Polit & Beck (2012) suggest five different criteria for evaluating research, including reliability, credibility, transferability, and confirmability, making data more trustworthy and reliable.

Integrity refers to consistency, accuracy, and reliability of results as well as the methodology and approach according to data protection guidelines, which allows outside researchers to follow, inquire, comment, and criticize the study process while at the same time attempting to establish reliability. The authors have designed a Microsoft table for this selection criteria and thoroughly explained how the data was analyzed.

The transferability of knowledge describes how the information gathered in one study can apply in another. To confirm that the articles collected for finding are similar and relevant to the study topic, allow the author to explore new knowledge, provide a complete answer, and fulfill the purpose and aim of this study.

The credibility of collected and analyzed data is based on the accuracy of the data. These components refer to the perceptions and interpretations of participants and researchers about the study topic. This article selected 16 articles to gather enough information to analyze. The supervisor helped conduct a systematic content analysis as part of this study.

Generally, confirmabilities serve as neutrality, whereby the authors use the findings to interpret the thesis, free from any preconceived notions. The study used a systematic approach to analyze its content and comply with standard ethical norms to use relevant data from relevant articles continuously. Moreover, supervisor guidance followed to determine appropriate categories to fit into the main categories and assist readers in understanding the study purpose.

As a final point, the trustworthiness of a study is mainly determined by its fearfulness. A systematic content analysis was conducted to confirm the study's validity by reading all 16 articles twice and analyzing them. The author has eliminated irrelevant and unbalanced information to meet inclusion criteria and divided it into categories and subcategories. To achieve the study's purpose and provide the correct answer to the research question. It facilitates the reader's understanding of the study's objective.

Moreover, the author read all relevant articles and theories related to the result findings and determined that the self-care theory of Dorothea Orem is appropriate for this study. Nursing has been noted to be a crucial component in HF patient self-care, and therefore, nurses need to know about patient self-care and have a positive attitude. As per Orem's theory, nurses are the only ones who can motivate patients to be actively involved in their self-care and empower them to adhere more to self-care activities by providing caring and trustworthy relationships.

The topic of the study is the Importance of self-care management education and preventing complications among older adults with (HF) heart failure. FINNA was used to conduct the literature

search. The following databases were used to find relevant articles: EBSCO CHINAL, PubMed, Med-line, Springer Link, Google Scholar, and Unpaywall. Based on all relevant information found in all related articles, themes, and subthemes, all similar ideas were grouped and arranged together. The author examined education methods suitable for self-care management of HF in the elderly to prevent complications, followed by nurse intervention methods that were effective and easy to use so that older adults would feel motivated to participate in self-care management actively.

All the information examined was subjected to content analysis and critical review resulting in 16 articles that mainly addressed self-care management but did not address nursing education or nursing roles. By presenting a holistic view of nurses and filling the knowledge gaps in HF self-care management education. This study will help nursing students publish more information about HF self-care management education aimed at preventing HF and complications in the elderly and encouraging them to partake in self-care activities.

### **12.1 Limitation of this Study**

As a result of using content analysis, this study had some specific limitations. Essentially, being a bachelor thesis limits the author's ability to do this study because further development can be done. By doing it on a larger scale, could have provided more established and well-founded data because the results are based on the collected data and the analysis. Another limitation of the study was that only one author conducted a systematic literature review, as at least two authors are needed to ensure reliable results and prevent bias (Polit & Beck, 2012). This study primarily believes that it would have been better to have two or more authors when conducting systematic literature reviews to eliminate bias and improve results. Limited resources, limited time, and language limitations also limited the study. There have been searches of all databases, and articles have been selected based on inclusion and exclusion criteria. However, more articles can be found from other reliable sources if they are free of charge and can be accessed for free since the author has accessed all articles through school login only. Furthermore, the author has had difficulty managing time because of other tight school schedules. In addition, the articles included in the study were all in English, so the author had language limitations during the study.

### **12.2 Discussion Finding**

The author developed this study intending to equip nurses with information regarding cardiac health education for patients with heart failure, particularly the elderly, to adhere to their self-care activities to prevent complications in this population. It is because of continuously rising HF incidents and high mortality and morbidity rates among the Finnish population that the author is interested in this topic. Around 25,000 Finnish citizens suffer from HF, which causes 13,000 deaths. (Kettunene,

2020). Further, in Finland, health care costs amounted to almost 4.9 billion euros in 2007, but CVD costs ranked second (THL, 2003). Therefore, the author is fascinated by the idea of interevent HF self-care management education and nurses' intervention to deliver this education to prevent HF complications effectively. HF self-care management education and counseling are considered necessary by the study results. Nurses' interventions about delivering it effectively among HF patients and quickly motivating and encouraging them are critical.

