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The impact of patient education on individuals with heart failure.

A systematic review

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Abstract/Summary

Heart failure (HF) is characterized as a multifaceted condition wherein individuals present with clinical warning signs associated with abnormalities in either the structure or function of the heart, in addition to common signs like fatigue, oedema, and dyspnea. Globally, the incidence of heart failure (HF) is rising quickly. The illness results in substantial medical expenditures and high rates of death and disease and dramatically influences the well-being of individuals. This research aims to study the patient's self-care management from HF patients and nursing's role in promoting self-care behaviour. Educating the patient about self-care management creates better knowledge to increase the quality of life and well-being.

This study was explored through a systematic review, examining the available evidence. The data can be accessed by FINNA Tritonia, provided by Novia University of Applied Sciences, PubMed, EBSCO, CINAHL, Un paywall, WHO, CDC and academic search elite.

The findings underscore the pivotal contribution of nurses in diminishing mortality, morbidity, and re-admission rates among HF patients. This is achieved through counselling, education, and active promotion of self-care practices. Moreover, the theme is divided into three categories: The role of nurses in promoting self-care management, setbacks in self-care management, and patients' perspectives on self-care. Furthermore, empowering individuals with heart failure through education significantly enhances their overall well-being and quality of life. Hence, it is strongly advised that nurses prioritise the organization of information, efficient time management, and enhancement of communication skills, as these aspects are paramount in meeting the educational and self-care expectations for patients with HF.

Language: English Keywords: Heart Failure or cardiac failure, Self-care Management, Patient's perceptive, Role of Nurses, Health Promotion and Education,

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1 Introduction

Heart Failure (HF) is a complicated and fatal condition distinguished by substantial morbidity and death, substandard empirical capacity, and well-being, and costly. Congestive heart failure (CHF) is another term for HF, it is a state when the heart doesn't extract the adequate blood that the body requires. The WHO identifies cardiovascular diseases (CVDs) as the leading cause of global mortality, estimating an annual death toll of around 17.9 million people. CVDs are types of diseases of the heart and blood vessels along with coronary artery disease, stroke, rheumatic heart disease, and other illnesses. Approximately 4 in 5 CVDs patients die because of heart attacks and strokes, and 1/3 of untimely death happen in patients below 70 years old (WHO, 2022).

More than 64 million people globally are affected by HF. However, reducing social and economic problems has become a dominant worldwide priority for health institutions. Although the cases of HF have been settling down, in the industrialized country seem to be diminished, and the universality is growing because of the aging population, developed medication and continuity with ischemic heart disease, and the accessibility of factual treatment to extend life for heart failure patients (Savarese, 2023).

HF can be treated with medications and surgeries, regardless of the symptoms. Since HF is a chronic disease, the patient must take extra care of themselves and their families requires a depth understanding of helping through self-care management because, in the long run, it will affect the patient's well-being. Moreover, HF may cause repeated hospitalization, deadly arrhythmias, deteriorating health conditions, and death rates rise (Ängerud, 2018).

HF self-care management involvement therapy program, teaching, and encouragement for continuous development through constant monitoring and checking the healthy lifestyle of the patient, willingness to treatment, stop smoking, minimizing alcohol intake, and physical activities should be maintained and adjusted for the new lifestyle ahead as well as the psychological aspects. Patients' conviction to self-care management expertise evolves through the encouragement of the medical team who is involved in the treatment plan. This includes the doctors, nurses, dietitians, and psychologists. It is essential to educate the patient, and proper guidance to improve their knowledge, and their faith and enhance their well-being. Life expectations can be tricky, and inadequate knowledge can be a threat to the patient's life (Ängerud, 2018).

It is essential to convey the influence of self-care management to patients with HF. Encouraging and educating both patient and family members about the importance of self-care in HF. The complicated necessity of a person with heart failure and the trouble symptoms that they need to cope with is demanding the family's cooperation to have the patient's well-being physically and emotionally while recovering (Ängerud, 2018).

2 Background

CVDs is the leading cause of death worldwide, outstripping cancer, whether in developed or developing countries. It is a serious disease and accounts for a high mortality rate, especially when the frequency of CVDs is increasingly younger due to unhealthy habits in daily life. The prevalence of obesity and high blood pressure in young people (35–64 years) is one of the main causes of cardiovascular disease. According to statistics, half of the population in the United States has at least one of the three top risk factors: high blood pressure, high cholesterol, and smoking (CDC, 2023).

HF is considered as a chronic disease and becomes a burden for patients when it requires patients to take more responsibility for self-management besides the support of doctors and nurses. Therefore, patient education is believed to be an essential component of cardiovascular care; However, there are many studies and evidence that the method of patient education, conveying the importance of self-management is still limited (Barnason & i, 2017).

The aim of this section is to discuss HF, its risk factors, symptoms, diagnosis, and treatments. In addition, different factors determine self-care management and the promotion of self-care education.

2.1 Heart Failure

HF is a condition in which the heart is weakened due to physical damage or cardiac dysfunction that makes the ventricles unable to receive or eject blood. This is known to be a complex clinical syndrome. The patient's cardiovascular system cannot supply enough blood to the cells, making the patient tired and short of breath, some people have a cough. Daily activities such as walking, climbing stairs, or carrying things can become more difficult. When the patient exerts himself, fluid retention can lead to pulmonary congestion and peripheral oedema (A. Chizner, 2016).

Myocardial contraction (force and velocity), ventricular efficiency, and myocardial oxygen demand are determined by cardiac output, cardiac preload, heart rate, myocardial mass, available nutrients (oxygen, fatty acids, glucose). The Frank-Starling principle describes the relationship between preload and cardiac performance. It showed that normally systolic contractility is proportional to preload within the normal physiological range. Contractility is difficult to measure clinically (because it requires cardiac catheterization with barometric analysis) but is reflected by ejection fraction, which is a percentage of end-diastolic volume ejected with each stroke volume. Ejection fraction can be assessed accurately through non-invasive echocardiography, scintigraphy, or magnetic resonance imaging (Delicce & Makaryus., 2023).

The figure below demonstrates the Frank- Starling Mechanism in normal heart and heart failure in plotting stroke volume and preload.

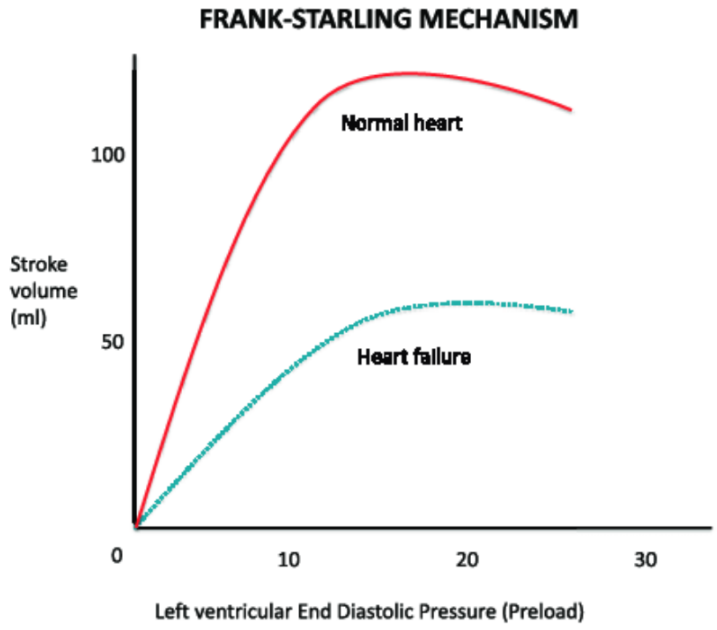

Figure 1 *Frank- Starling Mechanism (Hajouli & Ludhwani., 2022)*

2.2 HF Diagnosis and Testing

HF is a complex clinical syndrome. Therefore, the diagnosis of HF needs to be made carefully, combining many factors. In order to diagnose HF in detail, specifically in terms of the cause and severity of the disease, it must be based on medical history information, symptoms through examination and many methods of investigation, including heart ultrasound, electrocardiogram, chest X-ray, complete blood count, urinalysis, electrolyte test, fasting blood sugar, blood lipids, blood creatinine, liver enzymes, serum iron, bilirubin,

TSH, FT4, BNP or NT-proBNP, ST2, Galectin 3, SPECT or PET cardiac magnetic resonance imaging to assess myocardial perfusion, imaging percutaneous coronary artery or MSCT coronary artery contrast medium (Chatterjee, 2014).

According to the Framingham criteria, a definitive diagnosis of HF is established when a patient has 2 major or 1 major plus 2 minor criteria (Mahmood, 2013).

- Main criteria include nocturnal paroxysmal dyspnea occurs, neck veins distention, dilated heart chambers, pulmonary edema, circulation time > 25 seconds, hepatojugular reflux (Mahmood, 2013).

- Minor criteria include cough a lot during night, shortness of breath on exertion, ankle edema, ultrasound shows enlarged liver, pleural effusion, vital capacity reduced by 1/3 from maximum status, tachycardia (>120 beats/min) (Mahmood, 2013).

2.3 Classification and Manifestations HF

Left-side HF has two main pathogenesis components, these are systolic malfunction and diastolic malfunction (A. Chizner, 2016).

Systolic malfunction because of the inability of the left ventricle (LV) to contract (poor removal fraction, normally about <40%). Systolic malfunction is the usual complexity of many kinds of heart illnesses like coronary artery disease along with ischemic LV (severe myocardia infraction, mitral regurgitation, ventricular septal defect, left ventricular aneurysm, ischemic cardiomyopathy), chronic systemic arterial high blood pressure, inflated cardiomyopathy, and valvular heart illnesses. As a result of low cardiac output, exhaustion, frailty, and inability to do any physical fitness activities. Dilated cardiomyopathy is a kind of systolic malfunction. It is a pathological procedure that includes myocardium. Although several have particularly well-known reasons some are unknown. Causes have been recognized in the medical background of recently as flu-related diseases or/either caused by viruses, for example, echovirus, human immunodeficiency virus, coronary artery diseases, extreme consumption of alcohol, use of prohibited drugs, chemotherapy, connective tissues diseases (systemic lupus erythematosus, and periarteritis), postpartum condition, physical and psychological stress, thyroid diseases or supraventricular. Even though the main reason is still unknown, it is assumed to be an autoimmune reaction from mortified myocardium, normally viral. Cardiomyopathy has three international categories (A. Chizner, 2016):

- Dilated cardiomyopathy (systolic malfunction)
- Hypertrophic cardiomyopathy (diastolic malfunction),
- Restrictive cardiomyopathy (diastolic malfunction)

Besides, long-term alcohol consumption is the leading cause of secondary, non-ischemic dilated cardiomyopathy. The mechanism of alcoholic cardiomyopathy takes place as follows: inhibition of protein synthesis, iinhibition of oxidative phosphorylation, free radical damage, accumulation of fatty acid esters, disruption of cell membrane structure of cardiac cell, causing coronary vasoconstriction, and receptor abnormalities in cardiac cells. In addition to cardiomyopathy, long-term alcohol consumption increases the risk of atrial fibrillation, supraventricular arrhythmias, ventricular extrasystoles, hypertension, and stroke (Shaaban, Gangwani, Pendela, & Vindhyal, 2022).

Diastolic malfunction is caused by decreased cardiac output. It has a normal removal fraction but with flawed relaxation resulting inflexible, resistive left ventricle. Diastolic malfunction is also a known cause of coronary artery disease with ischemia, high blood pressure LV hyperplasia, valvular aortic stenosis, hypertrophic obstructive cardiomyopathy, diabetes mellitus, and cardiomyopathy limitation. As a result of decreased cardiac output, the patient will feel frailty, tiredness, and intolerance to physical activities. Patients limit their physical fitness activities to inhibit the uncomfortable feeling and shortness of breath (A. Chizner, 2016).

2.4 Symptoms and risk factors

Symptom of HF varies depending on the type and severity of the condition. In mild HF, patients experience the symptom if patient engages in strenuous physical activity. And symptoms are different regardless it is left-or right HF. Moreover, the possibility of having symptoms of both kinds. Symptoms normally get severe when your heart weakens (Rahko, 2013). The risk for heart disease can be increase by various medical issues, behaviour, age, and genetic factors. However, several risks for heart condition cannot be restrained like age or family history, on the other hand, some chances reduce your risk by altering the variables under your control. You cannot change some heart disease risk factors, such as your age or family history. Nevertheless, you can reduce your risk by altering the variables that can be controlled. (Fryar, 2012)

2.4.1 Symptoms

The increase of symptoms that normally overlook resulting in often hospitalization is common. Even though symptoms happen the same in the majority of patients, researchers and medical providers focus on the symptoms individually (Debra K. Moser, 2014).

A collection of symptoms involves two or more co-exists symptoms. Even though a collection of symptoms is fully related, it does not necessarily mean they have the same aetiology. There is a shred of advanced evidence that indicate that a cluster of symptoms can be predictive of result than individually existing symptoms. Symptoms foresee personalized experiences manifesting recognized interchange in usual function (Debra K. Moser, 2014).

These are the symptoms of HF that have been observed in patients from the United States, Asia, and Europe: shortness of breath, trouble walking and climbing, tiredness/demand resting, and fatigue/ poor energy these are categorized in physical capability symptom clusters. Anxiety and depression are categorized as cognitive problems and difficulty sleeping is categorized as psychological/cognitive. symptom cluster. Although edema is one of the symptoms, it is not in the cluster with any of these and creates a third distinctive result. (Debra K. Moser, 2014).

The Pseudo-F statistic and the pseudo-T were utilized to determine if the quantity of clusters derived on the dendrogram is relevant.

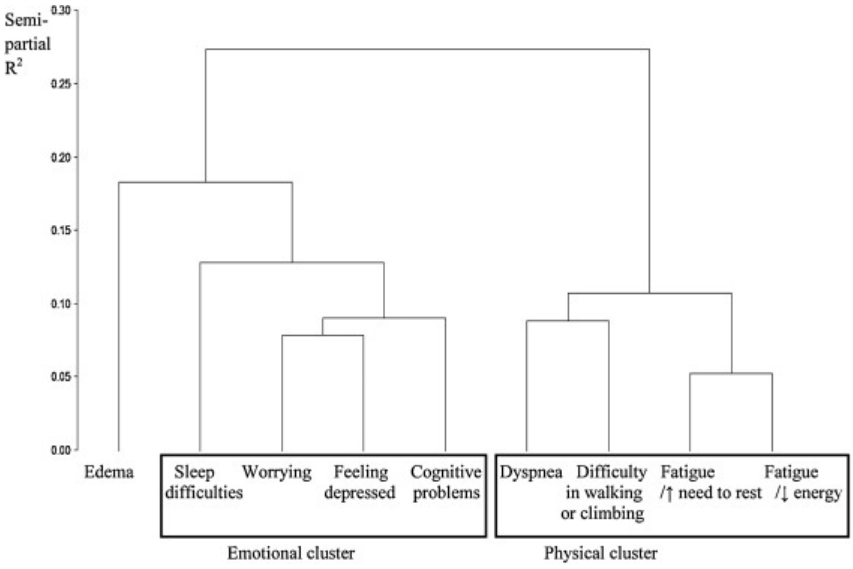

Figure 2 Dendrogram of United States (Debra K. Moser, 2014)

2.4.2 Risk factors

HF is a severe condition when the heart cannot supply blood and oxygen to the body because of decreased cardiac output. Approximately 6.2 million grown-ups in the United States suffer from HF. In the year 2018, HF 379,800 deaths were reported (13,4%). HF amounted the country approximately $30,7 billion in 2012. The overall amount covers health, medications for HF treatment, and sick leave (Virani, et al., 2020).

HF risk factors have two reasons either lifestyle or health factors and other risk factors. An inappropriate lifestyle may enhance the risk for HF. Smoking is the most common risk factor for HF. In the United States, it is the main cause of disability-adjusted life years. An unhealthy diet high in cholesterol and fats can cause obesity and overweight. Lack of physical activities, there is evidence that suggests light-intensity physical activity may help prevent CVDs. In current research from the Women's Health Initiative, greater light-intensity physical activity per day was linked to a decreased risk of coronary heart disease (Virani, et al., 2020). Extreme alcohol consumption, and bad cholesterol levels that are too high can block arteries, and if a part of plaque is broken, a thrombus will form resulting in a heart attack. (Piano, 2017).

Other risk factors can be underlying diseases that triggered HF. High cholesterol and lipids, high blood pressure, diabetes mellitus, metabolic syndrome, and kidney diseases. Kidney disease is the reason for repeated coronary episodes, stroke, HF venous thrombosis, and atrial fibrillation. (M. Fornage, 2020).

2.5 Treatment

HF is more common in elderly, currently it is one of the leading causes of hospitalization among the elderly. Hospital care and death rates are increasing particularly in established countries in where population aging, despite the improvements of treatment methods and overall results for HF patients. With regards to specifics of patients (age-related modifies drugs and gender differences), therapies (pharmacokinetic and pharmacodynamic adjustments in medicines; cardiorenal syndrome), and pharmaceutical treatment (involving recent perspective in HF therapies procedure, sacubitril/valsartan mixture, and sodium-glucose co-transporter-2 inhibitors). A multidisciplinary procedure to treat HF is crucial, some medication and nutritional supplements that may aggravate the diagnosis of Hf patients and considers several possibility drug to drug interactions, the effects and proposals for

medical care providers and also the adverse threat of the drug responses and discontinuation of the therapy (Valentina Buda, 2020).

HF is a worldwide health problem that associated with co-existing conditions and death. It is important to successfully handle and control HF as its burden rises. Nevertheless, there are inconsistencies between actual clinical practice and recommendations for the best HF treatment. Patient-related, medical provider-related and medical system-related conditions cause a failure to adhere to recommended care. Analysing HF treatment routines and adherence in actual clinical practice, identifying clinical gaps, and making recommendations for ways to enhance the integrity of HF care and clinical results for HF patients are the goals of this review article. While it is vital to enhance therapies decisions as much as possible on scientific recommendations, it is well-recognized that many individuals still are not given guideline-directed medical treatment, especially in the beginning. Qualitative evaluation through monitoring of performance is also necessary as well as educating patients, caregivers, and medical personnel through a multidisciplinary approach is crucial to enhance medication compliance (Kim, 2023).

The American College of Cardiology Foundation and the American Heart Association instructions recommended pharmacological and non-pharmacological involvement in treating volume overload in acute decompensated heart failure patients (Meer R Zafar, 2020).

2.5.1 Pharmacological Treatment

The benefits of Mineralocorticoid Receptor Antagonists treatment on death-related outcomes and quality of life are yet unknown, nevertheless, there is conclusive evidence that it decreases the number of heart failure hospitalizations in heart failure patients with intact ejection fraction. Evidence that are available for beta-blockers, angiotensin-converting enzyme inhibitor/angiotensin receptor blocker, and angiotensin receptor/neurolysin inhibitor is insufficient, and it still unknown if these medications can be used to treat heart failure with preserved ejection fraction (HFpEF) if the indication for its use is lacking (Nicole Martin, 2018)

Cardiologists face a significant problem in providing appropriate therapeutic treatment to patients with HF. ACEi/ARNI, beta blockers, mineralocorticoid receptor antagonists (MRAs), and sodium glucose cotransporter two inhibitors should be started as soon as possible to lower the risk of HF-related death and hospitalization. Although, several details

still require clarification. Based on clinical manifestations and left ventricular ejection fraction data, recent recommendations suggest treatment strategies. Moreover, specifically in the acute context, these last do not always accurately reflect the patients' hemodynamic condition and the involvement of pathophysiological mechanisms. Even in the area of chronic management, few critical issues need to deal with. The recommendations did not mention the dosage or four pillar medications that should be taken first. While some writers advise starting with ACEi or ARNI, others with ACEi or beta blockers, one of the most current approaches suggests starting with all four medications simultaneously at modest doses (Paolo Severino, 2023).

Acute decompensated HF or ADHF characterized by imbalance of fluid volume. An increasing case of hospitalization is correlated with ADHF. Volume overload can be attributed to medication non-adherence, extreme salt consumption, co-existing conditions, and/or disease progression. Although HF medicine has advanced over the past few decades, however, diuretics have remained the cornerstone of care. Diuretics are necessary even though may activate the renin-angiotensin-aldosterone system (RAAS) and cause potentially harmful adaptive responses include diuretic resistance, neurohormonal activation, and renal malfunction. In ADHF, there has been a burgeoning interest in breakthrough methods of controlling volume overload. So, a new substitute treatment of interest for medication volume overload in ADHF patients is ultrafiltration (Zafar, Miller, Mustafa, & Al-Khafaji, 2020).

The illustration below demonstrates medications which are recommended depending on HF's condition. The table shows different medications, examples, and the monitor requirement during the treatment.

Medication Type	Examples	What to Monitor
Angiotensin converting enzymes inhibitors	Captopril, Enalapril, Benazapril, Lisinopril, Quinapril, Ramipril	Kidney function, potassium, blood pressure; possible cough, dizziness, rash or swelling
Angiotensin receptor blocker	Candesartan, Losartan, Valsartan	Kidney function, potassium, blood pressure; possible dizziness

Medication Type	Examples	What to Monitor
Beta blockers	Carvedilol, Metoprolol succinate, Bisoprolol	Blood pressure, heart rate, possible worsening fatigue
Aldosterone inhibitors	Spironolactone, Eplerenone	Potassium, kidney function, possible breast tenderness
Hydralazne/Isosorbide	Isosorbide dinitrate, Hydralazine combination	Blood pressure, possible headache, dizziness, or nausea
Diuretics	Furosemide, Torsemide, Bumetanide, Metolazone, Hydrochlorothiazide	Electrolytes (Potassium, Sodium), Kidney function, too much fluid loss or dizziness
Digitalis	Digoxin	Digoxin level, kidney function

Table 1 Medication needs to be understood to improve quality of life (White, 2014)

The sodium-glucose co-transporter two inhibitor dapagliflozin and the angiotensin receptor neprilysin-inhibitor sacubitril/valsartan both decreased death from CVD and HF readmission among individuals with HF with reduced ejection fraction (HFrEF). It is uncertain if either of these medication types affects the efficacy or security of the other. Dapagliflozin and prevention of adverse results in HF 4,744 patient experiment in comparison dapagliflozin with inactive drug in individuals with HFrEF. Patient evaluated by whether they had taken sacubitril/valsartan randomly. Based on sacubitril/valsartan and the interactivity examination, the effectiveness of dapagliflozin were evaluated for the primary composite outcome (CV mortality or incident of deteriorating heart failure), its fundamental, and all-cause mortality. The sacubitril/valsartan group looked at predetermined safety consequences (Dewan , et al., 2020).

A total of 508 patients received treatment with sacubitril/valsartan at standard. Sacubitril/valsartan was prescribed to patients from Europe or North America, to decrease ejection fraction and systolic/diastolic pressures of the blood. To patients receiving

sacubitril/valsartan in comparison to those who did not take sacubitril/valsartan, the advantage of dapagliflozin as to inactive medicine was comparable for the initial outcome of cardiovascular mortality or worsened HF; the same results has been reported for additional outcomes. Dapagliflozin correspondingly effective and low risk in patients who used and not used sacubitril/valsartan in the experiment, which recommended that using both medicines can reduce death and morbidity in individual with HFrEF (Dewan , et al., 2020).

In United States 5.7 million individuals suffer from heart failure. Aldosterone antagonists, B-blockers, angiotensin-converting enzyme inhibitors, and angiotensin receptor blockers reduce ejection fraction and decrease morbidity in individuals with HF, but death rate continuous to be severe. The first medication of a newest class of medicines for the management of heart failure was approved by the US Food and Drug Administration in July 2015: In a sodium supramolecular combination called valsartan/sacubitril, which Novartis presently sells under the brand name Entresto, the angiotensin receptor blocker valsartan and the neprilysin inhibitor pro-drug sacubitril are combined in a 1:1 ratio. Sacubitril transformed into LBQ657 by esterase, stopping neprilysin from breaking down natriuretic and other vasoactive peptides. This combination of neprilysin inhibitor and angiotensin receptor antagonist targets two pathological structures of HF: the stimulation of renin-angiotensin-aldosterone process, and reduced susceptibility to natriuretic peptide. To identify the consequences on worldwide death and morbidity in HF, valsartan/sacubitril remarkably decreases death and hospital admission for HF patients, and besides blood pressure, in comparison to enalapril, a significant amount flowing of brain natriuretic peptide or N-terminal pro-brain natriuretic peptide and reduce ejection fraction (Hubers, 2016).

2.5.2 Non-Pharmacological treatment

To prepare significant physical activity counselling and promotion, it is vital to comprehend patients' motives and levels of self-efficacy. Patients with more co-existing conditions and less movement ability than the other groups may have felt less confident about working out. Nevertheless, just half of the patients who were adamant achievers (high confidence and initiative-taking) accomplished the suggested amount of physical activity each week. This proves that while motivation and confidence are essential variables, there are other characteristics that are crucial for increasing physical activity (Klompstra, Jaarsma, Stromberg, Evangelista, & van der Wal, 2021).

Aside from decreasing diseases and death, recent treatments for HF also aim to increase training endurance and quality of life. Several HF patients have musculoskeletal adjustments and poor inspiratory muscles, which can be improved with inspiratory muscle training. This improves quality of life and increases respiratory muscles stability and tolerance, maximum oxygen uptake, functional capability, and respiratory reactions to training. Most commonly in HF patients with a low ejection fraction, yoga interventions were demonstrated to enhance quality of life, acute phase reactants, and peak oxygen consumption. It is still unknown how different yoga breathing practices would affect people who have HF with preserved ejection fraction or diastolic heart failure. This study is likely the first to examine the aftermath of a non-pharmacological involvement, like yoga and particular breathing methods to ameliorate the cardiovascular fitness, the autonomic nervous system, and quality of life in HFpEF patients (Carla Pinheiro Lopes, 2018).

Chronic HF requires a long-term self- care treatment. The significance of patient knowledge on therapies conformity, lifestyle adjustments, observing symptoms and immediate response to deterioration possibilities gives the HF patients immediate recommendations. Patients with HF, self- management is associated to considerable quality of life, less death, repatriation rates, medical and people-oriented results as well. However, recommendations provide overall direction for self-care guidance, health care providers working with HF patients need more detailed counsel. Current data and professionals' perspective, suggestions for diet, exercise, medication compliance, mental health, sleep, relaxation, and travel, smoking, vaccination, and infection prevention, observe symptoms, control symptoms are coherent with considerations from instructions and proficient consent evidence (Chioncel, et al., 2021)

2.5.3 Devices and Surgeries

HFrEF patients who further getting suitable treatment, catheter ablation for atrial fibrillation is suggested to enhance outcomes. Patients with HFpEF have fewer therapy alternatives than those with HFrEF, and the evidence on how to control their atrial fibrillation is questionable. Based on information from observational studies, this systematic review and meta-analysis sought to determine how catheter ablation affected patients with HFpEF and atrial fibrillation in terms of their functional status, post-procedural problems, hospitalization, morbidity, and death. Overall, the pooling of the data revealed that 58.0% of patients had long-term sinus rhythm. In 22.3% of patients, a long-term atrial fibrillation reappearance use

fatality was found in 6.3% while admission for HF takes place in 6.2% (Androulakis, et al., 2020).

Minimal data information assessing the results or effectiveness of bariatric surgery in treating patients who are highly obese and are using a left ventricular assist device as a link to give them the right to be recommended for heart transplants. Patients who have recently had laparoscopic sleeve gastrectomy will evaluated by medical personnel for their protection and efficacy. Bariatric surgery may be a viable alternative for patient with left ventricular assist device, who are severely obese, according to the findings with seven patients and findings from previous research (19 individuals). These individuals lose much weight after bariatric surgery, which could increase their chances of receiving a heart transplant (Punchai, et al., 2019).

2.6 Factors influencing self-care management.

Identifying the clinical and sociodemographic features associated with self-care is critical to tailoring appropriate self-care programs to improve health outcomes including patients' quality of life. The Social Quality Model (SQM) shows a comprehensive overview of the social, health, and living conditions factors that directly or indirectly affect the quality of daily life. The SQM also describes the conditions to enhance the well-being and potential of people, from which they shape their circumstances and offer better ways of self-improvement. For example, access to medical care in the United States is often difficult because of individual insurance requirements, and the cost is high compared to countries where health insurance is covered by the government. The availability of health services is important in countries where health insurance is universal and nationally organized. However, the country-to-country differences in coverage, and individual resident's preference for the elements of the four SQM conditions have yet to be examined (Roy, 2020).

The figure below demonstrates different factors that influence the quality of life such as living conditions (accommodation, employment, financial status), social embeddedness (social support, insurance), self-regulation, society, and individual (Roy, 2020).

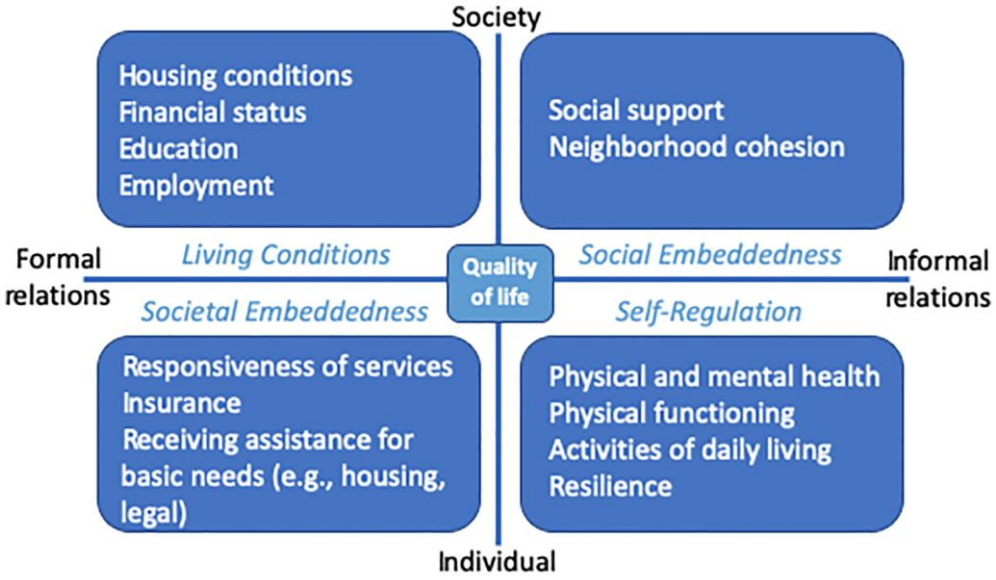

Figure 3 Theoretical framework describing four conditions necessary to support quality of life (Roy, 2020).

2.6.1 Living conditions

Poor living conditions are often associated with poor health. Living conditions affect lifestyle, and lifestyle choices related to nutrition, physical activity, or alcohol consumption, smoking is considered to be the major determinant of a person's healthcare management (Krieger, 2020). Financially challenged patients are prone to poor outcomes, experience financial hardship, and hardly afford the good, nutrient-rich foods and medications that they need to engage in self-care activities (Malhotra, 2021). Financial and education also contribute to the choice of living environment. In 2010, the Committee on Social Determinants of Health published its final report about the importance of improving living conditions to improve overall health. The factors determined in living conditions include health care and education, quality housing, clean water, sanitation, social protection, and health care (Laine, 2016).

2.6.2 Self-regulation

Self-care behaviors are important for HF patients during treatment to prevent worsening. Many studies showed that half of the patients had poor self-regulation. To achieve maximum effectiveness in the treatment process, it required patients to change their lifestyles and make the necessary and appropriate changes in daily living (Hsu, 2021). Changing life patterns is challenging and needs self-discipline as well as motivation. Research showed that lifecycle transitions (motherhood, work, past illness) make self-care is more difficult, adults usually

stressed from illness, anxious from work, and tend to have a busy lifestyle (Schulman-Green, 2016).

2.6.3 Healthcare system

The opportunity to assess specialist care, education from the health care is one of the crucial factors that drive self- care management. The health care provider has the responsibility of clear communication and provide transparently and enough information for the patient. Regular visits and communication can boost motivation as well as a self-discipline in self-care management. However, due to the limitation of the health care system, some patients cannot get full support from the health care provider. For example, limitations in a language barrier, peer support, and not enough time to have inadequately discussed (Schulman-Green, 2016).

2.7 Self- care management intervention

Health education counselling for patients with HF is very important, contributing to improving the effectiveness of treatment, prolonging the progression of the disease, and helping to improve the patient's quality of life (Podvorica, 2021).

Assistance for proper self-care practices to prevent HF worsening symptoms and self-management to enable patients' early insight of bodily changes throughout aggravation are necessary for preventing the occurrence of repeated hospitalization among HF patients. This also help the patient to go for advance appointment. Self-management intervention purpose to enhance the understanding of patient-distinctive physical feeling created by HF, according to patients records of everyday activities. 68 patients with HF, a parallel two-arm aimless controlled experiment is being conveyed right after their hospitalization. Patients in both categories put on watch with activity tracker the day of release from the hospital. According to their everyday records, patients on the self- management intervention category be given assistance to contemplate on their accurate everyday activities and the corelations of physical impact accomplished. Implementing the European Heart Failure Self-Care Behavior Scale, patients' "Asking for Help" self-care practices is the main result at one-month post-intervention. The first experiment to assess how the Hf patients perceived their symptoms using an activity tracker watch. The issue of postponed appointment throughout the exacerbation can be settled by assisting patients in better understanding their distinct physical interest linked to their everyday routines is according to their records on daily basis.

Clarifying the impact might enable the development of fresh nursing treatments for the ongoing management of illnesses with a focus on preventing readmissions (Matsuda, 2022).

2.7.1 Diet

A varied diet provides adequate vitamins and nutrients. It recommended to increase the intake of green vegetables, fruits, low-fat dairy products, fish, lean meat, poultry, eggs, soy products, and vegetable oils. Patients, who are taking anticoagulants, should avoid consuming too many dark green leafy vegetables such as spinach, broccoli, peas, green beans, radishes, parsley, and lettuce since dark green vegetables are rich in vitamin K (reduces the effectiveness of the drug). Salt restriction, especially in severe HF, should limited to <1.5g of salt per day. The patient should learn to read the sodium that listed in the ingredients in pre-packaged foods (Wickman, 2021).

The fluid is limited to 1.5-2 liters/day in patients with severe HF to prevent getting oedema, weight gain, or shortness of breath. Limit hypotonic solutions to reduce hyponatremia. Routine fluid restriction is not necessary for all patients with mild to moderate symptomatic HF. Weight-based fluid restriction (30 mL/kg body weight, 35 mL/kg if weight > 85 kg) may be less likely to cause thirst (Johansson, 2016). HF patients should avoid excessively consuming alcohol, especially patients with alcoholic cardiomyopathy. Limit alcohol according to the usual guidelines (2 units/day in men, or one unit/day in women1 unit = 10 mL pure alcohol (1 glass of wine, 1/2 can of beer) (Djoussé, 2008).

2.7.2 Exercise

Regular exercise will help increase blood circulation and prevent the formation of blood clots. Depending on the stage of the disease and health condition, the patient can choose moderate exercises such as walking, meditating, and cycling. Patients should pay attention when choosing exercises, not do sports that require a lot of strength such as intense running, or weight lifting, or activities that cause symptoms such as shortness of breath; dizziness, lightheadedness; chest pain; nausea; cold sweat. If these signs occur, stop exercising immediately. Do not exercise on an empty stomach or immediately after a meal, and do not do strenuous exercise. Furthermore, HF patients should avoid exercising outdoors when the weather is too hot, too cold, or wet because high humidity makes them tired, and too hot or too cold temperatures affect the circulatory system, causing shortness of breath and chest pain (Cattadori, 2018).