In this study, the author uses article review and the first research question to investigate whether nurse education about symptom recognition and lifestyle modification can prevent heart failure complications by encouraging patients to take responsibility for their health care. A poor diet, insufficient exercise, and excessive stress are examples of lifestyle factors that may increase the incidence of heart failure. Lifestyle modifications, including physical exercise, maintaining a healthy diet, and reducing depression and stress, can reduce the risk and complications of heart failure, e.g., Tai Chi exercise and yoga can decrease blood pressure and risk of CVD mortality. In contrast, Tai Chi exercise is beneficial for increasing exercise capacity, reducing depressive symptoms, and improved patient quality of life. The maintenance of a healthy diet, average weight, and fitness level has also been found to help reduce the risk of HF. HF patients with difficulties maintaining a healthy lifestyle can benefit from using new technologies and motivational tools called leveraging, which remind people about meals and activities they are taking and help them adopt healthy habits (Aggarwal, et al, 2018).

The earlier the HF signs and symptoms are detected, the lower the risk of worsening HF and avoiding hospitalization. Unspecific symptoms, however, cause a delay in recognizing and intervening. Consequently, diagnosing and treating HF symptoms are extremely difficult because each patient's symptoms are unique and fluctuate from time to time. Additionally, comorbidities, age, and medication contribute to poor and slow responses, worsening symptoms, and hospitalization. A nurse-led teaching program about HF symptoms may improve self-care. During an educational session, nurses should consider patients' comorbidities with heart failure (HF). Nurses who teach elderly individuals with heart failure must monitor their cognition, mobility, and health. In addition, social support contributes profoundly to the interpretation of symptoms. Therefore, nurses' assessment of patients' and caregivers' health competence is encouraged as part of this study. Through education, it is essential to engage patients and their families in self-care to change their behavior and avoid complications from HF (Vuckovic, Bierle, & Ryan, 2020).

According to this study, based on the article review and the second research question, the author investigates that motivational interview are essential among other effective education delivery strategies when patients face challenges in self-care management after hospital discharge. A patient with a chronic illness like HF faces a vulnerable situation the following discharge from the hospital

with multimorbidity and a higher hospitalization rate. Currently, patient. Self-management is a dynamic process, and this picture changes drastically after hospital discharge because patients then need to handle multiple burdens of illness, including fatigue, self-management burden with multiple morbidities, and the burden of being systematic in meeting self-care needs. In addition, they struggle to do their mandatory daily task because of fatigue. As health care providers, nurses here should offer guidance and encourage self-management post-discharge illness advice through motivational interviewing. Nevertheless, nurses' understanding of providing this type of efficient care remains challenging ((Brandberg, Ekstedt & Flimk, 2021; Chew, et al., 2019).

Based on Orem's self-care theory, HF self-care management is essential for HF patients. According to Orem, nurses should play a more central role in teaching older patients about self-care management activities that are important for HF and help them maintain a healthy lifestyle, leading to a better quality of life. Even this study finding has discussed more nurses' intervention about self-care management education and council and practical strategies to deliver self-care education for patients to adopt more self-care activities and prevent complications from HF with the assistance of nurses. This study recommends that nurses work with patients to educate them about heart failure and develop preventative strategies (Hartweg, 1991).

The nurses need to understand the barriers to self-care for HF patients and what kind of assistance they need. Using Orem's self-care deficit theory, nurses must recognize when older adults need assistance and offer appropriate care when they cannot care for themselves. Furthermore, assist and teach the patient to determine what types of assistance they need. A nurse with nursing self-care was also tasked with educating patients, sharing knowledge, and providing physical and physiologic support to develop their capabilities (Gonzalo, 2021). Based on Orem's theory of nursing, patients with heart failure need support for self-care, especially if they experience self-care deficit, which can be provided by nursing care agents who will provide self-care support to the patient through caring agencies. The care agent here also helps the patient to become confident and autonomous. The agency's goal is to provide self-care education through support and training of self-care agents, so patients are taught how to manage their health conditions independently (Snowden, Donell & Duffy, 2010). As the last point, Orem's theory of self-care will be applied as a theoretical backdrop since this theory is well-established, providing nurses with tools to lead self-care education and facilitating patient education. By using this theory, HF patients will be able to carry out routines for self-care in a structured way (Hartweg, 1991).

## 13 Conclusion

Studying the HF self-care management education method and delivering effective education strategies for older adults aims to prevent HF complications among the elderly. Older adults are at higher risk of HF complications. As a result, it was decided that it was an important subject worth investigating. Due to the topic's simplicity and the importance of the results, this topic was chosen to understand and get relevant articles.

According to the reviewed literature and study, a nurse's role is to educate patients on their self-care activities and advocate and guide patients to engage in and adhere to more self-care activities by using effective education techniques.

It was not easy to collect and analyze the data for this study since the topics, HF self-care management education, and methods for delivering education are wide-ranging. It was an excellent choice to choose this study because it offered a chance to understand HF self-care management in depth. Even though there are still several concepts associated with self-care education, we could consider delivering education strategies in this study.

Though it would have been an extensive study, the author decided not to include it. Despite this, the study's information is still essential. This thesis can be a helpful guide for students, researchers, and nurses interested in becoming specialized researchers and educators for self-care management in heart failure. Hence, the author of this study recommends that nurses implement HF self-care management education programs and provide education strategies for HF patients. Nurses should also encourage elderly patients to regularly participate in their self-care activities since this is an integral, holistic approach to preventing HF complications.

The study finding focused on the positive impact of nurses' investigation of HF self-care management education and effective delivering strategies among patients are beneficial to boost positive clinical outcomes, including reducing readmission and mortality. Moreover, the study suggested that nurses' intervention of HF self-care management education programs and delivery strategies need to plan hospital discharge, even during patient diagnosis with HF. Nurses should provide comprehensive self-care education programs for patients to promote and adhere to their self-care activities. Then, they should deliver each program separately and effectively according to the patient's needs and comorbid conditions to achieve positive and effective clinical outcomes.



## 14 Bibliography

Aamodt, I. T., Strömberg, A., Hellesø, R., Jaarsma, T., & Lie, I. (2020). Tools to Support Self-Care Monitoring at Home: Perspectives of Patients with Heart Failure. *International journal of environmental research and public health*, 17(23), 8916. <https://doi.org/10.3390/ijerph17238916>

Aggarwal, M., Bozkurt, B., Panjath, G., Aggarwal, B., Ostfeld, R. J., Barnard, N. D., Gaggin, H., Freeman, A. M., Allen, K., Madan, S., Massera, D., Litwin, S. E., & American College of Cardiology's Nutrition and Lifestyle Committee of the Prevention of Cardiovascular Disease Council (2018). Lifestyle Modifications for Preventing and Treating Heart Failure. *Journal of the American College of Cardiology*, 72(19), 2391–2405. <https://doi.org/10.1016/j.jacc.2018.08.2160>.

Almkuist, K. D. (2017). *Using Teach-Back Method to Prevent 30-Day Readmissions in Patients with Heart Failure: A Systematic Review*. *Medsurg nursing*, 26(5), 309-351.

Angelo Gonzalo, B. R. (den 5 March 2021). Dorothea Orem: *Self-care deficit Theory*.

All Answers Ltd. (November 2018). *Chronic Heart Failure and Nursing Diagnosis Self-Care Deficit*. Retrieved from <https://nursinganswers.net/essays/chronic-heart-failure-and-nursing-diagnosis-self-care-deficit.php?vref=>.

Hekkala, Anna-Mari C. P. (2021, January 8). *Causes of Heart Failure. Information of Heart disease*(<https://sydan.fi/fakta/sydamen-vajaatoiminnan-taustasairaudet/>).

Bianchi V. E. (2020). *Nutrition in chronic heart failure patients: a systematic review*. *Heart failure reviews*, 25(6), 1017–1026. <https://doi.org/10.1007/s10741-019-09891-1>

Boyde, M., Peters, R., New, N., Hwang, R., Ha, T., & Korczyk, D. (2018). Self-care educational intervention to reduce hospitalisations in heart failure: A randomised controlled trial. *European Journal of Cardiovascular Nursing*, 17(2), 178–185. <https://doi.org/10.1177/1474515117727740>.

Brandberg, C., Ekstedt, M., & Flink, M. (2021). *Self-management challenges following hospital discharge for patients with multimorbidity: a longitudinal qualitative study of a motivational interviewing intervention*. *BMJ open*, 11(7), e046896. <https://doi.org/10.1136/bmjopen-2020-046896>

Butrous, H., & Hummel, S. L. (2016). Heart Failure in Older Adults. *The Canadian journal of cardiology*, 32(9), 1140–1147. <https://doi.org/10.1016/j.cjca.2016.05.005>

All Answers Ltd. (November 2018). *Chronic Heart Failure and Nursing Diagnosis Self-Care Deficit*. Retrieved from <https://nursinganswers.net/essays/chronic-heart-failure-and-nursing-diagnosis-self-care-deficit.php?vref=1>

Chew, H. S. J., Sim, K. L. D., Cao, X. & Chair, S. Y. (2019). Motivation, Challenges and Self-Regulation in Heart Failure Self-Care: A Theory-Driven Qualitative Study. *International journal of behavioral medicine*, 26(5), 474-485. <https://doi.org/10.1007/s12529-019-09798->

Choi, H. M., Park, M. S., & Youn, J. C. (2019). Update on heart failure management and future directions. *The Korean journal of internal medicine*, 34(1), 11–43. <https://doi.org/10.3904/kjim.2018.428u9jibnj>

Colin-Ramirez, E., Arcand, J., & Ezekowitz, J. A. (2017). *Dietary Self-management in Heart Failure: High Tech or High Touch?* *Current treatment options in cardiovascular medicine*, 19(3), 19. <https://doi.org/10.1007/s11936-017-0515-9>

Cooke, A., Smith, D., & Booth, A. (2012). Beyond PICO: *the SPIDER tool for qualitative evidence synthesis*. *Qualitative health research*, 22(10), 1435–1443. <https://doi.org/10.1177/1049732312452938>.