2.7.3 Adherence

Understanding the importance of treatments helps patients motivating to their treatment plans. Patients should be informed of the indications, doses, and effectiveness of the drug and be aware of the common side effects of the drugs used. It is important for the patient's adherence to treatment, the patient needs to take the medicine as prescribed and remember to take the medicine every day. If the patient cannot remember the time to take the medicine, he/she needs help from a closed one to avoid forgetting to take the medicine. Also, the patient should never stop taking or changing the dose or taking any other medication without consulting the doctor. Poor medication adherence leads to worse health outcomes which include higher rates of hospitalization and death in patients with HF (Wu, 2018).

Nurses are responsible for educating patients on how to recognize the symptoms of HF such as daily weight monitoring to detect rapid weight gain. In case of increased shortness of breath, oedema or sudden unexplained weight gain > 2 kg in 3 days; the patient should report to the healthcare. (Howie-Esquivel, 2019).

3 Research aim

This research aims to study the patient's self-care management from the point of view of HF patients and nursing's role in promoting self-care behavior. Educating the patient about self-care management creates better knowledge to increase the quality of life and well-being.

Research question:

What is the role of nurses in promoting self-care management among HF patients?
What are challenges in self-care management among HF patient?
What are the perceptions of HF patients in self- care management?

4 Methodology

Qualitative research is a method of collecting information and data in a 'non-numeric' form to obtain detailed information for a research, survey, or investigation object. Qualitative is used to study and find out opinions and perspectives to understand deeply insight issues. This information is usually collected through interviews, direct observations, or focus group discussions using open-ended questions. And it usually applied in the case of a concentrated sample. The researcher uses qualitative methods to have a better understanding, it allows to

explore the behavioural factors, experiences, and feelings of people. The reflexibility in qualitative research helps researchers to discover beyond the reports, and descriptions of the participants (Holloway, 2016).

4.1 Systematic Review

A systematic review is an analysis of fundamental research that includes a clear declaration of the goals, sources, and procedures used, and that conducted using a clear and reproducible approach. A meta-analysis is a mathematical synthesis of the outcome of two or more primary research that similarly has the same hypothesis approached. Even though meta-analysis enhances the accuracy of the result, it is vital to ensure the procedure used for the reviews has validity and credibility (Gopalakrishnan S, 2013).

Excellent systematic reviews and meta-analyses can discover all the pertinent studies, critically evaluate each research, propose a neutralized significant overview of the results, and take into consideration any consequences that weakened the data. Research evidence, which is typically the best type of evidence and is therefore ranked at the top of the hierarchy of authentication, can be summarized through systematic review and meta-analysis (Gopalakrishnan S, 2013).

For family doctors and primary care physicians, systematic reviews can be highly beneficial decision-making instruments. Substantial information is impartially outlined, recognizing differences in clinical studies, and determining advantageous or unfavourable interventions that will be functional for doctors, researchers as well as the community, and legislators (Gopalakrishnan S, 2013).

4.2 Data collection

The articles were found through FINNA and Tritonia that offered by Novia University of Applied Sciences, and other sources such as www.ncbi.nlm.nih.gov, and urn.kb.se. They can be accessed in EBSCO, CINAHL, Un paywall, and academic search elite for the full text. Besides, several web pages were used including the Centers for Disease Control and Prevent (CDC), World Health Organization (WHO), PubMed, and Google Scholar.

Data collection techniques are crucial given that methodology and systematic procedure adopted by the researchers will decide how the knowledge obtained can be applied and which insights it may produce (Paradis, O'Brien, Nimmon, Bandiera, & Martimianakis, 2016).

The search words that are used when finding articles are “heart failure or cardiac failure or congestive heart failure” and “self-care or self-management”. Other search words are “heart disease or cardiovascular disease or cardiac or coronary heart disease” and “health promotion or patient education or health education”. And “heart disease or cardiovascular disease or cardiac or coronary heart disease”, roles of nurses, and “patient’s perceptive or patient’s opinion or patient’s point of view”. The article search is narrowed down from the year 2012 to 2023.

Presenting the outcomes of an in-depth analysis by not considering how they will affect the report's conclusions is not advised. Specifically, the removal of low-quality articles may have an impact on the review's results on medical practices. To prevent drawing erroneous findings or outcomes, reflecting on the outcomes of critical appraisal should take into consideration the credibility, practicality, and medical significance. And also, the authors assess the credibility and validity of the research through perused the full-text publications. Lastly, the authors selected articles from books, eBooks, and journal articles from respected publishers in the review.

4.3 Inclusion and exclusion criteria

When planning a study, it is crucial that researchers not only choose the significant inclusion and exclusion criteria but also consider how those choices would affect the external credibility of the study's outcome. Frequent mistakes that happen concerning inclusion and exclusion criteria are as follows: applying similar inconsistent to determine inclusion and exclusion criteria (example when using gender female and male, the research includes men, and women as excluded); choosing variables as inclusion criteria that do not associate to respond the research questions; and not explaining crucial details from the inclusion criteria that are required to establish the external credibility outcome (Patino, 2018).

In creating first-rate research, it is vital for researchers to establish the criteria for the topic. Inclusion and exclusion criteria are utilized to verify the distinctive of the subjects or components. Choosing these criteria frequently involves exquisite offset between compelling research and the ability to generalize to wider groups. Researchers must be accurate regarding their inclusion and exclusion criteria. To ascertain the practicality of the research, it is necessary that the readers evaluate the criteria cautiously to make sure subjects are the same in their method or institution (Connelly, 2020).

Inclusion criteria epitome the features of the subjects that are involved in the research. Analysts should take into consideration the chosen groups to determine their results. Common inclusion criteria include things like demographics, location, work, or medical diagnosis. Furthermore, characteristics involve age bracket, individuality, ethnic group, or classification of illnesses. These guidelines support researchers in evaluating whether to include or remove an individual from the research sample. A good example of inclusion and exclusion criteria obtained in research by Mumba and co-author is physical activity, balance efficiency, and suffering. The sample required to consist of self- governing, community-dwelling individuals who were at least 50 years old and active. Basic comprehension of computers was also required (Connelly, 2020).

Exclusion criteria are not the conflicting of inclusion criteria. Alternatively, they determine characteristics that exclude a person from the research; these characteristics are frequently confusing variables that may distort or affect study results. Moreover, practical characteristics like the inability to read or speak English can be used as exclusion grounds. Another exclusion criteria may include co-existing conditions and age, particularly to patients with the possibility of increasing risk of unfavorable incidents (example; patients with HF, diabetes is the one of the coexisting conditions (Connelly, 2020).

This research paper utilized inclusion and exclusion criteria to find articles related to the research subject. Articles used are meticulously picked, mostly topics related to HF patients, the impact of self-care management, procedure to enhance the knowledge of the patients about HF for beneficial results. And articles only in English, the most relevant journal with full text. The articles selected published from 2013–2023 were utilized to limit the search and acquire suitable outcome. This research includes only peer-reviewed scientific qualitative study articles to achieve the desired objective of removing irrelevant materials while maintaining a standard level of quality. The article's substance has been carefully examined and is given precedence; it was omitted since it was not very pertinent to the subject and failed to address the research question. To give a clear picture of how the selection criteria (inclusion and exclusion criteria) were applied when searching the databases and to summarize the screening process, a PRISMA diagram was used as shown in the image below:

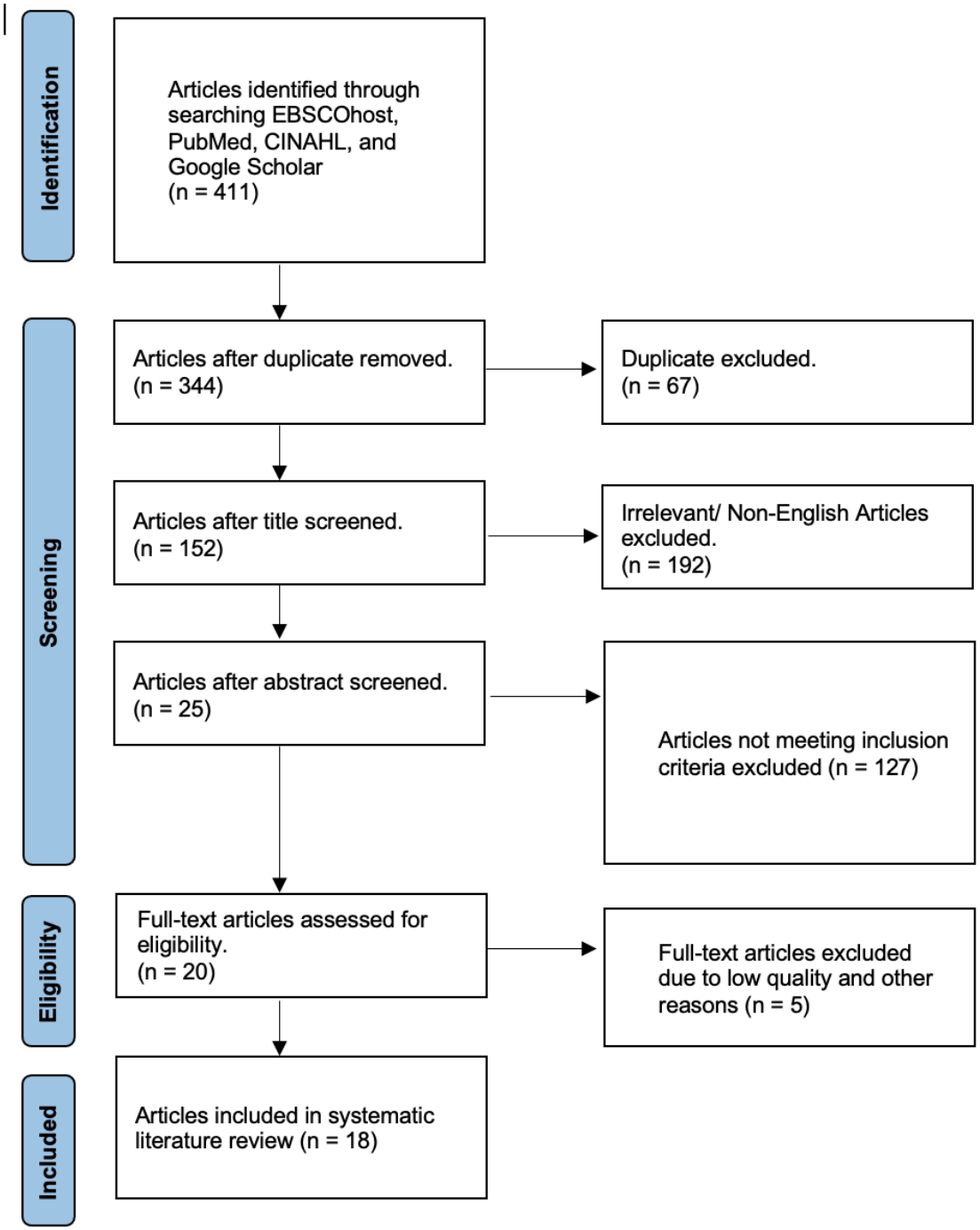

Figure 4 PRISMA flowchart showing the search and screening process.

4.4 Data analysis

Integrative data analysis, a narrative framework for organizing simultaneously raw data analysis collected from various studies, provides numerous benefits, these includes economy (e.g., reprocess existing data), power (e.g., substantial, synthesize sample measurements), the prospective to convey new investigations that is not possible to get an answer for just a single provided research, and the possibility to create advance science, like investigating the

effects of transversely studies similarity and possible cause for differences. Integrative data analysis has systematic threats problems linked to it, including need to consider the testing throughout research, to create comparable measures amongst the research, and to consider for different origin of research contradictions that may affect the hypothesis sampling (Hussong, Bauer, & Curran, 2013).

It is frequently complicated when developing analytical confederation of compound features with hereditary markers to acknowledge the effective genetic variants affecting quality. Fine mapping can identify and give importance genetic variations for additional research. Still, it might be difficult to choose the best strategy due to the wide range of methods of analysis and research layouts. Examining the benefits and drawbacks of several fine-mapping strategies, emphasising the primary performance-influencing variables. The topics covered the significance of linkage uncertainty, statistical fine-mapping techniques, trans-ethnic investigations, genomic annotation and data assimilation, and other research and design subjects (Schaid, Chen, & Larson, 2018)

A meticulous selection of articles highlighted all the appropriate phrases concerning the research questions. All the chosen articles for the papers were examined and evaluated thoroughly, and were checked for reliability of the findings, results, and conclusion. Articles used in this review convened and obtained based on the findings.

The authors ensure that all the gathered articles are reliable and easy to understand for the readers and for the researchers to comprehend what is discussed in this paper and the limitations that have been found. Given the number of studies readily accessible, a systematic review can encompass hundreds or even thousands of studies. It is a complicated process. Utilizing computerized data management to assess and evaluate the information obtained may improve the review's authenticity and give coherence. The study's eligibility, trustworthiness, transferability, and credibility has been selected by gathering information/articles from reliable databases such as Springer Link, CINAHL Database, academic search, PubMed, WILEY, and EBSCO(Medline).

4.5 Ethical consideration

In the 1950s, the first formal Codes of Ethics were created for nursing professionals. The goal was to develop ethical obligations and set values for the profession. The Code of Ethics has been revised and developed over time, now, the version of Code of Ethics has been

expanded and represented into advanced practice roles, nursing research, health policy, and administration (Haddad LM, 2022).

The articles used in this research have been checked and were published in scientific journals. The research articles have accurately cited information, knowledge, and research from various reliable sources. The study was carefully conducted by assessing its integrity, accuracy, and meticulousness. Furthermore, in compliance with scientific criteria and ethical standards, the data collection process in this study was free of plagiarism. To avoid plagiarism, all information from related studies was carefully read, captured the main points, and then interpreted and made in authors' own words following the guideline of the Finnish Advisory Board on Research Integrity (TENK, 2019).

To fully respect the work and achievements of other researchers, this study does not plagiarize and copy ideas from other articles, nor acknowledges and correctly cites information and quotes. References were included and cited in the text. It is important to ensure the ethics and reliability of the study, therefore, the study did not use sources that have not been evaluated with high reliability, only academic sources were used. The database system was used is from the school library which requires the credential to access. All information, articles, reports are carefully and selectively collected by the authors.

5 Theory framework

Nursing theory results from defined concepts, systematically recognized through nursing scientific research, related to the phenomena and events of nursing practice to guide care. Nursing theory has achieved good results by providing conceptual criteria for the purpose of describing or predicting information needed to guide nurses in supportive care. The nursing theory model is intended to provide knowledge to enhance nursing care, nursing practice, a guide to continuing or related nursing study to develop nursing practice within the scope and goals of nursing (Alligood, 2017).

5.1 Orem's self-care theory

Orem's theory is built on the need for self-care and the patient's ability to care for themselves. The goal of the theory is to enable the patient to have the capacity to take care of themselves. Orem's theory is analysis based on:

Humans: A recipient of nursing care that includes individuals, families, and the community. People are seen as the center of care delivery, they have health-related needs that need to be met by nurses. Therefore, humans are the most important subjects in nursing care.

Health: is a state of health or completeness in human structure, physical and mental function. Each person's health is defined differently depending on the individual and depending on the specialized area of the subject that the nurse cares for. Restoring, maintaining, or enhancing the health of a client is the goal of nursing care. According to the American Nursing Association (ANA, 1995) defines: “Health is a state of perfect physical, mental, and social well-being of an individual and his or her ability to continuously respond to change. about their inner function”. The nurse provides care based on the individual's level of health and basic health-related human needs that the nurse arranges time to provide the care.

Environment: The environment includes the surrounding conditions in which the customer lives, such as air, weather, means of living, food, and drink, including those who have daily contact with them. Diseases are phenomena, functional and structural changes in people and their ability to adapt to their actual needs. For example, the extent of care for a nursing subject depends on their home, school, workplace, or community conditions, and how long they work. Care coordination planning should be appropriate to the patient's abilities or the time they work, the time they accept or reject care, from which they agree to cooperate, actively cooperate, or have a negative attitude not to cooperate because it is not suitable for their living conditions. Therefore, nurses need to understand the environmental influences to plan to meet their needs appropriately and effectively.

Nursing: The nursing function includes identifying and evaluating the patient's condition, assessing their response to illness such as fatigue, changes in body shape and structure. From there, to determine the nursing diagnosis, they will apply their thinking skills combined with their knowledge, experience, and standards of nursing to build a care plan for each client.

According to Orem, nurses must identify why patients cannot meet their demands. And what nurses need to do to help patients meet their needs and how far they can take care of themselves. Nursing care aims to empower patients to meet their own needs. Orem's nursing theory has 3 main concepts (Alligood, 2017).

Nursing system: full support, partial support, and health education support. In which, complete dependence is defined as the patient's inability to perform self-care activities, almost as a nurse must do for the patient. Partial dependency is when the nurse shares the

caring work with the patient, the patient can perform some self-care activities while still needing the support of the nurse. And without dependence is defined as the patient completely taking care of himself/ herself, the nurse is the person who guides and advises the patient (Alligood, 2017).

Lack of self-care ability: the patient needs nursing support. Supportive approaches such as nursing care to provide necessary care to the patient, guiding the patient in certain self-care activities, counseling on self-care, arranging or adjusting the home environment to appropriate to the patient's current or future needs, emotionally supporting the patient (Alligood, 2017).

Self-care capacity: Patients can perform basic personal activities to maintain life and health. A patient's self-care capacity is defined by a person's ability or strength to perform self-care, influenced by basic factors: age, gender, developmental status, health status health, socio-cultural orientation, health care system, and environmental factors. In addition, the necessary elements to maintain the function and structure of the body such as adequate amounts of air, water, and food, maintain the excretory process, and self-regulate to match the changes of the body, injury, or illness (Alligood, 2017).