Cui, X., Zhou, X., Ma, L. L., Sun, T. W., Bishop, L., Gardiner, F. W., & Wang, L. (2019). A nurse-led structured education program improves self-management skills and reduces hospital readmissions in patients with chronic heart failure: *a randomized and controlled trial in China*. *Rural and remote health*, 19(2), 5270. <https://doi.org/10.22605/RRH5270>

David. B. Rensik, J. P. (2020, December 23). What is Ethics in Research & Why Is It Important. *Natioanl Institute of Environmental Health Science*(<https://www.niehs.nih.gov/research/resources/bioethics/whatis/index.cfm>).

Gilmour, J., Strong, A., Chan, H., Hanna, S., & Huntington, A. (2014). Primary health care nurses and heart failure education: a survey. *Journal of primary health care*, 6(3), 229–237.

Glogowska, M., Simmonds, R., McLachlan, S., Cramer, H., Sanders, T., Johnson, R., . . . Purdy, S., MD. (2015). *Managing Patients with Heart Failure: A Qualitative Study of Multidisciplinary Teams with Specialist Heart Failure Nurses*. *Annals of family medicine*, 13(5), 466-471. <https://doi.org/10.1370/afm.1845>.

Gonzalo, A. (2021, March 5). *Dorothea Orem: Self-Care Deficit Theory*. Nurse Labs. Retrieved from: <https://nurseslabs.com/dorothea-orems-self-care-theory/>

Greenhalgh, T., A'Court, C., & Shaw, S. (2017). Understanding heart failure; explaining telehealth - a hermeneutic systematic review. *BMC cardiovascular disorders*, 17(1), 156. <https://doi.org/10.1186/s12872-017-0594-2>

Gusdal, A. K., Josefsson, K., Thors Adolfsson, E., & Martin, L. (2017). Nurses' attitudes toward family importance in heart failure care. *European journal of cardiovascular nursing*, 16(3), 256–266. <https://doi.org/10.1177/1474515116687178>

Hart, J. & Nutt, R. (2020). Improving Inpatient Education and Follow-Up in Patients with Heart Failure: *A Hospital-Based Quality Improvement Project*. *Nursing economic*, 38(2), 74-85.

Hartweg, D. (1991). *Dorothea Orem: Self-Care Deficit Theory*. Thousand Oaks: SAGE Publications.

Hayley McBain, M. S. (2015). The impact of self-monitoring in chronic illness on health care stylization: a systematic review of reviews. *BMC Health Services research* (DOI 10.1186/s12913-015-1221-5).

Heart Failure sign and symptoms. (2015, August 12). Retrieved from *National Heart Lung, and Blood institute*: <https://www.nhlbi.nih.gov/health-topics/heart-failure>.

Jackson, G. (2004). Heart Health- The 'At your Fingers' Guide: *The 'At your Fingertips Guide*, (Vols. Available at: <https://ebookcentral-proquest-com.ezproxy.novia.fi/lib/novia-ebooks/reader.action?docID=237794>). London: Class Publishing (London) Ltd.

Jaarsma, T., Hill, L., Bayes-Genis, A., La Rocca, H. B., Castiello, T., Čelutkienė, J., Marques-Sule, E., Plymen, C. M., Piper, S. E., Riegel, B., Rutten, F. H., Ben Gal, T., Bauersachs, J., Coats, A., Chioncel, O., Lopatin, Y., Lund, L. H., Lainscak, M., Moura, B., Mullens, W., ... Strömberg, A. (2021). Self-care of heart failure patients: practical management recommendations from the Heart Failure Association of the European Society of Cardiology. *European journal of heart failure*, 23(1), 157–174. <https://doi.org/10.1002/ejhf.2008>.

Jaarsma, T., Cameron, J., Riegel, B., & Stromberg, A. (2017). Factors Related to Self-Care in Heart Failure Patients According to *the Middle-Range Theory of Self-Care of Chronic Illness*: A Literature Update. *Current heart failure reports*, 14(2), 71–77. <https://doi.org/10.1007/s11897-017-0324-1>.

Jo, A., Ji Seo, E., & Son, Y. J. (2020). The roles of health literacy and social support in improving adherence to self-care behaviours among older adults with heart failure. *Nursing open*, 7(6), 2039–2046. <https://doi.org/10.1002/nop2.599>

Jovanić, M., Zdravković, M., Stanisavljević, D., & Jović Vraneš, A. (2018). Exploring the Importance of Health Literacy for the Quality of Life in Patients with Heart Failure. *International journal of environmental research and public health*, 15(8), 1761. <https://doi.org/10.3390/ijerph15081761>.

Jurgens, C. Y., Goodlin, S., Dolansky, M., Ahmed, A., Fonarow, G. C., Boxer, R., . . . Cranmer, K. (2015). Heart failure management in skilled nursing facilities: a scientific statement from *the American Heart Association and the Heart Failure Society of America*. *Circulation: Heart Failure*, 8(3), 655-687.

King, M., Kingery, J., & Casey, B. (2012). Diagnosis and evaluation of heart failure. *American family physician*, 85(12), 1161–1168.

Kiteley, R., & Stogdon, C. (2013). *Literature reviews in social work*. Sage.