5.2 Self- Care deficit and HF

In nursing practice, using Orem's self-care deficit helps systematize care planning and organize expertise into a conceptual framework to guide nurses on how and provide evidence for practice to take certain steps to improve patient care efficiency. An important issue in improving quality of life in patients with chronic conditions such as HF is educating patients in their treatment and care. A fundamental principle of self-care is the involvement, responsibility, and commitment of the patient and his or her family. Orem's theory considers everyone as a self-care agent with the ability to perform self-care activities according to his or her abilities. (Yildiz, 2020)

According to Orem’s self-care deficit, to promote the health status of HF patients, it is important to understand the risk factors, raise awareness, and improve self-care and quality of life. Therefore, the theory has been hypothesized to be an effective approach to better chronic disease care, to reduce recurrent hospitalizations, and to minimize medical and patient costs. And most importantly, improving self-care and quality of life, encouraging

patient education, protecting health, and providing behavior change by raising awareness towards developing and teaching home care. (Yildiz, 2020)

Concepts from Orem's nursing theory are well suited to describe HF-related self-care behavior and its limitations. The impact of intensive systematic and planned education from healthcare workers in hospitals and in the home has been evaluated in several trial designs. Despite intensive education and support for patients with HF, patients may not be able to perform all of the self-care behaviors that may be expected. All patients described limitations in knowledge, judgment/decision making, and skill. Supportive educational interventions are effective in enhancing self-care effectiveness, but many other influencing factors are present. (Jaarsma, 2000)

Despite intensive indications and support, some patients reported limitations in self-care behaviour. In this study, a few patients reported without their knowledge that they had to adhere to an appropriate diet or restrict certain foods, or need to be warned a doctor in the case of leg swelling, fluid retention. Important information is forgotten during health visitsproviding care is quite common. Majority of patients do not remember everything the doctor said during the consultation and forgot what doctor said during the visit. But most importantly, increasing patient knowledge may not automatically increase behavioral awareness. Behavioral awareness depends on the individual patient. Potential strategies are to link information with experience in the hospital, this gives the patient a realistic view of self-care at home and helps the patient remember. For example, daily weighing in the hospital can be used as an opportunity to explain increased body water volume, leg swelling, the need to continue this routine at home, and steps to take if any abnormality weight increasing. (Jaarsma, 2000)

5.3 Roy’s Adaptation Model

Roy's model anchors on the conviction of personal adaptation. Her conceptualization about nursing, people, health, and the environment are all connected to this fundamental concept. Roy Adaptation Model sees an individual as a holistic adaptive system that continuous relationship with environment either internal or external. Roy defines adaptation as “the method and result by which envision and sensing person, groups or an individual, utilize responsive understanding and preferences to design environmental and human unification. Every person’s life has a purpose in a creative universe, and people are entangled from their

surroundings, instead of being a human system that only tries to adapt to environmental stimuli to preserve morality (Phillips, 2018)

The etymology of Roy adaptation model for nursing includes cited tasks of Harry Helson in psychophysics, which covered social and behavioral sciences. According to Helson's theory of adaptation, adaptive reactions are justification of the coming stimulus and the adaptive level. A stimulus is anything that causes a reaction. The environment, both internal and external, can provide stimuli. There are 3 categories of stimuli in adaptation level: 1.) Focal stimuli are the internal and external stimulus that often instantly challenge the human system, 2.) Residual stimuli are environmental aspects that are ambiguous outcome in given circumstances, 3.) Contextual Stimuli are stimuli obtainable that provide focal stimulus outcome particularly external and internal environmental cues that influence a person but are not the focus of their awareness or energy (Phillips, 2018)

Roy's model has two interconnected subsystems these are regulator and cognator, the fundamental, effective, or control procedures subsystem. Four adaptive modes make up the secondary, activator subsystem: physiological demands, self-perception, role function, and interdependence. Self-concept group identity adaptive mode focuses primarily on the human system's psychological and spiritual components. The fundamental urge that drives each person's sense of self-perception. Physiological-physical adaptive mode focuses on how physiological processes in people interact with their environment to provide their basic needs for oxygen, health, excretion, activities and relaxation, and security. Role function adaptive mode illustrates the presumptions concerning how a person acquits towards others. Interdependence adaptive mode narrates the interconnections of humans in the community. Obtaining stability in the physical, intellectual, and social of an individual is the goal of the four adaptive modes. The said four adaptive modes are associated with ***perception***, the conscious recognition of a stimulus, and its understanding (Phillips, 2018).

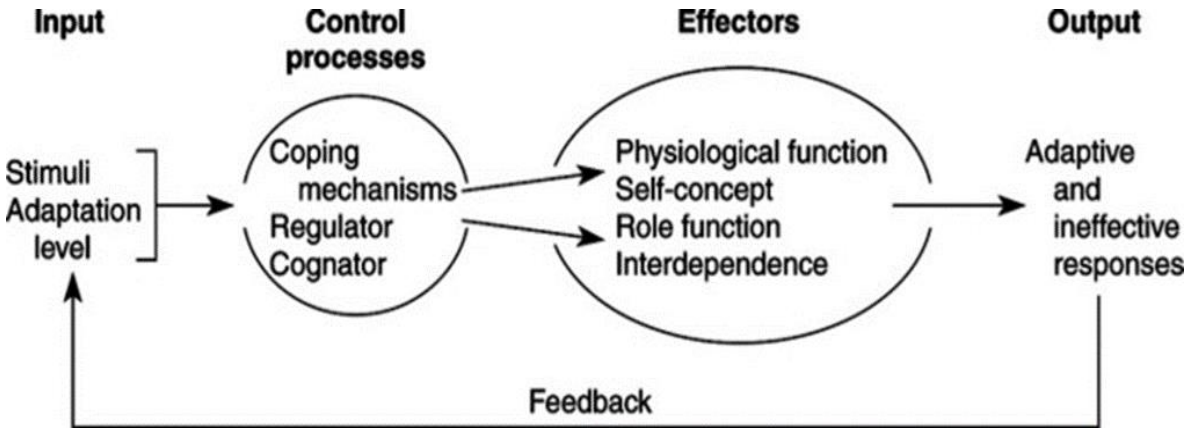

Figure 5 Person as an adaptive system. (From Roy, C. [1984]. Introduction to nursing: An adaptation model [2nd ed., p. 30]. Englewood Cliffs, NJ: Prentice Hall.)

Roy's model concerns the thought on adaptation of a person. Her ideas of person, health, nursing, and environment is all equivalent to this fundamental concept:

Nursing: The general description of nursing according to Roy is that it is "a medical profession that concentrates on human life and its processes and emphasizes the enhancement of wellness for people, their families, organizations, and the community as one.". Roy distinguishes between nursing as a practical discipline and nursing as a science. Nursing science is a progressive body of knowledge involving people that contemplate, categorize, and correlate in which positively influence an individual on their health condition. Nursing as a practice discipline is a nursing methodical branch of knowledge that is utilized with the intention of supplying important assistance to people like encouraging their capability to transform health positively. To advocate adaptation for a person or group in every one of the four adaptive modes, hence promoting health, dying with honor, and quality of life, that's the nursing goal of Roy's. Nursing has a distinctive function as an adaptation facilitator by evaluating performance in all these four adaptive modes and variables affecting adaptation, intervening to develop adaptive capacities, and improving environment interconnections.

Person: Roy claims that people are comprehensive, adaptive systems. The human system is defined as an adaptive system as one that is made up of pieces that work together cohesively to serve an intended objective. Families, organizations, communities, individuals or sets of people and society as one is all part of human systems. Regardless of their huge differences, every individual has a conventional fate. Human systems have cognitive and emotional abilities that are anchored in awareness and significance that allow them to successfully respond to environmental modifications and have an impact on those alterations The environment and people share similar structures, relationships, and significance. An existence, multifaceted, adaptive system with internal mechanisms (a cognator and regulator) functioning to preserve adaptation in the four adaptive modes (physiological, self-concept, role function, and interdependence), Roy described the person as the fundamental subject of nursing and the beneficiary of nursing care.

Health: Health is a condition and procedure of existence and enhancing unified and whole individual. It is an indication of adaptability or the way a person and their surroundings interact. This concept was created by Roy from the idea that adaptation is an approach that

fosters social morality, and intellectual, and physical credibility and that consistency denotes an unmatched state that leads to integrality or unification. In her previous work, Roy regarded health alongside a continuous flowing from death and extremely sick to remarkable and optimum well-being. In the year 1990s, Roy's articles tended to be more concerned with health as a dynamic process in which wellness and diseases may exist together. She wrote that health is not free from the certainty of death, illness, sadness, and anxiety, but rather the capacity to deal with these challenges effectively. One inescapable, concurrent element of an individual's overall life journey is their state of health or diseases. Nursing is apprehensive with this aspect. Disease arises when coping methods are unsuccessful. When a person continuously changes wellness occurs. Individuals are allowed to react to new stimuli as they become accustomed to the current ones. The release of vitality from futile coping techniques can aid in recovery and improve well-being.

Environment: Roy claimed that environment as all the situations, situations, and effects surrounding and impacting the actions and progress of individuals or groups, with a special focus on the reciprocity of individuals and nature resources, including contextual, focal, and residual stimuli. It is the constant changing of the surroundings that motivates individuals to coerce adaptive responses. The environment serves as an individual’s input as an adaptive system including internal and external influences. These elements could be small or significant, harmful, or beneficial. Nevertheless, any modification to the environment requires greater energy for adaptation to the circumstances. Focal, contextual, and residual stimuli are the three types of variables from the environment that have an impact on an individual (Philips, 2018).

Roy distinguishes between nursing as a practical discipline and nursing as a science. Nursing science is a progressive body of knowledge involving people that contemplate, categorize, and correlate in which influence positively to an individual on their health condition. Nursing as a practice discipline is a nursing’s methodological branch of knowledge that is utilized for the intention of supplying an important assistance to people like encouraging their capability to transform health positively. To advocate adaptation for a person or groups in every of the four adaptive modes, hence promoting health, dying with honor and quality of life, that’s nursing goal of Roy’s. Nursing has a distinctive function as an adaptation facilitator by evaluating performance in all these four adaptive modes and variables affecting adaptation, intervening to develop adaptive capacities, and improving environment interconnections (Phillips, 2018).

One set of scientific assumptions has been created by combining assumptions from adaptation level theory and assumptions from systems theory. According to systems theory, human adaptive systems are seen as collaborative components that work together to achieve a specific goal. Human adaptive systems are intricate and diverse, responding to a wide range of surrounding cues to accomplish adaptation. With their capability to modify their surroundings, humans have potential to present changes in the surroundings. Outline features of spiritual creation and integrate the assumptions of benevolence and credibility into one set of theoretical assumptions. Humanism affirms that an individual and their encounters are crucial to have knowledge and to appreciate and they share the ability of innovation. The concept of truth supports the conviction that every human life has a purpose, worth, and significance (Philips, 2018).

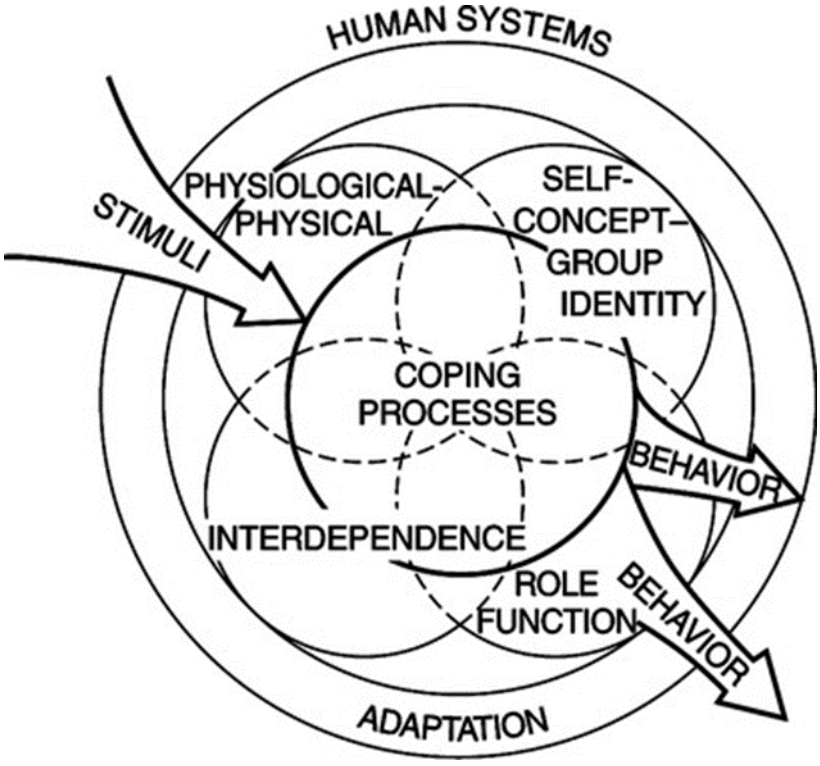

Figure 6 Human adaptive systems. (Roy, Sister Callista; Andrews, Heather A., THE ROY ADAPTATION MODEL, 2nd Ed., ©1998. Reprinted by permission of Pearson Education, Inc., New York, New York.)

The objective of nursing is to enhance adaptive responses. This can be only accomplished through these six steps of nursing process: behavior assessment, nursing prognosis, evaluation of stimuli, objectives setting, intervening, and evaluating. The anchor of the nursing intervention is to dominate the environmental stimuli through modification, developing, reducing, eliminating, or preserving them (Phillips, 2018).

The Roy adaptation model has had a significant impact on the nursing field. One of the models that is most frequently utilized to pilot research in nursing, education, and practice. The paradigm is covered in the majority of nursing baccalaureate, master's, and doctorate programs. The impact of Roy's adaptation model and its contribution to nursing studies is manifested by numerous quantitative and qualitative research articles. The framework has served as an inspiration for the creation of numerous middle-range nursing theories and adaptation methods (Phillips, 2018).

5.4 Adaptation of self-care management among HF patients

To evaluate the impact of a Roy adaptation model-based teaching plan on everyday tasks and weariness in HF patients, the experiment of 60 HF patients in hospitals and samples were designated randomly in two representative selection and intervention. The results showed that following the intervention, there was significant variance between the two groups (control and intervention). The outcome revealed that following the intervention, the intervention group had significantly lower mean ratings for weariness and greater average scores for everyday tasks than the ones in the control group (P .05). In all groups, there was a substantial association between weariness and daily tasks and hospital care frequency and disease duration. Patients with HF who use Roy model-based teaching can experience less fatigue and an improvement in everyday tasks, cost-effective, efficient, and friendly nursing intervention (Abdolahi, Doustmohamadi, & Sheikhbardsiri, 2020).

To determine the impact of the Roy adaptation model-based interventions on HF patient, a quasi- experimental was done in China starting Marc 2018- November 2019. It consisted of 112 patients suffering with HF being observed. These patients were divided into 2 groups, intervention group and controlled group. In the intervention group, a culturally adapted intervention established on the Roy Adaptation Model was carried out. Before being discharged, the control group got bedside patient teaching and a standard handbook for HF self-care. The heart ultrasound, Minnesota living with HF questionnaire, self-care HF index, and coping and adaptation processing scale-short form were utilized to assess the level of patient's adaptation of physical activities, self-identity, interconnection after six months of discharge. The results demonstrated an improvement in adaptation trends. Many of the patients in the intervention group finished more than 60% of the designated interventions. Contrast to the controlled group, intervention group ameliorated adaptive behaviors. The results showed evidence of constructive adaptation for HF patients, specifying that Roy

Adaptation Model is a useful tool for creating an established framework for the patient's nursing care (Wang, 2020)

A random investigation has been done to evaluate the quality of life of patients with HF using Roy's adaptation model. By using the randomized blocked procedure, 76 HF patients were assigned to the intervention or control group in this randomized controlled experiment. The information was gathered between May and October of 2017. For four weeks, the intervention group had both oral and written educational sessions. At the start of the experiment and one month after the study's completion, participants finished Roy's adaptation model-based evaluation form and the Minnesota quality of life questionnaire. When compared to control patients, intervention patients had rationally considerably higher scores on the physiologic, role function, self-determination-interconnection, and overall, Roy's adaptation model dimensions over time (p .05). The result of quality of life significantly increased. The research guide nurses to identify the stimuli and the actions of HF patients. Roy adaptation model can be applied consistently to boost disease adaptation and enhance quality of life (Mansouri, 2019).

Adaptation is the method and results of various control networks that are prompted by multiple motivation, creating reactions that can be categorized if it is adaptable or non-adaptable. Roy adaptation model claims that people are adaptable systems constantly interconnect and adjust to their surroundings which are divided into modes of four: physical, self-identity, function of role, and interconnection. Stimuli are both internal and external occurrences that have the same impact as a person's ability to adapt. To detect the non-adaptive behavior in the four aspects and behavior stimulation, the nurse should thoroughly evaluate the patient using medical record and physical investigation to govern the non-adaptive behavior (Roussia, 2023).

The idea of adaptation is crucial in the context of HF. In recent research, self-care management is referred to as intentional and responsive adaptive actions on the four physical and psychological manners from the adaptation procedure. Whence, self-care routines like keeping track of weight every day or quitting smoking are efficient adaptive habits to keep or regain a stable condition. In this research, they concentrated on the endless information clarification section of the cognate system as described in the Roy adaptation model. The theoretical framework advocates the awareness of self-care management and is a significant motivator of self-care practices. Normally, nursing treatments exist by changing, eliminating, or preserving internal and external stimuli that influence adaptation. In this

research, it was suggested that amending patients misunderstanding regarding how to manage HF and produce proper information, may result in emotional intonation, increasing the patient's capacity to practice operative self-care. Moreover, because of the method, the researchers suggested a nursing education method that aims the stimuli and adaptive modes to encourage self-care behaviors (Roussia, 2023)

6 Result

According to the research questions, three main categories have been found: A) Promoting patient's empowerment. B) Barriers of adapting new lifestyles. C) Person-centered approach. In the first main category is **promoting patient's empowerment**, there are four sub- categories as *"management of symptoms recognition", "Nurse as an educator", "Self-care maintenance", "Psychological support".* The second main category is **barriers of adapting new lifestyles** where five sub- categories are *"Lack of knowledge", "Psychological difficulty", "Adapting to new lifestyles", "Financial difficulty", "Low adherence"*. The last main category is **paient- centered approach in self-care management** where are five sub- categories *"Motivation and belief", "Preference for information delivery", "Patient- provider communication", "Coping mechanism", and "Oral health and CVDs*" are analyzed.