Komajda M. (2015). Current challenges in the management of heart failure. *Circulation journal: official journal of the Japanese Circulation Society*, 79(5), 948–953. <https://doi.org/10.1253/circj.CJ-15-0368>.

Lainscak, M., Blue, L., Clark, A. L., Dahlström, U., Dickstein, K., Ekman, I., McDonagh, T., McMurray, J. J., Ryder, M., Stewart, S., Strömberg, A., & Jaarsma, T. (2011). Self-care management of heart failure: practical recommendations from the Patient Care Committee of the Heart Failure Association of the European Society of Cardiology. *European journal of heart failure*, 13(2), 115–126. <https://doi.org/10.1093/eurjhf/hfq219>

Lifestyle Changes of Heart Failure. (2017, May 31). Retrieved from *American Heart association*.

Liu, M. H., Chiou, A. F., Wang, C. H., Yu, W. P., & Lin, M. H. (2021). Relationship of symptom stress, care needs, social support, and meaning in life to quality of life in patients with heart failure from the acute to chronic stages: a longitudinal study. *Health and quality of life outcomes*, 19(1), 252. <https://doi.org/10.1186/s12955-021-01885-8>.

Negarandeh, R., Aghajanloo, A., & Seylani, K. (2020). Barriers to Self-care Among Patients with Heart Failure: A Qualitative Study. *Journal of caring sciences*, 10(4), 196–204. <https://doi.org/10.34172/jcs.2020.026>.

Oosterom-Calo, R., van Ballegooijen, A. J., Terwee, C. B., te Velde, S. J., Brouwer, I. A., Jaarsma, T., & Brug, J. (2012). *Determinants of heart failure self-care: a systematic literature review*. *Heart failure reviews*, 17(3), 367–385. <https://doi.org/10.1007/s10741-011-9292-9>

Namdar, A. A., C, A., & Inamdar. (2016, june 29). Heart failure: Diagnosis, Management and Utilization. *Journal of Clinical medicine*, 5(62), DOI; 10.3390/jcm5070062; Available online: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4961993/>.

Inamdar, A. A., & Inamdar, A. C. (2016). Heart Failure: Diagnosis, Management and Utilization. *Journal of clinical medicine*, 5(7), 62. <https://doi.org/10.3390/jcm5070062>

Nicholson, C. (2007). *Heart Failure: (A Clinical Nursing Handbook)* (Vols. DocID: 326416 /available in; <https://ebookcentral-proquest-com.ezproxy.novia.fi/lib/novia-ebooks/reader.action?docID=326416>). England: John Wiley & Sons, Ltd.

Polit, D. F., & Beck, C. T. (2012). *Nursing Research*. London: Wolters Kluwer. P.85-132.

Renpenning, k. M. (2003). *Care Theory in Nursing: selected paper of Dorothea Orem*. Taylor, Springer Publishing company. E-book Central.

R. K. (2020, 4 12). Heart Failure. (2021 Kaustannus Oy Duodecim) Retrieved Article ID: dlk00084 (002.014), from *TERVEKIRJASTO DUODECIM*:

Salahodinkolah, M. K., Ganji, J., Moghadam, S. H., Shafipour, V., Jafari, H., & Salari, S. (2020). Educational intervention for improving self-care behaviors in patients with heart failure: A narrative review. *Journal of Nursing and Midwifery Sciences*, 7(1), 60.

Schwarzl, M., Ojeda, F., Zeller, T., Seiffert, M., Becher, P. M., Munzel, T., Wild, P. S., Blettner, M., Lackner, K. J., Pfeiffer, N., Beutel, M. E., Blankenberg, S., & Westermann, D. (2016). Risk factors for heart failure are associated with alterations of the LV end-diastolic pressure-volume relationship in non-heart failure individuals: data from a large-scale, population-based cohort. *European heart journal*, 37(23), 1807–1814. <https://doi.org/10.1093/eurheartj/ehw120>

Siddaway, A. P., Wood, A. M., & Hedges, L. V. (2019). *How to Do a Systematic Review: A Best Practice Guide for Conducting and Reporting Narrative Reviews, Meta-Analyses, and Meta-Syntheses*. *Annual review of psychology*, 70, 747–770. <https://doi.org/10.1146/annurev-psych-010418-102803>

son, Y.-J., Shim, d. k., & Seo, E. K. (den 6 Novemeber 2018). Health Literacy but not Frailty predicts self-care behaviors in patient with heart failure. *Environmental Research and Public Health*.

Snowden, A., Donnell, A., & Duffy, T. (2010). *Pioneering theories in nursing*. Retrieved on 22.11.17 from <http://ebookcentral.proquest.com><br>Created from Novia-ebooks

Strömberg, A. (2005, january 4). The crucial role of patient education in heart failure. *The European Journal of Heart Failure*, 7(DOI: 10.1016/j.ejheart.2005.01.002), 363-369.