CODE	THEMES	SUB-THEMES
A	Promoting patient's empowerment	o Management of symptoms recognition o Educator o Self-care maintenance o Psychological support
B	Barriers of adapting new lifestyles	o Lack of knowledge o Psychological difficulty o Adapting to new lifestyles o Financial difficulty o Low adherence
C	Patient- centered approach in self- care management	o Motivation and belief o Preference for information delivery o Patient- provider communication o Coping mechanism o Oral health and CVDs

Table 2 Result analyzing in themes and sub-themes.

6.1 Promoting patient's empowerment.

Nurses have unique qualifications to enforce strategies that may help enhance the quality of life and must adapt recommendations based on evidence to international clinical settings. The significance of creating patient education initiatives aimed at enhancing HF patients' understanding and self-care practices (Awoke, Baptise, Davidson, Roberts , & Dennison-Himmelfarb, 2019). Moreover, creating a specialized advanced HF program to treat patients in a developing nation can considerably improve illness awareness and self-care behaviors when guided by skilled HF nurses (Bader, et al., 2018).

6.1.1 Management of symptoms recognition

The increased rate of hospitalization for deteriorating HF is a result of patients' difficulty in identifying and managing the early signs of the condition. As a result, it's critical to

encourage self-monitoring and assist patients in identifying and understanding their symptoms. Six nurses, five of whom were trained in cardiac rehabilitation nursing along with one of whom was certified as a nurse with advanced training in chronic care nursing, took part in the research. In the evaluation, seven categories were found. The five primary themes were "promote patients to meditate on their own," "support touching the body to increase body awareness," " promote sharing the task," "support self-management which does not become excessively sensitive," and " promote involvement in the patient's life." These five main themes described the support given for patient self-monitoring. Creating a support system in outpatient care and struggling with constraints and powerlessness were two more topics that discussed the context-related elements of providing support (Taniguchi, Shimizu, & Seto, 2021).

" Self-monitoring is awareness of symptoms or bodily sensations that is enhanced through periodic measurements, recordings, and observations to provide information for improved self-management. Especially, self-monitoring in heart failure patients has three components, each requiring mastery: "awareness" (the subjective identification of the patient's particular changing situation), "measurement" (the objective identification of the patient's changing situation), and "interpretation" (the process of thinking about and attaching meaning to what one has been identified)" (Taniguchi, Shimizu, & Seto, 2021).

Previous research has shown that patients often struggle to identify and describe the signs of CHF. The depth of understanding concerning indications casts doubt on doctor-patient interactions, such as portraying doctors as inadequate educators who cannot possibly provide their patients with all important information or as unable to develop patients' trust in order to amend their incorrect data gathered from external sources (Plotka, Prokop, Migaj, Straburzynska-Migaj, & Grajek, 2017).

" Some patients simply stated that they do not know when they were asked whether HF symptoms could be improved. Some patients were uncertain. 'In a way 'yes' and 'no' because it's [symptom improvement] just the individual and the medication you take'. Some patients were uncertain when they were asked whether their symptoms could be improved but hoped for symptom improvement. Two patients stated that 'I hope so with the medicines. 'I don't know. I hope they can" (Seongkum Heo, 2021).

Patients with HF need to get more efficient, thorough knowledge about their condition, and pragmatic therapies to improve their ability to control their symptoms. Researchers and

medical professionals must evaluate how well patients are informed about HF symptoms is different to every person and self-care techniques (Seongkum Heo, 2021).

" Nurses specialized in CHF could very well fill this gap. The patients in general know which symptoms are the most alarming, but the majority do not recognize particular symptoms as CHF symptoms or do not link them with one another, that is, sleeping in sitting position with dyspnea or insomnia" (Seongkum Heo, 2021).

6.1.2 Self-Care Maintenance

Self-care involves making decisions that affect the behavior actions to maintain physiological integrity (self-care management) and suitable action to symptoms (symptom management). The understanding of HF patients to their symptoms may affect how they manage themselves and their interpretations of the symptoms can be different from the medical personnel. Symptoms like oedema maybe cause of fluid retention either due to large amount of sodium or fluid consumption and absence of dose of diuretics, whilst dizziness is cause of insufficient blood pressure influence by position change (Seongkum Heo, 2021).

" Self-care even after an individualized educational intervention during hospitalization and after discharge was improved over time, but it was still very poor (self-care maintenance and self-care management at 6 months after discharge: 38 and 55, respectively: adequate self-care. These findings may indicate that increased knowledge through education alone is insufficient to change patients' self-care. Thus, self-care in patients with HF needs to be improved more effectively" (Seongkum Heo, 2021).

In corresponds to the circumstances' theory of HF self-care, majority of reported common factors that affects the mechanism of self-care were the perception about HF self- care behaviors, encounter with medical personnel, confidence about their competence, and norms associated with taking medicines. Work related burdens and preservation of traditions are the most common culturally oriented beliefs that affected people's motivation for self-care. The patients' routines of the patients appeared to be a key enabler of medication and self-monitoring adherence. Unfortunately, some patients mentioned that they could have trouble adhering to their self-care regimen because of their current lifestyle patterns. For instance, eating behaviors linked to socially grounded values of getting together with friends and relatives and upholding traditions to make it harder to follow a balanced diet (Sedlar, Lainscak, & Farkas, 2021).

" Among the reasons for difficulties with regular physical activity, lack of self-confidence, avoiding physical activity in the winter to prevent illness (value of being healthy) and difficulties in establishing new habits (value of maintaining a healthy lifestyle) emerged. Studies show that group exercise programmes have shown success in addressing these challenges, improving exercise self-efficacy, and supporting regular activity engagement of HF patients" (Sedlar, Lainscak, & Farkas, 2021).

Self-care practices among elderly HF patients were favorably correlated with knowledge of health issues and identified social support. Effectual self-care is essential for HF treatment to enhance the patient's expectancy. This includes symptom monitoring, regular physical activity, sodium limitation, and maintaining a healthy weight. According to previous research, social assistance can encourage self-care behavior by increasing local resources for elderly HF patients. Self-care confidence and self-care behaviors can be supported by social support from family and friends (Jo, Seo, & Son, 2020).

" Health literacy and social support have been emphasized in previous studies that focused on individual and environmental factors for effective HF self-management. Health literacy is the capability to understand and use health information and the services required to make appropriate decisions for health and to apply such knowledge in daily life. HF patients with adequate health literacy can benefit from a better quality of life and clinical outcomes through improving self-care behaviours" (Jo, Seo, & Son, 2020).

6.1.3 Educator

For individuals suffering from persistent medical illnesses who are hospitalized, nurses serve as the main educators of home-continuing care. The capability of nurses to teach patients regarding HF self-care is crucial. Understanding of HF among patients was a significant determinant of complete self-care commitment. HF self-care instruction is a normal expectation just before hospital release. HF education for patients and families is provided mainly by hospital-based nurses. To guarantee that the best nursing procedures remain in place, it is vital to understand better the nurses' degree of comfort and frequency of delivering instructions on crucial HF self-care contents. Researchers concluded that nurses who are knowledgeable about HF education may be more confident when teaching patients and could initiate a more exciting learning atmosphere for them (Pratt, et al., 2015).

" Nurse leaders must also heighten the importance of patient education by staff nurses. Education delivery is time consuming, especially when teach back or motivational

interviewing techniques are involved. Nurses may believe that competing responsibilities are more important. If patient education is elevated in importance, nurses will develop novel solutions to ensuring its completion and may be more likely to share gaps in education delivery when giving shift-to-shift reports" (Pratt, et al., 2015).

It's necessary to evaluate HF management strategies to guarantee the ongoing provision of most effective instruction and treatment. Nurses play a vital part in providing patient-centered health information. Insufficient knowledge in HF drug treatment, assessment and controlling symptoms, the origin and severity of HF, as well as a particular action strategy to prevent HF symptom aggravation are the concerns of nurses. Efficient interaction between patients and healthcare professionals was hindered using complicated medical terms by providers, a lack of documentation, interactions that did not encourage open conversation, and respondents' memory issues (Ivynian, 2020).

" For people managing chronic illness, such as heart failure, adequate health literacy is crucial to understand the complex information that underpins self-care, yet evidence suggests poor understanding in this patient population. Gaps in knowledge and poor communication may indicate inadequate availability of multidisciplinary heart failure management programmes and/or fidelity to guideline recommendations" (Ivynian, 2020).

Patient education is essential in developmental health care because it encourages HF awareness and self-care, reduces repeated hospitalization, and increases patient compliance. To take control of their condition and comply with the suggestions made by guidelines, patients with HF must continuously take education (Hart & Nutt, 2020).

" A 25% reduction in 30-day readmissions was seen in the group receiving the standardized inpatient education; however, there was no difference in readmissions among patients who consented to participate in telephone follow-up versus those that declined" (Hart & Nutt, 2020).

CHF-specific nurses could be able to meet this need. Patients are generally aware which signs are most serious, however most of them are unaware of certain symptoms as CHF symptoms or do not associate them with one another, such as sleeping in a seated position with dyspnea or sleeplessness. According to studies done on populations that are comparable to ours, the greater the level of education a patient is, the lower their risk of repeated hospitalization. Not only should a standard hospitalization document be given upon discharge, but an individual instructional discussion with a healthcare provider is also

advised. Such a mindset becomes essential, particularly for senior patients (Plotka, Prokop, Migaj, Straburzynska-Migaj, & Grajek, 2017).

"The level of knowledge about alarming symptoms lays a shadow on the communication between doctors and patients showing either doctors as ineffective teachers, being expected to provide patients with all the necessary information, or incapable of gaining patients' trust to correct their inaccurate knowledge from other sources" (Plotka, Prokop, Migaj, Straburzynska-Migaj, & Grajek, 2017).

6.1.4 Psychological Support

The information gathered led to the discovery of five themes: 1.) application of a wide range of approaches with some understanding deficiencies and inability, 2.) unpredictability in signs advancement, 3.) consideration of various feasible self-care strategies,4.) use of customized methods in searching for medical care, and 5.) the readiness to accept thorough and achievable interventions. Theme one, HF patients utilized few self- care approaches, and most of HF patients utilized different self-care approaches. Theme two, in connection with the understanding of possible symptoms development. Theme three, the approaches is all about medication, minimize exercise, healthy lifestyle, optimism, and reducing weight. Theme four, most of the patients said had obtained therapy right away, however, some also said, based on circumstances, they had put off getting medical attention for several weeks or months. And five, all patients reported that they would participate in interventions to improve their self-care and HF symptoms (Seongkum Heo, 2021).

" One patient said that 'I will do whatever it [intervention session] takes". Another patient said that 'Yeah, I would [participate]. At least try it out and see'. One patient said conditional yes. 'I could, if to see, if, if there are some more ideas out there that could help it" (Seongkum Heo, 2021).

"All the patients used more than one self-care strategy, and the majority of them used a variety of self-care strategies. For example, to manage oedema, one patient used medication, position change, walking, and controlling clothing. 'If it's [leg swelling is] bad, I take me another Lasix. I keep my feet propped up. ... But when we're ... driving ... we pullover, and we walk, ... not wear tight socks" (Seongkum Heo, 2021).

Patients occasionally had erroneous assumptions about assessment or medical care, according to medical professionals. ("Of certain, some individuals also want the medical

system to give them a single medication and all would be well. And that is unrealistic (Sedlar N. L., 2020).

"Difficulties of changing life habits were also acknowledged by healthcare professionals, especially registered nurses, that offer educational and psychosocial support to patients ("…I think, we all find it difficult to change our habits, this is a process that takes time…") (Sedlar N. L., 2020).

There are four confirmed that they had anxiety because of the illness or specifically noted having depression symptoms. They felt dissatisfied and ashamed for being an obligation to other people since they lacked independence and felt dependent on others. Due to HF, three patients claimed they became socially alienated from others, refusing to speak about what they had gone through towards their nearest family or friends (Sedlar N. L., 2020).

Almost half (48%) of informal caregivers reported experiencing anxiety, especially about the future and their ability to manage sudden deterioration ("… that's what I'm afraid of, when it comes to something. That's what scares me. And it is in my mind every day, you know…"). Almost two thirds (62%) of informal caregivers indicated that caring for the patient was sometimes frustrating, especially when they felt that the patient does not want to discuss HF and/or his daily condition, withdraws, does not want to be controlled or does not want to stop working (even when feeling worse) (Sedlar N. L., 2020)

Every patient participated in the studies stated that they were willing to take part in thorough and practical intervention workshops to learn more concerning their symptoms and therapy options as well as to get psychological assistance from other patients as well as medical professionals (Sedlar N. L., 2020).

Self-care encouragement was determined to have impact by measure outlook, embodied by how the present acted as a pivot point for thoughts about the past and future. Limitations to behavior change were correlated with behavior prepotency, as demonstrated by preexisting routines and social behaviors. Individualized approaches to getting past these obstacles were essential for developing one's ability for self-management, presented by the challenging mental management over current practices (Chew, 2019).

" Behavior prepotency is often illustrated as habits, which are conditioned responses to internal or situational cues such as the behaviour of eating snacks when one feels bored even when one is not hungry. This requires executive function (cognitive processes including

working memory, inhibition, and mental flexibility) to exert 'top-down' self-regulation/control over thoughts, emotions, and behaviours to overcome challenges that may steer one off-track from a long-term goal" (Chew, 2019).

6.2 Barriers of adapting new lifestyles.

Self-care behavior in HF patients is considered challenging for both patients and healthcare providers since patients must be proactive in physiological maintenance, symptom monitoring and symptom management. To limit hospital readmissions in HF patients and improve patient health, nurses must be the ones who deeply understand the mechanisms of the disease, know the influencing factors related to self-care, and promote self-care. And importanly, encourage patients to perform good home care procedures (Chew, 2019).

Compliance with treatment regimens such as taking medication on time is one of the important requirements for HF patients. Besides understanding the importance of taking medication, it is also important to disseminate medication side effects. While many patients receive explanation of medicine's mechanism, few are likely to be aware of anticipated side effects (and how to manage them) or of drug interactions (Karpa K, 2016).

Detecting symptoms of the disease and how to respond to HF symptoms is vital. Symptoms include cough, shortness of breath, fatigue, edema, and chest pain. After knowledge about recognizing the symptoms of HF, it is neccessary to educate patient how to manage. There are many patients still can not recognize the symptoms even though they have been diagnosed with HF for many years (Jaarsma T, 2021).

6.2.1 Lack of knowledge

It is common that HF patients lack the necessary knowledge to control their condition. For instance, some patients believe that they can manage the disease with medication, there is no requirement to change the diet (low sodium diet), regular exercise, or weight monitoring. These misunderstandings have led to incorrect self-care behaviours and resulted in hospital readmissions due to worsening of the disease. The information that nurses instruct patient needs to be accurate, consistent, and appropriate to each stage of the HF patient's illness (Seongkum Heo, 2021).

"The mean (± standard deviation (SD)) HF knowledge score of participants was 8.4 ± 3 points with a range score of (0–14 points) out of a possible maximum score of 14." (Seid, 2019)

"Lack of knowledge and misconceptions about the disease were noticed in some patients' (16%) and caregivers' (19%) answers ("…This is not a serious disease; she doesn't have urinary incontinence, uses the bathroom independently, eats normally, brings food, has no problem with other basic daily activities…") and were recognized as an important barrier by healthcare professionals as well." (Sedlar N. L., 2020)

"One reason for the lack of knowledge reported was that healthcare providers did not provide information about self-care in detail. '… he [the patient's physician] said low sodium. I don't remember if he said keep it under any milligrams. I don't recall him saying that." (Seongkum Heo, 2021)

"Almost a third (31%) of patients and some (19%) informal caregivers reported that eating a healthy diet and avoiding salt was more difficult for them due to insufficient knowledge (i.e., how much salt is contained in processed food)." (Sedlar N. L., 2020)

Many patients are knowledgeable about self-care behaviors such as fluid restriction and sodium restriction. However, they are not well informed about how many grams of salt they should eat daily, which foods contain high amounts of salt, and how much fluid they should consume since the body mass is individually (Chew, 2019). In addition, research showed that most of the HF patients have poorly acknowledge in terms of recognizing signs and symptoms. (Seid, 2019)

6.2.2 Psychological difficulties

It is not easy to always maintain positive and motivated, it is challenging not only to deal with symptoms, but to change in lifestyle and adapt in new habits. Many patients reported that they experienced depressive symptoms, feeling burden and frustrated. (Chew, 2019) The presence of psychological distress associated with poor self-care in several research report. (Seid, 2019)

"More than two thirds (69%) of patients with HF reported experiencing negative emotions (helplessness, despair, frustration, anxiety, feelings of uselessness) due to physical and work restrictions." (Sedlar N. L., 2020)

"Three patients reported they socially isolated themselves from others as a consequence of HF, not even sharing experiences with their closest relatives or friends ("… I no longer like visiting others, they said I've isolated myself…")." (Sedlar N. L., 2020)

It is fact that HF can take toll in psychological. Many patients reported that no matter how hard they have tried but the symptoms and the condition is keeping going down, making their motivation drained. (Chew, 2019)

"Actually, I think I've already done everything I can. Like take medication and limit water and salt. But still, your condition can deteriorate. So sometimes there's nothing you can do about it." (Chew, 2019)

"Patients in our study emphasized feelings of uselessness, helplessness, sometimes isolation; the majority of them expressed frustration regarding their inability to work and loss of autonomy." (Sedlar N. L., 2020)

Patients who are older or have other chronic comorbid diseases believed that they could die at any time from HF or comorbidities. Therefore, it is more important to enjoy the present moment and the pleasant rather than trying to change their lifestyle for an uncertain future. (Chew, 2019)

"No need to hold on too much already. If it is tasty, I want to drink, I will just drink. If die, then die. Because at my advanced age, I don't care so much. Happy can already. Battery, there is time. If it wants to stop, it stops. Don't think. You think also no use. Nothing much to change." (Chew, 2019)

"Patients who had no chronic comorbid diseases were 2.6 times more likely to be good adherent than patients who had chronic comorbid conditions like HTN, KD, HIV, Hyperthyroidism, and Diabetes." (Seid, 2019)

6.2.3 Adapting to new lifestyle

Changing lifestyle, avoiding unhealthy habits, and diet is one of the difficult barrier for HF patients. Research shows that patients of all ages have difficulty in adapting new lifestyle. In older patients, it is difficult to adapt in terms of having to do more exercise, or difficulties while having other chronic comorbid diseases. Younger people tend to have difficulty in making healthy lifestyle changes since it is required to compromise their life patterns, and roles. (Sedlar N. L., 2020)

"Almost half of the interviewed patients (44%) stated that comorbidities are complicating their attempts to manage HF ("…I drink 1.5 L of water per day, I should not drink more… but I should drink more water because of my kidney disease… now I don't know what to do…")" (Sedlar N. L., 2020)

"Working participants commonly mentioned time constraint as a major challenge in performing physical exercise as they were already exhausted after work and some even had family commitments such as looking after their children." (Chew, 2019)

Dietary habits

Several studies showed that personal dietary habits and sociocultural dietary norms are hard to change. Especially when it comes to remade food such as ready food, or restaurant's food. We cannot deny the convenience, but it is hard to know or control the sodium contains in the meal. (Sedlar N. L., 2020)

"Because come back already very late. More tiring (if have to cook at home)" (Chew, 2019)

"Cultural food preference as a barrier to the adoption of a low-salt diet], our findings showed that participants encountered difficulties in deviating from sociocultural dietary norms." (Chew, 2019)

"Food is a mean for social bonding especially in a multiethnic society like Singapore, where the Singaporean cuisine bonds Singaporeans with a single identity. However, these traditional foods are usually unhealthy: traditional Indian (e.g. Indian curry), Malay (e.g. Nasi Lemak or coconut fat rice) and Chinese food (e.g. char kway teow or noodles fried with dark sauce) which are high in salt, fat and sugar." (Chew, 2019)

"Sometimes it's just a matter of you are just busy or bored then you will snack a little bit just to de-stress or kill a little bit of time that's all." (Chew, 2019)

Financial difficulty is also a problem in adapting in new healthy diet. Some patients reported that they are aware that eating fish is better for their health compared to pork, however, pork is a lot more affordable so they can have it more often. (Sedlar N. L., 2020)

Physical exercise

Many patients report that physical exercise is time consuming, and some find it boring. However, most of the patient are aware of the important of engaging physical activities in

daily living to maintain a good heart health and ideal BMI. Some patients try to integrate the exercise into daily activities and make it more enjoyable. (Chew, 2019)

"One participant verbalised difficulty in finding time to exercise and that he only exercised on day-offs." (Chew, 2019)

"Walk at the mall. Like every 2 or 3 days. Half an hour" (Chew, 2019)

In older patient, it is more likely to have physical limitation due to comorbidities and some patient reported that they are not sure what type of exercise that their bodies can tolerate. (Sedlar N. L., 2020)

6.2.4 Financial difficulty

Healthcare providers report that financial and economic issues such as low retirement income and social support, or lower income due to being unable to work, losing a job, have impacted self-esteem and patient's self- care. Limited costs for healthy food choices, medications, transportation to medical appointments, and not enough to buy support equipment like blood pressure monitor. (Sedlar N. L., 2020)

"No, no. I don't have any control over my food. I don't have enough money to do so. That is the fact. What to do." (Deepak Y. Kamath, 2021)

People experiencing financial hardship often cannot afford certain foods, and medications or supplements they need to engage in self-care activities. They are often stressed about living and medical expenses, which could greatly impact their self-care behaviors. According to statistics, housing cost, and existing debt is one of a common a burden for patients, which affect on their physical and mental health. (Weida EB, 2020). Furthermore, patients with HF who experience major financial difficulties will have a lower emotional, social, and spiritual quality of life. Statistics show that poorer ability to coordinate and respond to health care makes them perceive themselves as a burden to family members (Malhotra, 2021).

"In the face of financial difficulties, advanced CHF patients may prioritize their treatment expenditure to ensure their physical QOL, and thus may have fewer remaining resources to invest in activities to improve other aspects of their QOL—social and spiritual." (Malhotra, 2021)

"On the other hand, those with financial difficulties may not have been able to afford expensive treatment options and services. This may have negatively influenced their perception of health care coordination and responsiveness." (Malhotra, 2021)

	N=250 *N* (%)
Cover the cost of treatment	
Very well	91 (36.8)
Fairly well	92 (37.3)
Poorly	64 (25.9)
Take care of daily needs	
Very well	125 (50.6)
Fairly well	86 (34.8)
Poorly	36 (14.6)
Buy little "extras"	
Very well	75 (30.4)
Fairly well	87 (35.2)
Poorly	85 (34.4)
Reporting 'poorly' in none of the above 3 domains	146 (59.1)
Reporting 'poorly' in 1 of the above domains	47 (19.0)
Reporting 'poorly' in 2 of the above domains	24 (9.7)
Reporting 'poorly' in all 3 domains	30 (12.2)
Mean financial difficulties score (SD); Range: 0–6	2.6 (2.1)

Figure 7 Perceived financial difficulties among the participants in the study. (Malhotra, 2021)

The table showed how financial can impact on self-care behavior. Only 36,8% of the participants reported that they can cover the cost of treatment and 50,6% can take care of daily needs very well. This explains that patients who perceived high financial difficulty are likelier to have lower social, and spiritual quality of life.

6.2.5 Low adherence to self-care management

Although patient education was adequately provided by nurses, patient compliance with self-care, including maintenance self-care and symptom management, is poor. Many patients believe that it is not easy to keep up with all the complex medication regimens, low-salt diets, regular exercise, and weight monitoring. Surveys show that most patients have a good sense of adherence to medication, but compliance with diet, symptom monitoring, and weight is poor. (Seongkum Heo, 2021)

"From individual self-care recommendation, higher levels of good adherence were noted for follow-up appointments 266 (85.8%) and taking prescribed medications as directed 257 (82.9%). However, most patients had higher levels of poor adherence to exercise 250

(80.6%), body weight monitoring 284 (91.6%), and fluid restriction 240 (77.4%).” (Seid, 2019)

Compliance with self-care recommendations also depends on the patient's knowledge and education about the signs and symptoms of HF and self-care behaviors. Statistics show that well-educated HF patients are 2.5 times more likely to adhere well to the recommendations than patients with a poor level of knowledge (Sedlar N. L., 2020). The relationship between the patient and the nurse, or caregiver, also has an influence on the patient's adherence to self-care. Patients who often miss the check-ups and do not comply with doctor's appointments often have a higher rate of non-compliance with self-care at home than patients who visit and have a close relationship with their caregivers (Seid, 2019).

6.3 Patient- centered approach in self-care management.

To achieve the best self-care plan, it is necessary that HF patients understand their condition and basic information about why self-care behaviors such as consuming less sodium and managing weight are required. There is varying evidence that shows that many patients have poor comprehension. And one of the key things to explore the matter is to be patient-centered, study about knowledge gaps. Focusing on patient perspectives on health communication in HF is essential to understand how to best provide helpful information to empower patients to become more involved in self-management. From the patient's perspective, understanding what type of information is most valuable is crucial to facilitating high-quality patient education and promoting a comprehensive understanding of health. (Ivynian, 2020)

6.3.1 Motivation and Belief

Maintaining self-care behaviors requires both discipline and motivation. Studying what impacts the motivation in self-care management is essential for healthcare provider to better care and encourage patients. Besides maintaining the adherence to medication, it is important to be motivated in changing life habits, and the influencing factors identified were perceived beliefs about value, personality, gender, age, cognition, self-efficacy comorbidities, and social support. The result of the interview has showed that motivation and belief is different from patient to patient. (Chew, 2019)

Family consideration

"My worry is that if I were to go, my missus will be very sad. That's the only thing that bugs me. Whatever keeps her happy I will try. So, she's my main motivation". (Chew, 2019)

"At this moment, keeping me going is my wife and my girl. My girl is still young, she is only 5 years old. Then my wife is not independent at all. So slowly I have to train them." (Chew, 2019)

"Because I want to look after my wife. My wife not so well also. I got to keep myself fit. In order to look after her. No other motivation" (Chew, 2019)

Research shows that the family group section is more strongly associated with voluntary motivation than others for medication compliance and healthy diet adoption. Participants undergo family support education and intervention sessions, including education on how to reduce negativity from family toward the patient during treatment. The results show that simply being attached to the patient's family can improve the patient's self-care motivation regardless of how supportive the family is. Depending on the degree to which the person finds it meaningful and the level of family cohesion (Chew, 2019). Spiritual and emotional support from family and friends can help patients live with the disease and improve their ability to self-care. (Seongkum Heo, 2021)

Fixing the wrongs

"That time I should have come back for regular follow-ups. I didn't. I was very headstrong. Regret already. Now can save then save (prevent the condition from worsening)" (Chew, 2019)

"If this happens again, cannot save. If you don't look after yourself, you eat already at most 2 to 3 months you come back and lie on the hospital bed. Very suffering" (Chew, 2019)

Changing lifestyle behaviors is complex and requires motivation and self-regulation to stay on track. To be motivated to be more healthier, most of the patients often look to the future, however, the past experiences such as tiredness, hospitalized also contribute to motivation for better current behaviors. Patients mentioned feelings of regret for neglecting their health and not wanting to go through that again. This motivates the patients to become more grateful and appreciative of their health. (Chew, 2019)

Stay positive.

A positive self-concept hugely impacts choices in various aspects of life and positive coping and health. More importantly, it increases satisfaction and happiness in life. Patient who has a positive self-concept experiences lower levels of stress than patients with a negative self-concept and life. (Amouzeshi, Safajou, Kazemi, & Kianfar, 2019)

"I think positive thinking is very important. You cannot just because of one-time heart attack then you totally put yourself so low and then no motivation at all. You have to be more aggressive to think positively and build up yourself." (Chew, 2019)

For some patients, religion contributes to positive energy and fulfils hope when they are diagnosed with HF. They believe that God has helped them overcome the difficulties of daily life by bringing peace of mind. They feel that religious belief is very important, and they are more comfortable after practicing religious rituals. (Caterina Checa, 2020)

"this suffering… what I am suffering now I do not know if many people would endure it… and I have faith… because if not… you will be buried… God helped me because I was not well, I did not do anything wrong in life…" (Caterina Checa, 2020)

6.3.2 Preference for Information Delivery

Sources of HF information from physicians and nurses are preferred because they are considered trustworthy and can provide the most relevant key HF information. Participation in cardiac rehabilitation programs is a key factor contributing to increased knowledge and understanding of HF. But research shows that the majority of patients do not always rely solely on healthcare providers. After being discharged from the hospital, patients often learn and read more information from other sources such as online newspapers or their acquaintances. However, patients think that information in booklet form is much more helpful than information found on the internet like Google because of its high reliability. (Ivynian, 2020)

"Participants voiced that they would like resources and information in a variety of ways including written (leaflets, booklets, posters), electronic (email, internet) or through the media (patient information, advertisement)." (Sanchez, 2017)

Using the internet to find information is very common, but it is difficult for patients to distinguish which information is trustworthy. Reliable information needs to have an accurate

source, based on many evidence-based studies, however not all accurate information can apply to everyone because of different contexts and different health conditions. Many patients say the Internet is still an excellent tool to find information when they have questions outside of scheduled visits. (Sanchez, 2017)

"I either ask the GP or I ask the cardiologist when I see him but I only see him usually twice a year...So I would google it (laughter)...you understand that the information you may get you can't take that as the gospel, you need to check that up.." (Ivynian, 2020)

Patients believed that information about HF provided by healthcare providers is sometimes inconsistent, incomplete, or lacking in detail, leading to a lack of understanding. As a result, patients themselves connect pieces of information, often from different sources such as online research, to create a bigger picture. Lack of information about how drugs work is a prime example. (Caterina Checa, 2020)

"It's normally the nurses who come in and say, 'the doctor has prescribed this and this' and you ask the nurse and she says 'oh, it's just for that'. But they don't actually explain to you what 'that' is. That's been another one of my ongoing sagas with the hospitals. They don't explain to you enough what tablets they are giving." (Ivynian, 2020)

Insufficient or inaccurate patient communication about management details has contributed to an overall a negative healthcare experience for patients. Patients believe that HF information provided by providers is incomplete, not explained thoroughly, or not communicated at all. Besides, the fact that doctors and nurses do not have much time in the meeting with patients also negatively affects knowledge about self-care behaviour. Many patients emphasized the need to tailor the information specifically related to etiology, medical history and comorbidities, and other informations. In cases that patients have other underlying medical conditions, they usually want to hear about how HF is related to their current illness, the changes in medication, and self-care behaviors. Many patients believe that a combination of verbal information, and the recommended images and text, is the most effective way to convey information, emphasizing the importance of written information for later reference upon discharge from the hospital. All patients expect information to be provided face-to-face and periodically to facilitate retention and memory of information. (Ivynian, 2020)

6.3.3 Patient-provider communication

Poor communication can lead to knowledge gaps in patients during self-care management. One of the barriers to effective communication between patients and healthcare providers is the use of complex medical terminology, which makes it difficult for patients to understand. Or not explaining the medical terms simply to the patient leads to misunderstanding and decreasing the effectiveness in educating. (Ivynian, 2020)

"...because she just speaks...she doesn't speak in long words or anything, she just speaks so that anybody would understand what she was saying." (Ivynian, 2020)

Conveying too much information at once, and especially using medical terms, makes it difficult for patients to recall facts and names. Critical information such as symptoms, treatments, tests, and diagnoses, leads to knowledge gaps and affects communication with providers. Patients think that taking notes is one of the ways to remember. Recording also helps convey important information to other healthcare providers, facilitating ongoing management. (Ivynian, 2020)

Comfort in communication and the relationship between patient and healthcare provider are also important. Patients report that if the relationship between them and their provider is good, it is easier to openly communicate. This requires a combination of trust, compassion, flexibility, and two-way communication. Patients also reported that doctors sometimes are not open to asking questions and expected compliance, disregarding the patient's right to know and make decisions according to their wishes. (Ivynian, 2020)

"Doctors are a funny group. They don't like to be questioned on decisions...they should realise too, it's your life they are dealing with, not their own..." (Ivynian, 2020)

"...see this is the other thing 'I'll do as I'm told' because in our day...it's rude to ask the doctor something, you know, you just accept it." (Ivynian, 2020)

Many patients report that they appreciate good characteristics from the healthcare provider such as kindness, affection, honesty and compassion. Overall, they feel that health care professionals were concerned about their health status during the early stages of treatment and want to have a good progress in their treatment. However, during the period when the disease is stabilized, patients notice that they are less involved and face-to-face with caregivers, which leads to a feeling of loss of reasonable control over self-care. (Caterina Checa, 2020)

6.3.4 Coping mechanism

Self-care management is a naturalistic decision-making framework, decided in the context of real-life situations that the patient faces such as different information, goals, financial problems, health, coping with life changes. Cultural factors and beliefs are also factors that impact the quality of self-care in HF such as different factors mainly gender, geography and the society in which they grow up, form beliefs, worldview as well as corresponding habits and behaviors. (Deepak Y. Kamath, 2021)

Cognitive coping strategies

Managing medications and symptoms is one of the top ways to prevent the worsen of HF. Most patients claim that they often face this problem and emphasize the fact that they need constant changes in medication and dosage. Diuretics are one of the most commonly mentioned medications by patients, and although taking them is generally easy, there can be downsides such as frequent urination and required weight management. (Deepak Y. Kamath, 2021) Some patients report that blood pressure measurement is part of their routine and objectively important for good symptoms control, as is weight measurement when possible. However, only a few people mentioned about quitting unhealthy habits such as smoking even though smoking is one of the habits that directly negatively affects HF self-care management. (Caterina Checa, 2020)

"Well I take this as a routine… I am a very pragmatic person… I wake up, I weigh myself, I take the pills… the diuretic one first…that's a recommendation, I measure my blood pressure, I measure my sugar levels… I have to have everything under control, sometimes it gets wrong in one way, sometimes to another…" (Caterina Checa, 2020)

Diet plays an important role in self-care at home in addition to medication management. This coping strategy is seen as a simple adherence to healthy, wholesome food principles. The patients followed general recommendations and established a low-sodium and water-restricted diet. However, there are many patients who report feeling these are too strict because in addition to the HF guidelines, they also follow other coping strategies for their comorbidities such as diabetes, or kidney disease. (Caterina Checa, 2020)

"Well, especially the diet… because in the last analysis, besides the sugar, there was also the salt… they are suppressing everything! This is too much. Sometimes they even ban beer without alcohol…" (Caterina Checa, 2020)

Emotional coping

For many HF patients, progressive HF has an impact on their mental health. Research shows that most women feel sad and depressed when getting diagnosed. They believe that the disease affects mental health and affects their role as a women in the family. This makes them depressed and anxious more often. However, men tend to be more relaxed and even optimistic about being cured. Since mental health always has a particular impact on physical health, some patients recognize this and find many coping strategies to improve it. The common strategy is by doing basic activities such as watching TV, reading books, exercise, positive thinking and build social relationships. These activities are beneficial in coping with emotions, it helps to stay toward the positive, being grateful for having family and relatives by their side, maintaining good social relationships. (Caterina Checa, 2020)

6.3.5 Oral health and CVDs

In recent years there has been increasing evidence linking periodontal disease to CVDs and its adverse outcomes. Studies show that periodontitis leads to the entry of bacteria into the circulatory system, leading to severe inflammation and subsequent plaque formation thereby increasing the risk of CVDs. A study in the Netherlands with 60,174 participants reported that periodontitis and atherosclerotic cardiovascular disease have an association. Periodontal disease can increase the risk of CVDs recurring by up to 1.5 times. There is currently no confirmation that effective periodontal treatment can improve cardiovascular health, but studies highlight the need for CVDs patients to receive good oral health education to avoid possible risks. This proves that more research supports oral health care as part of a patient's self-management regimen. However, international reports show that most cardiovascular patients are unaware of this connection, and only a few take care of their oral health. (Paula Sanchez, 2017)

"Never heard of oral health with being a relationship to heart—it's never been discussed with me" (Paula Sanchez, 2017)

"When I go to my local dentist he does have sign up in his reception saying that there is a link. I didn't understand the details" (Paula Sanchez, 2017)

Most patients do not know about the connection between oral health and CVDs, or many patients believe that they have only heard about the connection, but do not know the details. Cardiovascular patients reported that they received this information through nurses and

dentists, not from cardiologists. However, information confusion was also noted when some patients said that their dentist believed there was no connection between heart attack and oral issues. (Paula Sanchez, 2017)

"I told her [dentist] that I had a stroke and heart attack and she told me no, that one thing [oral health] had nothing to do with the other" (Paula Sanchez, 2017)

"They told me that the oral health or the health of the teeth affects the internal organs….That is what the dental nurse explained to me" (Paula Sanchez, 2017)

One of the barriers related to dental examination and treatment identified by most patients is financial and assessibility issues. According to a report in Australia over the nine years from 1994 to 2013, the proportion of people going for regular dental check-ups decreased, even though they were partly covered by insurance. The second barrier is in accessing public services. Patients reported that to save costs they often choose public hospitals, but the waiting time is usually very long (waiting time on the phone and waiting time for an appointment). (Paula Sanchez, 2017)

The lack of awareness about oral health in CVDs patients is determined by many factors. One vital factor is that the amount of dental care information provided by clinicians is inadequate, or not provided at all. Most reports show that no information about oral health is provided during cardiac appointments or general health care encounters, only except mandatory visits to the dentist before heart surgery or major surgery. However, in the above situations, patients have not been informed why they need to see a dentist to prepare for surgery. This leaves some patients wondering whether nurses and cardiovascular health providers are receiving adequate training to promote oral health. Additionally, most patients indicated that cardiovascular nurses should be the ones promoting oral health in the cardiovascular setting. They reported that they would feel the most comfortable receiving dental knowledge from nurses and assessing and referring them to oral health specialists when necessary (Paula Sanchez, 2017).