Stuart D. Katz, M., & M.B., H. L. (2013). *Heart Failure: A practical Guide for Diagnosis and Management* (Vol. DocID; 1630624). (A. i. <https://ebookcentral-proquest-com.ezproxy.novia.fi/lib/novia-ebooks/reader.action?docID=1630624>, Ed.) New York: OXFORD University Press.

Tansey, P. (2010, December 9). Counting the cost of heart failure to the patient the nurse and the NHS. *Brithis Journal of Nursing*, 13;19(22) (DOI: 10.12968/bjon.2010.99.22.1396), 1396-1401.

Teichman, S. L., Maisel, A. S., & Storrow, A. B. (2015). Challenges in acute heart failure clinical management: optimizing care despite incomplete evidence and imperfect drugs. *Critical pathways in cardiology*, 14(1), 12–24. <https://doi.org/10.1097/HPC.0000000000000031>

The Finish Advisory Board on Research Integrity, TENK (2012). *Responsible conduct of research and procedures for handling allegations of misconduct in Finland*

Toukhsati, S. R., Driscoll, A., & Hare, D. L. (2015). Patient Self-management in Chronic Heart Failure - *Establishing Concordance Between Guidelines and Practice*. *Cardiac failure review*, 1(2), 128–131. <https://doi.org/10.15420/cfr.2015.1.2.128>.

Trophy, J. M., & Cassio Lynn, R. M. (2011, November 16). Heart Failure. *The Journal of the American Medical Association*, 306(JAMA. 2011;306(19):2175. doi:10.1001/jama.306.19.2175), <https://jamanetwork.com/journals/jama/fullarticle/1104634>.

Uijl, A., Koudstaal, S., Direk, K., Denaxas, S., Groenwold, R. H., Banerjee, A., . . . Asselbergs, F. W. (2019). Risk factors for incident heart failure in age- and sex-specific strata: A population-based cohort using linked electronic health records. *European journal of heart failure*, 21(10), 1197-1206. <https://doi.org/10.1002/ejhf.1350>

Valerie C. Scanlon, P. T. (2007). *Essential of Anatomy and physiology* (Vol. 5th Edition). New York: F.A. Davis Company Philadelphia. (n.d.).

Vuckovic, K. M., Bierle, R. S., & Ryan, C. J. (2020). Navigating Symptom Management in Heart Failure: The Crucial Role of the Critical Care Nurse. *Critical care nurse*, 40(2), 55–63. <https://doi.org/10.4037/ccn2020685>

Warning sign of heart failure. (2017, May 31). Retrieved from *American Heart Association*: <https://www.heart.org/en/health-topics/heart-failure/warning-signs-of-heart-failure>



White, A., & Schmidt, K. (2005). Systematic literature reviews. *Complementary therapies in medicine*, 13(1), 54–60. <https://doi.org/10.1016/j.ctim.2004.12.003>.

White, M. F., Kirschner, J., & Hamilton, M. A. (2014). *Self-care guide for the heart failure patient*. *Circulation*, 129(3), e293–e294. <https://doi.org/10.1161/CIRCULATIONAHA.113.003991>

Welfare, F. I. (2020, September 29). Cardiovascular Disease. Retrieved from *Finish institute for health and welfare*: <https://thl.fi/en/web/chronic-diseases/cardiovascular-diseases>.

Xiao, Y., & Watson, M. (2019). Guidance on Conducting a Systematic Literature Review. *Journal of Planning Education and Research*, 39(1), 93–112. <https://doi.org/10.1177/0739456X17723971>.

Zuraida, E., Irwan, A. M. & Sjattar, E. L. (2021). Self-management education programs for patients with heart failure: A literature review. *Central European Journal of Nursing and Midwifery*, 12(1), 279-294. <https://doi.org/10.15452/cejnm.2020.11.0025>.

## Appendices 1

### Tables

Table 1: Signs and Symptoms of HF.

Table 2: Lists of data bases, selected key words and articles.

Table 3: Inclusion criteria.

### Figures

Figure 1: Figure 1: Prisma follow chart showing the search and screening process.

Figure 2: Self-care monitoring and Self-care guide for HF patient.

Figure 3: Groups of medicines used for HF to improve quality of life and survival rate.

### Abbreviation

HF	Heart Failure
CVD	Cardiovascular Disease
QOL	Quality of life
HCPs	Health care professionals
WHO	World health organization
CHF	Chronic heart failure
CT	Computerized tomography
TTE	Transthoracic Echocardiography
MRI	Magnetic resonance
BNP	Heart-secreted natriuretic peptide
ECG	Electrocardiogram
MI	Myocardial infraction
NSAID	Non-Steroidal Anti-inflammatory drugs
ACE inhibitors	Angiotensin-Converting enzyme
COPD	Chronic obstructive pulmonary disease
BP	Blood pressure
AF	Arterial fibrillation
WBC	White blood cells
LDL	Low-density lipoprotein

HDL	High-density lipoprotein
GP	General practitioner
COVID	Corona virus disease
CPAP	Continuous positive airway pressure
DVD	Digital Video disc
THL	Finish institute of health and welfare
ICT	Information and communication technology
ISDN	Isosorbide dinitrate
GDMT	Guideline directed medical therapy
ICDS	implanted cardinal defibrillators
CRT	Cardiac resynchronization therapy

## Appendices 2

### Appendix 1: Summary of article used

Citation	Aim	Methodology	Result
Jaarsma, T., Hill, L., Bayes-Genis, A., La Rocca, H. B., Castiello, T., Čelutkienė, J., Marques-Sule, E., Plymen, C. M., Piper, S. E., Riegel, B., Rutten, F. H., Ben Gal, T., Bauersachs, J., Coats, A., Chioncel, O., Lopatin, Y., Lund, L. H., Lainscak, M., Moura, B., Mullens, W., ... Strömberg, A. (2021). <i>Self-care of heart failure patients: practical management recommendations from the Heart Failure Association of the European Society of Cardiology. European journal of heart failure, 23(1), 157–174.</i>	The aim of this study to summarize practical advice and recommendation which will help HF Patient to improve self-care behavior	Descriptive qualitative study	The result of this article shown that HF patient need to be active in their self-care behavior, but different things health care provider should be considered during education and advice session such as, comorbidities, behavior changes, depressive mental condition.
Lainscak, M., Blue, L., Clark, A. L., Dahlström, U., Dickstein, K., Ekman, I., McDonagh, T., McMurray, J. J., Ryder, M., Stewart, S., Strömberg, A., & Jaarsma, T. (2011). <i>Self-care management of heart failure: practical recommendations from the Patient Care Committee of the Heart Failure Association of the European Society of Cardiology. European</i>	The aim of this study is to give practical advice for Nurses as a health care provider what they should advice patient deliver during deliver HF education.	Descriptive summarized qualitative study	The result in this study shows that non-pharmacological self-care management should encouraged among HF patient by health care professional and providers.

<i>journal of heart failure, 13(2), 115–126.</i>			
Aggarwal, M., Bozkurt, B., Panjra, G., Aggarwal, B., Ostfeld, R. J., Barnard, N. D., Gaggin, H., Freeman, A. M., Allen, K., Madan, S., Massera, D., Litwin, S. E., & American College of Cardiology's Nutrition and Lifestyle Committee of the Prevention of Cardiovascular Disease Council (2018). <i>Lifestyle Modifications for Preventing and Treating Heart Failure. Journal of the American College of Cardiology, 72(19), 2391–</i>	The aim of this study is to prevent HF through lifestyle modification	The study has done with qualitative, summarized systematic content analysis	The result in this study shown that, in case of reducing the risk of HF lifestyle changes are significant.
White, M. F., Kirschner, J., & Hamilton, M. A. (2014). Self-care guide for the heart failure patient. <i>Circulation, 129(3), e293–e294.</i>	The aim of this study is giving some advice and tips to gain knowledge and better understanding of HF and help HF patient to develop effective self-care plan.	The study is qualitative, summarize and descriptive study.	
Colin-Ramirez, E., Arcand, J., & Ezekowitz, J. A. (2017). Dietary Self-management in Heart Failure: High Tech or High Touch?. <i>Current treatment options in cardiovascular medicine, 19(3), 19.</i>	The aim of this study is to provide current guidance and recommendation in HF dietary management	This study is qualitative systematic literature review	The result of this study found that, HF guidelines should mainly focus on sodium and fluid restriction and (Omega-3 polyunsaturated fatty acid supplementation as primary dietary recommendation.
Vuckovic, K. M., Bierle, R. S., & Ryan, C. J. (2020). Navigating Symptom Management in Heart Failure: The Crucial Role of the Critical Care Nurse. <i>Critical care nurse, 40(2), 55–63</i>	This study aims to identify the complexities and obstacles with HF patients that hinder the ability of patients to detect HF symptoms and the role of critical care nurses to assist patients in detecting HF	This study is qualitative descriptive. Systematic literature review study	The result of this study found that, critical care nurses should consider to use HF disease index for comorbid patient during teach them about symptom recognition, also assessing patient mobility, cognitive function, psychological disorder are recommended during