7 Discussion

In this part of the study, the authors will discuss the findings reviewed in the results section and explain carefully and succinctly so that readers have a clearer view and deeper understanding. The goal of this section is to provide answers to the three research questions

based on the research findings. The authors will use data analysis methods, strengths and limitations related to the research process.

7.1 Discussion method

Method discussions aim to guarantee that the quality of the research is preserved. This part of the research discussed the process of gathering and how the quality of the information's was assessed. A systematic review is the most trustworthy source of information to navigate medical practice. It intends to outline the accessible documents to address the primary concerns. A systematic review's main features are a specified collections of goals with predetermined qualifying criteria, a systematic approach to finding all the pertinent studies utilising the qualifying criteria, an evaluation of the standard of the selected academic endeavour, and an easily understood and consistent process. It is necessary to determine the procedures to be employed, which means that before commencing the review, a critic must comprehend the entire revision process. An informative proposal aids as a framework and, more significantly, provides the clarity required for this kind of study (Holly, Salmond, & Saimbert, 2021).

The vital strategy in orchestrating unparalleled scientific research is to formulate a research question that will serve as a roadmap for your research's design, evaluation, and research report (Raich & Skelly, 2013). Transparency eradicates uncertainty and lets anybody choose the study and follow the procedure the same to guarantee of getting the same outcome. Researchers included inclusion and exclusion criteria for the studies to decide on our inclusion of articles. In addition, the authors utilised some approaches to finalise a comprehensive investigation and, at the same time, keep transparency along the way. Pre-establish appropriate databases and what terms to look for within every database's abstract, title, and keyword sections; the article search's keywords and index terms should be searched in all relevant databases; extend the search by looking through the articles' reference lists that were found. Furthermore, the researchers carefully gathered articles that could possibly answer the research questions and the aims.

In systematic reviews, "quality assessment" frequently signifies defining the research's "internal validity." If the research lacks the primary methodological prejudices, it is considered internally credible. Examiners can assess the reliability of the research by carefully examining the rationale that flows from the data-gathering process, evaluation of the information, findings/outcomes, and conclusions. When evaluating the research's

quality, certain authors consider its "external reliability" or universality. Using a set of criteria to classify research is a standard method for evaluating its reliability, for instance, rating the research according to similar methodological standards for inclusion and exclusion. In outlining the study, qualitative and quantitative research have distinctions because of the differences. Typically, it needs different checklists. Moreover, checklists have been created to assess other qualitative and quantitative investigation subcategories. Bias is probably the most crucial thing to evaluate. Prejudice may have been initiated during the creation of the systematic review, or it could have existed in the preliminary research. In peer-reviewing systematic reviews, assessing the potential for bias created throughout the evaluation procedure is crucial (Xiao & Watson, 2017).

The goal of the Transfer Method is to assist the review writers in creating systematic investigations that are more beneficial to policymakers. TRANSFER offers instructions to review researchers concerning how to think about and evaluate the transferability of revision outcomes through working with stakeholders to determine the concerns of the review, determine components beforehand which could impact the transferability of review results, and describe the components of the circumstances provided in the review concerning the cited transferability aspects. The transfer method is the primary endeavour to ponder the transferability of evaluation results contexts mentioned in the paper systematically and transparently from the onset of the analysis procedure through validation of appraisal of reliability and conviction in the data supporting the analysis outcome. Besides, assessing transferability is acknowledged as a foundation that provides precise information regarding associating with shareholders to guarantee well-informed assessment (Munthe-Kaas, Nøkleby, Lewin, & Glenton, 2020).

To verify the research’s transferability, identical and consistent data were gathered in connection with the research’s argument and goal. During the research, the authors describe the key factors that need to be considered for the outcomes to be transferable, in addition to the vital function that the viewer performs in this procedure. Lastly, we go over various drawbacks and restrictions on transferability that researchers should be concerned about while organising and carrying out a research project that might generate outcomes that are possibly transferable.

The researchers must be confident that all the gathered data or information is substantial. The primary interest is to ensure that no research is disregarded that could influence the study's conclusions. Maintaining the credibility of systematic review is critical to preventing

the study's inefficiency and assisting in managing evidence. The British Journal of Dermatology (BJD) point of view that these articles require thorough, methodical scientific evaluation, with the ideal review panel consisting of an information specialist and an expert in comprehensive evaluation techniques. The increase of methods that are accessible to evaluate the validity of data and assessment shows how challenging this could be. Evaluators must verify that proposals have validity in the evidence obtained during the evaluation and ensure any restrictions and variances within the procedure and review are addressed. Presenting instructions, such as MOOSE or PRISMA, guarantee a thorough explanation of the methodology so readers can assess the study's integrity and validity (Garcia-Doval, Van Zuuren, Bath-Hextall, & Ingram, 2017).

Various aspects during the data-gathering process can guarantee the validity of the qualitative data and ensure their credibility. These can be achieved by the participants' approval or member verification, examiner, conceptual triangulation, and the meticulous methods employed in data collection. After the authors have enough articles for their study, they meticulously selected the best and the most relevant articles, in full text, peer reviewed. Additionally, the full-text analysis offers a chance to double-check inclusion/exclusion and include PRISMA to shows the transparency of the articles used in these studies.

In both professional and academic settings, systematic reviews are an invaluable resource for nurses. Effective systematic review, often encompass meta-analyses among other things, provide an effective approach to assess vast quantities of data for administrators in the fields of patient care, regulations, and studies. The procedure is thorough enough to ensure that study outcomes are consistent and appropriate for a variety of contexts and demographics. The most eligible integrate studies obtain multidisciplinary presumptions regarding the meaning of the literature, associating theories to data and data to theories. Excellent systematic evaluations are accurate, unambiguous, and consistent. These criterions provide guidance for writers pursuing to do systematic research or to all reviser looking for articles to promulgate (Owens, 2021).

Developing an effective research proposal requires time. The greatest opportunities to possibly get inspiration for brilliant, original research topics are conferences, business relationships, and knowledge of the advantages and disadvantages of the existing studies. It may require an extended period for proposals from these sources to merge and generate the innovation process. Utilizing Population, Intervention, Comparison, Outcome (PICO/PPO) approach is indispensable for modifying the research question, construct the foundation for

your research, and prepare for either initial research as thorough exploration of the literature. The greater concentration exhibited by your research query, greater probable it is that you will uncover a significant solution (Raich & Skelly, 2013).

The inclusion and exclusion criteria for the subject of the investigation ought to be specified in detail, along with the subject matter itself. The quest for information needs to be thorough, encompassing several tiers of evaluation enhanced by additional exploration of the sources indicated in the preliminary findings. Lastly, in order to illustrate the necessary steps to replicate the study, an in-depth explanation of the method used must be included in the publication of the findings. A systematic review's integrity can be ensured and conceptual conflicts between various study forms can be avoided by considering these well-established specifications, which are readily available in the scientific literature (Owens, 2021). The reliability of qualitative data is guaranteed when information has been double-checked during the process of gathering and analysing information to make sure the results are expected to be replicable by other people. A precise recording coding scheme that describes the numbers and patterns encountered in analysis. And last, reliability can also be guaranteed by a data check before analysis.

7.2 Result discussion

In this study, evidence was collected about patients' perspectives on self-care management at home, as well as the difficulties which patients have to face. Additionally, the advantage of patient education by nurses to yield more effective outcomes are also emphasized. Self-care is considered the most important aspect of HF management, and promoting self-care through education is integral to patient-centered care and support from the patient's challenges (Deepak Y. Kamath, 2021). To understand and improve HF patients' self-care behaviors, nurses as direct caregivers need to understand and cope with patients' different challenges and difficulties since every patient has different circumstances, various challenges in meeting patient health care needs and preferences (Ivynian, 2020). Therefore, this study focuses on patients' difficulties and the perspective in self-care management. Hence, nurses could figure out the cause as well as solutions to improve the role of nurses and patients' health during HF treatment.

After reading and analyzing all the relevant research and theories related to the findings, it was determined that Orem's self-care theory and Roy's adaptation theory were the most appropriate for this study. The research articles selected in this study emphasize self-care

behavior and adaptation requirement of HF patients. According to Orem theory, the nurse is the one who motivates patients to actively engage in self-care and empowers them to adhere to more self-care activities by providing caring and trusting relationships. And above all, there is required to change the living environment and living habits of optimization in the care process through the emphasis of Roy adaptation theory.

The results of the study suggest issues that should be addressed when engaging in patient education. According to Orem's self-care deficit theory, it is strongly recommended to support and maintain a certain level of independence when taking care of patient. Promoting self-care management is one of the first interventions to guide and increase the independence in self-care of HF patient (Alligood, 2017; Taniguchi, Shimizu, & Seto, 2021).

Comfortable patient-nurse relationships in HF self-care education are associated with quality education for hospitalized patients. HF self-care content that patients should be exposed to and monitored during their visit, such as medication use, low-sodium/ healthy fat diet, and activity and oral health, should be prioritized during their visit, examination and monitoring. The communication time between the nurse and the patient is very important. Many patients believe that the meeting is too short and the amount of information is too much, making them uncomfortable and ineffective in recepting (more than 50% of nurses spent less than 15 minutes per patient on heart failure education before discharge). Therefore, it is strongly recommended that nurses should organize information, time and improve communication as is a top priority for HF educating and self-care expectation (Nancy M Albert, 2015; Paula Sanchez, 2017).

To be a good educator, a nurse must learn how and what to address patient's conditions and situations. It is necessary to get to know patient's living conditions, difficulties that patient is facing in order to efficiency in supporting and educating. According to Orem's theory, the main theories that exist are self-care theory, self-care deficit theory, and nursing systems theory, which describe the role of the nurse as an advocate, and educator. Therefore, identifying relevant factors such as enviroment, individuality to perform well in the role of a caregiver and guide is necessary (Alligood, 2017; Yildiz, 2020).

According to Roy Adaptation Model, environment and health and person have a strong connection, understanding the link helps enhance the efficiency in nursing support. In addition, assessing the level of health literacy needs to consider an individual's social context such as living arrangements, which medical facilities the patient accesses, and interactions

with others health care providers. The above assessment helps determine how the patient manages self-care behaviours. (Jo, Seo, & Son, 2020; Phillips, 2018). However, a survey of nurses working in emergency, medical-surgical, and telecardiology settings, short-term patient care only provides information related to the short treatment process, is not yet comprehensive and detailed. The frequency of providing education in self-care content areas was much lower than expected, nurses report that they have not been trained in the areas of heart failure self-care and patient guidance and education. In a study of over 2000 patients, nurse education of patients before discharge was very low, less than 40% of patients were asked to monitor or modify two factors, 23% of patients were encouraged to correct three factors. Factors mentioned include a low-sodium diet, recommendations for when should be hospitalized, and physical activity (Nancy M Albert, 2015).

Roy Adaptation Model stated that the individual as a comprehensive adaptive system in constant relationship with the internal or external environment. Roy defines the adaptation that the individual envisions and feels and responds to in order to design unity in his or her environment. Self-care management in HF patient requires a several changes in the patient's lifestyle and their surrounding environment, it is vitally important for them to adapt to enhance the quality of life (Mansouri, 2019; Phillips, 2018).

One of the commonalities that patients often experience when implementing HF self-care is difficulties in incorporating physical activity into their daily lifestyle. Although most patients claim to be in control and have a plan for their self-care regimen, they still encounter certain difficulties such as time constraints as a major challenge in performing physical exercises. Many patients reported they are exhausted after work and need much time to take care of their family over themself. Others mentioned limiting exercise due to fear of overexertion because it could worsen their condition when they had other underlying medical conditions such as diabetes, high blood pressure. Besides, economic difficulties are a big barrier, when self-care requires a healthy diet and healthy lifestyle. Economic hardship is a barrier when patients cannot access a healthy diet which usually a bit more expensive to afford for instance high nutrition diet and supplements. Regarding healthy, low sodium diets, one study has shown that cultural food preferences are one of the barriers to low-salt diets. This is little known or considered, for example, Chinese and Malay cuisine, fried noodles and Nasi Lemak or coconut fat rice with many spices, contain quite high amounts of sodium, oil and fat (Chew, 2019; Caterina Checa, 2020; Deepak Y. Kamath, 2021).

Multiple studies have shown the different in patient's gender, comorbidities, and knowledge of the signs, symptoms, and self-care of HF are significantly associated with adherence to self-care recommendations and management. In Carpenter 2008's study, it is proven that there was significant association between the emotion orientation and avoidance orientation components and the total threat to self-concept. It happens when an individual perceives a stimulus as a threat, it turns to stress and the emotion responses as situation changing such as denial or avoidance to reduce the stress level. And besides, there are inconsistencies in gender differences in self-care compliance in HF patients, some studies suggest that male are 2,3 times better than female at self-care managment, but there is also a study showing the opposite. And revealed that women with HF and other cardiovascular diseases are more likely to experience psychosocial stress and need more social support than men. Therefore, to improve the psychological distress and social support are significant associated with increasing the self-care behaviour and management in HF patients (Seid, 2019; Amouzeshi, Safajou, Kazemi, & Kianfar, 2019).

During the research, the authors noiticed that nurses and doctors often focused on dietary changes and medication compliance, they paid less attention to the important role of social support in the self-care management process. Social support is important in motivating patients to cope with the disease and observed a strong association between lack of social support, sadness, and perceived health status. Especially for older patients who do not have many relatives, family nearby. Besides the social support, patients can also receive emotional support from caregivers, family, and friends. In this regard, it was found that patients with good social support had better levels of mental health and self-care abilities (Caterina Checa, 2020).

7.3 Limitation of the study

The main purpose of this research essay is to collect existing information from different research articles around the world, and synthesize it into a big picture. From there to give audience a broader understanding of the current situation in HF self-care management. Since this is a bachelor's thesis, this research has certain limitations, the scale of information collection is limited. One of the limitations is that this literature review was conducted by only two bachelor nursing student and the number of research papers was limited to 18 articles. Although the utmost care has been taken to prevent any issues of reliability or bias, there will be some errors and limitations. All databases used were thoroughly searched based on inclusion and exclusion criteria such as limited literature to only the last 10 years, but

nevertheless there are many essays that the authors have not been able to access. The authors has used two different theories to have important empirical evidence that has been proven to be reliable, and complemented in practice based on the theoretical and practical framework to form a solid foundation for this study. The results and methods in the essay are transferable and can be used or applied to related topics.

8 Conclusion

HF is a life-threatening condition for which there is typically no treatment. However, when is treated with medicines and adheres to a nutritious diet, most of those with the condition live a normal life. Exploring the impact of patient education among HF patients to prevent further complications was quite rewarding. Self-care is only the option to diminish the severity of the condition. The quality of life of an individual can solely be maintained and begins by itself. Self-care management can be only achieved through the willingness of the patient to be treated, with help from family, friends, and healthcare providers. The motivation to get a proper treatment and knowledge on how to obtain it. Nutrition, physical activities and mental preparation. To impose these key factors to be considered in self-care management, family and friends plays a significant role on how to entangle themselves to get proper knowledge from the health care providers and help to encourage the patient to adhere on the treatment.

The cornerstone for dealing with HF condition was self-care advocacy. Nurses perform a significant role in educating patients, giving additional preventive measures, and self-care management interventions. Compared to other medical professionals, nurses are more integrated with the patient and tend to be more multifaceted with regard to managing medical condition. Consequently, more nurses are being trained to embody behavioural approaches like development discussions or meetings with clients and mental health treatment to optimize the efficacy of the intervention. Moreover, through promotion, education, and aid, nurses help patients become self-sufficient and abide by their own wellness routines. Offering regular self-care management plans or activities promotes beneficial consequences. Conclusively, implementing self-care management is quite challenging to both HF patients and nurses because of patient’s lack of initiative, economic or financial stability, patient’s lack of knowledge, and nurses using medical terms in communicating to patients. These factors surprisingly influence the psychological and physiological well-being of HF patients.

The authors sought that the nursing role in educating self-care management among HF patients is crucial in the treatment process. Hence, using medical terms in communicating with patients should be eradicated and make as simple as possible. Detailed information or knowledge about their condition makes the patients secure and motivated to go with the treatment interventions. Additionally, the motivation of HF patients in engaging to self-care management is seen to be stressful to them considering that they have to change their lifestyle particularly their daily routines, diets and even their habits. Nevertheless, some Hf patients according to the articles gathered, in correspondence to the adherence to self- care management have a positive response. A holistic perspective of nurses in educating HF patients promotes self-consciousness, and self-respect and patients' clear perceptions of their condition enhance them to manage their symptoms. Lastly, economic stability. When the financial situation remains secure, individuals are entitled to the necessities for a healthy lifestyle. A particularly significant psychological factor influencing wellness is earnings. The standard of life is influenced by one's assets, which also has an impact on behavioural well-being and medical practices, including tobacco use, extreme alcohol use, and nutrition.

Moreover, as demonstrated from the gathered information there are factors that inhibit the implementation of self-care management among HF patients. However, with the help of healthcare providers especially the nurses who will then help them to acknowledge the importance of self-care education to psychological and physical well-being. This research advocates a more resources to support nurses to gain more knowledge about their field of specialization to be able to confidently provide proper information to patients and support patients mentally, physically, and financially to achieve the goal of their treatments without worries with the collaboration of both healthcare providers and the policymakers.

Considering all the evidence gathered, this research concluded that self- care management education has a substantial influence among HF patients. It is not only enhancing the quality of life of the patients but helps them navigate obstacles, disappointments, and stress with an optimistic mindset with a more remarkable ability to recover from adversity. Additionally, learning self-care have long-term health advantage, especially with an individual with chronic conditions. Furthermore, this research proposes more extensive studies about topic because it creates educational evidence and resources that is vital for empowering people with the perception and abilities necessary to make wise decisions regarding their well-being. And also enlighten health promotion programs by emphasising lifestyle decisions and prevention strategies that promote general health that guides public health campaigns encouraging self-care activities. Finally, understanding the advantages and difficulties of

self-care facilitates the integration of these practices into traditional medical systems. As part of holistic medical care, medical professionals should be more efficiently prepared to mentor patients on self-care approach.

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Appendix 1

Figures

Table

Abbreviation

HF = Heart Failure

CVD = cardiovascular diseases

WHO = World health Organization

CHF = congestive heart failure

LV = left ventricle

AHA = American Health Association

ADHF = Acute decompensated heart failure

MRA = Magnetic resonance angiography

ACEI = Angiotensin-Converting Enzyme Inhibitors

ARNI = angiotensin receptor/neprilysin inhibitor

ARB = Angiotensin receptor blockers

ARN = Acute retinal necrosis

BB = beta blockers

SGLT2 = sodium glucose cotransporter 2 inhibitors

RAAS = renin-angiotensin-aldosterone system

HFrEF = Heart Failure with reduced ejection fraction

DAPA-HF = Dapagliflozin and Prevention of Adverse results in Heart Failure

ANS = autonomic nervous system

IDA = Integrative data analysis

Appendix 2: Medication needs to be understood to improve quality of life.

Medication Type	Examples	What to Monitor
Angiotensin converting enzymes inhibitors	Captopril, Enalapril, Benazapril, Lisinopril, Quinapril, Ramipril	Kidney function, potassium, blood pressure; possible cough, dizziness, rash or swelling
Angiotensin receptor blocker	Candesartan, Losartan, Valsartan	Kidney function, potassium, blood pressure; possible dizziness
Beta blockers	Carvedilol, Metoprolol succinate, Bisoprolol	Blood pressure, heart rate, possible worsening fatigue
Aldosterone inhibitors	Spironolactone, Eplerenone	Potassium, kidney function, possible breast tenderness
Hydralazne/Isosorbide	Isosorbide dinitrate, Hydralazine combination	Blood pressure, possible headache, dizziness, or nausea
Diuretics	Furosemide, Torsemide, Bumetanide, Metolazone, Hydrochlorothiazide	Electrolytes (Potassium, Sodium), Kidney function, too much fluid loss or dizziness
Digitalis	Digoxin	Digoxin level, kidney function

(White, 2014)

Appendices 3: Table of Articles

	Citation	Aim	Method	Results
1	Sanchez, P., Everett, B., Salamonson, Y., Ajwani, S., Bhole, S., Bishop, J., Lintern, K., Nolan, S., Rajaratnam, R., Redfern, J., Sheehan, M., Skarligos, F., Spencer, L., Srinivas, R., & George, A. (2017). Oral health and cardiovascular care: Perceptions of people with cardiovascular disease. PLoS ONE, 12(7), 1–17. https://doi-org.ezproxy.novia.fi/10.1371/journal.pone.0181189	To study the perception of patients with cardiovascular disease on oral health and the potential impact of oral health on cardiovascular disease.	A qualitative approach using structure interviews. The interviews conducted face-to- face, audio-taped and transcribed.	The results show that most of participant lack of oral health care knowledge associated to cardiac setting and participants want to have oral health promotion in cardiac setting. And emphasize the role of health care provider on promoting oral health care.
2	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.ezproxy.novia.fi/10.1007/s12529-019-09798-z	This study explores the underlying mechanism of heart failure self-care behaviours. The findings inform healthcare providers to better integrate self-care behaviours into patients' lifestyles.	A qualitative approach using unstructured face – to face interview. Thematic analysis used with constant comparison.	The study showed that motivation factors included consideration of family's future, own past, lifespan leads to intention of improving heart failure self-care. Challenges factors included difficulty of adapt new lifestyles, habits and dietary. Self-regulation to overcome challenges included self- monitor, positive thinking, home cook, etc.

3	Ivynian, S. E., Newton, P. J., & DiGiacomo, M. (2020). Patient preferences for heart failure education and perceptions of patient–provider communication. Scandinavian Journal of Caring Sciences, 34(4), 1094–1101. https://doi-org.ezproxy.novia.fi/10.1111/scs.12820	The aim of this study is to manage chronic diseases, like heart failure, sufficient knowledge is essential to acknowledge the complicated information that supports self-care.	Empirical research: Qualitative and quantitative studies	The study showed that patient need reliable modified information, about heart failure, and choose to have one-on-one argumentation about the data. Insufficient knowledge about the disease hinders successful patient-provider communication. Like health providers using different terms which patients could not understand, inadequate accurate information, the connection that did not stimulate open communication, and patients with memory disorders.
4	Seid, M. A., Abdela, O. A., & Zeleke, E. G. (2019). Adherence to self-care recommendations and associated factors among adult heart failure patients. From the patients' point of view. PLoS ONE, 14(2), 1–13. https://doi-org.ezproxy.novia.fi/10.1371/journal.pone.0211768	This study aimed to evaluate patients' adherence to self-care recommendations during heart failure treatment and other related factors.	Qualitative research doing by face- to- face interview. The study conducted on 310 heart failure patients.	The results showed that patient compliance with self-care recommendations was very low, however the majority of patients had good medication mangement. Regarding diet, adjusting lifestyle habits, performing regular physical activity and monitoring weight are not enough.
5	Checa, C., Medina-Perucha, L., Muñoz, M.-Á., Verdú-Rotellar, J. M., & Berenguera, A. (2020). Living with advanced heart failure: A qualitative study. PLoS ONE,	The objective of this study was to explore the perspectives of patients with advanced heart	Qualitative research through face- to- face interview with the participants of 12 patients.	The results showed that patients did not receive enough information, and that there was conflicting information about heart failure. Most patients believe that due to age, there are certain limitations in

	15(12), 1–18. https://doi-org.ezproxy.novia.fi/10.1371/journal.pone.0243974	failure regarding self-care, in terms of awareness as well as difficulties and limitations.		the self-care process. And difficulty in dealing with other diseases such as diabetes, renal failure since it is required medication and treatment management.
6	Seongkum Heo, Moser, D. K., Lennie, T. A., JinShil Kim, Turrise, S., Troyan, P. J., JungHee Kang, & Jones, H. J. (2021). Self-care strategies and interventions needed in patients with heart failure: from patient perspectives--a qualitative study. European Journal of Cardiovascular Nursing, 20(6), 540–546. https://doi-org.ezproxy.novia.fi/10.1093/eurjcn/zvaa033	The aim is to study the perspectives in self-care management and improvement symptoms of heart failure's patient. Thence, the intervention to improve self-care in heart failure patient.	Qualitative study by conducting open- ended interview from 20 patients	The participants used variety strategies approaching self-care in heart failure, however, they felt they have insufficient knowledge to take care of themselves and monitor their symptoms and experienced many symptoms of heart failure. The result of the study also reflect the knowledge of the patients, report showed that they used incorrect strategy to manage heart failure symptoms such as drinking more water to reduce oedema.
7	Kennedy, B. M., Jaligam, V., Conish, B. K., Johnson, W. D., Melancon, B., & Katzmarzyk, P. T. (2017). Exploring Patient, Caregiver, and Healthcare Provider Perceptions of Caring for Patients with Heart Failure: What Are the Implications? Ochsner Journal, 17(1), 93–102.	The purpose of this study was to determine patient and caregiver preferences during treatment, and self-care. Also compare the roles of health care providers,	The study used the semi-structured interview with the participants of 60 patients, 22 caregivers and 11 healthcare providers	Most patients find their doctors and health care providers immensely helpful during treatment. However, older patients with multiple underlying medical conditions have difficulty learning to cope with heart failure. And caregivers consider praying, meditating, talking to and encouraging patients, and seeking counselling or therapy as having a positive impact. As for healthcare providers, most of them think that

		and evaluate the effectiveness of promoting self-care management.		knowledge about HF is the most important thing besides medication compliance and adherence to the treatment plan.
8	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. 2020; 7: 2039–2046. https://doi.org/10.1002/nop2.599	The purpose of this study is to analysis the relationship between health literacy, social support, and self-care behaviors among heart failure patient	A cross-sectional descriptive study among 252 adult patients.	The result showed that health literacy and social support impact on the self-care management in heart failure patient. Moreover, there is a significant different in self-care behaviours between patient from the age of 81 and under 80 years old. The study also showed the difference in patient that living alone compared to living with family in encouraging self-care strategy.
9	Sedlar, N., Lainscak, M., & Farkas, J. (2020). Living with Chronic Heart Failure: Exploring Patient, Informal Caregiver, and Healthcare Professional Perceptions. International Journal of Environmental Research and Public Health, 17(8), 2666. MDPI AG. Retrieved from http://dx.doi.org/10.3390/ijerph17082666	The aim of the study is to investigate the difficulties and challenges toward self-care behaviours among heart failure patients. Meanwhile, studying the relationship between patients and healthcare professionals,	Qualitative research using semi-structure interview with 32 heart failure patients and 21 caregiver and 5 healthcare professionals	The result showed that the barriers in self-care management such as changing lifestyle, and financially, psychologically and support difficulties. Even though most of inform care givers stated that they offer practical and emotional support, health care professionals noticed that some patients have not received enough care. Finding from the interview showed psychological support has a hug impact, however, inform care givers did not mention about it in their care plan and heart failure treatment.

10	Płotka, A., Prokop, E., Migaj, J., Straburzyńska-Migaj, E., & Grajek, S. (2017). Patients' knowledge of heart failure and their perception of the disease. Patient preference and adherence, 11, 1459–1467. https://doi.org/10.2147/PPA.S126133	The goal of this study was to gain a perspective on patients' perception of chronic heart failure symptoms, by analysing self-care through their compliance with lifestyle modifications.	Qualitative study with the participant of 201 patients. Using 12 questions to ask about patient's perception of heart failure	The younger the patient, the more likely they are to think that heart failure can be cured; however, patients with severe heart failure tend to think that it cannot be cured. Many patients make significant lifestyle changes such as quitting smoking and being active. Most patients know the severe symptoms of heart failure but do not know how to identify them, which causes patients to only seek medical help when the symptoms become severe.
11	Sedlar, N., Lainscak, M., & Farkas, J. (2021). Self-care perception and behavior in patients with heart failure: A qualitative and quantitative study. ESC heart failure, 8(3), 2079–2088. https://doi.org/10.1002/ehf2.13287	The goal of this research was to examine self-care adherence and related factors.	A quantitative study utilizing the European Self-Care Behaviour Scale and qualitative study applying standardized interviews.	When preparing self-care interventions for patients with HF, a number of variables, including health-related beliefs, routines, and culturally oriented principles, must be considered. An appropriate evaluation of patients that considers the specific personal and societal environment should serve as the foundation for a patient-tailored strategy.
12	Amouzeshi, Z., Safajou, F., Kazemi, T., & Kianfar, S. (2019). The relationship between cognitive perception of self-concept and coping styles in heart failure patients. Nursing open, 7(2), 530–535.	To ascertain the association between self-concept and coping mechanisms in heart failure patients.	A quantitative study using correlational method.	Consequential correlations were found among the emotion-oriented, risk to one's overall self-image, bodily sensation, and self-awareness components. Additionally, a strong correlation was found ($p < .05$) between the avoidance-oriented and danger to self-perception in the

	https://doi.org/10.1002/nop2.417			overall and bodily feeling dimensions. Adopting maladaptive coping strategies, such self-pity or rejection, is linked to reduced general well-being and higher levels of anxiety.
13	Rahimi Kordshooli, K., Rakhshan, M., & Ghanbari, A. (2018). The Effect of Family-Centered Empowerment Model on the Illness Perception in Heart Failure Patients: a Randomized Controlled Clinical Trial. Journal of caring sciences, 7(4), 189–195. https://doi.org/10.15171/jcs.2018.029	This research sought to determine the impact of family-focused empowering approach on individuals with Hf and their insights.	A quantitative study applying Randomized controlled trials. There are seventy (70) HF participants.	The demographics of the control and experimental teams were identical. Prior to the intervention, values of all groups'remained identical in all areas related to how they saw their illnesses; With the exception of the Time line, every aspect of disease understanding showed significant variations following the intervention. The areas of concern (1.09 (0.61) vs. 3 (0.93) and one's identity (0.97 (0.61) vs. 2.11 (0.67)) showed the greatest and slightest modifications.
14	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.	The aimed of this standard development plan to ascertain if 60 minutes of standardised in-patient teaching and planned follow-up calls by nursing staff educated in HF, would reduce	This study used a quasi-experimental method.	

		30-day hospital readmissions.		
15	Giezeman, M., Arne, M., & Theander, K. (2017). Adherence to guidelines in patients with chronic heart failure in primary health care. Scandinavian Journal of Primary Health Care, 35(4), 336–343. https://doi-org.ezproxy.novia.fi/10.1080/02813432.2017.1397253	Specify how medical professionals comply with worldwide recommendations for managing the symptoms of chronic heart failure (CHF) about diagnosis, medication, and self-care practices.	A descriptive study was carried out on a cross-sectional basis among CHF patients, utilising data gathered from postal survey and medical documentation.	With one hundred and fifty five(155) HF patients, age range between 79 and 89 years old participated in diagnostic procedures and medical intervention by European Society of Cardiology guidelines, as well as self-care practices measured by the European Heart Failure Self-care Behavior Scale (EHFScBS-9). Although adherence to recommendations has increased from previous research, it needs to be revised, especially regarding prescription doses. Furthermore, patient awareness and self-care practices can be strengthened.
16	Taniguchi, C., Seto, N., & Shimizu, Y. (2021). Outpatient nursing support for self-monitoring in patients with chronic heart failure. PLoS ONE, 16(7), 1–11. https://doi-org.ezproxy.novia.fi/10.1371/journal.pone.0254019	The purpose of the research was to investigate how Japanese patients with chronic heart failure are supported in self-management by trained nurses in outpatient departments.	A qualitative study design was used for this interpretive research. Compost of five (5) registered nurse and one (1) advanced nurse practitioners.	The outcome proposes a necessity for an effective support network for outpatient treatment, an approach among nurses encouraging self-management among individuals with long-term heart failure in an outpatient environment and aims to support self-regulation in individuals with heart failure.

17	Albert, N. M., Cohen, B., Liu, X., Best, C. H., Aspinwall, L., & Pratt, L. (2015). Hospital nurses' comfort in and frequency of delivering heart failure self-care education. European Journal of Cardiovascular Nursing, 14(5), 431–440. https://doi-org.ezproxy.novia.fi/10.1177/1474515114540756	To investigate how often and how comfortable nurses are teaching hospitalized patients about HF.	Questionnaire methodologies and a multicentre, narrative, correlational framework was employed.	The topics covered in heart failure self-care differed in terms of nurses' comfort levels and how frequently they gave instruction. The topics of personal care instruction, where hospitalisation and survival are most critical, had the lowest rates of familiarity and consistency among nurses. Systems and procedures must be established to enable the provision of education leaving the hospital.
18	Malhotra, C., Bundoc, F., Ang, F. J. L., Ozdemir, S., Teo, I., Sim, D., Jaufeerally, F. R., Aung, T., & Finkelstein, E. (2021). Financial difficulties and patient-reported outcomes among patients with advanced heart failure. Quality of Life Research : An International Journal of Quality of Life Aspects of Treatment, Care and Rehabilitation, 30(5), 1379–1387. https://doi-org.ezproxy.novia.fi/10.1007/s11136-020-02736-7	Designed to examine the connection between economic challenges and patients' perceived quality of care, physiological, psychological, social, and spiritual QOL, and their views on burdening their families, the study sought to determine whether patients' perceptions of influencing stres s influenced	This research employs cross-sectional study of two hundred and fifty patients (250).	Almost half of the patients (41%) has financial difficulties. Lower QOL (emotional, social, and spiritual) and viewed health care coordination, as well as a greater chance of patients believing they are a responsibility to their family, were all correlated with more significant economic challenges scores (range: 0–6) (all $p < 0.05$).

		these relationships.		