	symptoms at an early stage.		hospitalization. Critical care nurses should include family care givers during education period.
Jo, A., Ji Seo, E., & Son, Y. J. (2020). The roles of health literacy and social support in improving adherence to self-care behaviours among older adults with heart failure. <i>Nursing open</i> , 7(6), 2039–2046. <a href="https://doi.org/10.1002/nop2.599">https://doi.org/10.1002/nop2.599</a>	The goal of this study is to determine the importance and effects of health literacy and social support in supporting and encouraging older patients to self-care for heart failure.	This study has used cross-sectional descriptive research	The result of this study has found that, to encourage older patient in their HF self-care activities, focused on patient health literacy, and social support were very important
Boyde, M., & Peters, R. (2014). Education material for heart failure patients: what works and what does not? <i>Current heart failure reports</i> , 11(3), 314–320.	The aim of this study is found out effective education material for patient living with HF and identify what kind of improvement it can bring in patient education	This method of this study is qualitative systematic literature review research	The result of this study found that, written learning materials and sources of multimedia are able bring development in educational strategies. Also detail educational strategies such as standard format of result reporting are also helpful to bring effectiveness of education strategies
Aamodt, I. T., Strömberg, A., Hellesø, R., Jaarsma, T., & Lie, I. (2020). Tools to Support Self-Care Monitoring at Home: Perspectives of Patients with Heart Failure. <i>International journal of environmental research and public health</i> , 17(23), 8916.	The aim of this study to describe patient experience how different tools can support HF patient in their self-monitoring at home	A qualitative descriptive study was conducted with semi-structured interviews and a deductive	The result in this study shows that face-to-face conversation and consultation by health care professional are able to bring potential benefit clinically also reduce readmission rate and lower HF mortality
Almkuist, K. D. (2017). Using Teach-Back Method to Prevent 30-Day Readmissions in Patients with Heart Failure: A Systematic Review. <i>Medsurg nursing</i> , 26(5), 309–351.	The aim of this study to reduce HF patient readmission rate by detect the importance	The method of this study has conducted mixed method with systematic literature review	The result of this study showed that using tech-back method brings positive result such as promote

	role of teach-back patient education.		self-care, patient engagement to HF medication and symptoms management, enlarging patient knowledge about their disease and condition which reduces hospital readmission.
Glogowska, M., Simmonds, R., McLachlan, S., Cramer, H., Sanders, T., Johnson, R., Kadam, U. T., Lasserson, D. S., & Purdy, S. (2015). Managing patients with heart failure: a qualitative study of multidisciplinary teams with specialist heart failure nurses. <i>Annals of family medicine</i> , 13(5), 466–471. <a href="https://doi.org/10.1370/afm.1845">https://doi.org/10.1370/afm.1845</a>	The aim of this study is identified health care professional such as HF specialist nurses' experiences and perception about HF patient management in multidisciplinary settings	The study has conducted qualitative depth-interview method.	The result of this study has identified two different thematic areas about health care professional challenges during working with HF patient. The first finding challenges is to communicate with patient and give them real understanding about their disease condition, secondly finding challenge is to communication with multidisciplinary team.
Salahodinkolah, M. K., Ganji, J., Moghadam, S. H., Shafipour, V., Jafari, H., & Salari, S. (2020). Educational intervention for improving self-care behaviors in patients with heart failure: A narrative review. <i>Journal of Nursing and Midwifery Sciences</i> , 7(1), 60	The aim of this study is to review and identify the educational intervention to promote self-care behavior among HF patients.	The method of this study has conducted narrative systematic review	This study result has found that effective educational intervention such as face-to-face, teach-back training, home visitation by follow up phone calls, e-learning plays significant role to promote self-care behavior among HF patient
Negarandeh, R., Aghajanloo, A., & Seylani, K. (2020). <i>Barriers to Self-care Among Patients with Heart Failure: A Qualitative Study. Journal of caring sciences</i> , 10(4), 196–204.	The aim of this study is to interevent different self-care barriers	This study has conducted a qualitative	The study result has founded three categories of HF self-care barriers with HF patient

<p><a href="https://doi.org/10.34172/jcs.2020.026">https://doi.org/10.34172/jcs.2020.026</a>.</p>	<p>among HF patients.</p>	<p>content analysis method.</p>	<p>including barriers are, personal factors, disease burden and insufficient support system.</p>
<p>Greenhalgh, T., A'Court, C., &amp; Shaw, S. (2017). Understanding heart failure; explaining telehealth - a <i>hermeneutic systematic review</i>. <i>BMC cardiovascular disorders</i>, 17(1), 156. <a href="https://doi.org/10.1186/s12872-017-0594-2">https://doi.org/10.1186/s12872-017-0594-2</a></p>	<p>The aim of this study is to be sought out theoretical and imperial perspective about telehealth education on HF patient</p>	<p>This study has conducted a hermeneutic systematic review method</p>	<p>This study result has founded that, telehealth patient education system is one kind of effective system which are comprised with numerical technological services to communicated and monitor HF patient. These technologies are becoming more popular and invasive among clinicians and patients</p>
<p>Chew, H. S. J., Sim, K. L. D., Cao, X. &amp; Chair, S. Y. (2019). Motivation, Challenges and Self-Regulation in Heart Failure Self-Care: A Theory-Driven Qualitative Study. <i>International journal of behavioral medicine</i>, 26(5), 474–485. <a href="https://doi.org/10.1007/s12529-019-09798-z">https://doi.org/10.1007/s12529-019-09798-z</a></p>	<p>The aim of this study is to promote self-care by intervening participant motivation, challenges, barriers, and their individualized self-regulation strategies.</p>	<p>This study has conducted by unstructured face-to-face interview. Data analysis have been done together with thematic analysis and continuous comparison.</p>	<p>The result of this study found five main categories to motivate self-care among HF patient including, family's future, consideration of patient's own fatalistic future, past life demotivation, difficulties to adopt regular physical activities and difficulties to change personal and social dietary habits. For overcoming these challenges this study has emerged twelve subcategories to promote self-care capacity.</p>